

GRADE 7 BUSINESS & FINANCE

First edition

8 units

32 lessons + bonus business unit

A video for every lesson

FIRST EDITION

COURSE GUIDE

This course follows eight strands of business and finance through one school year: work and economic thinking, the story of money, markets, great businesses, workers and owners, entrepreneurship and sales, accounting, and saving, investing and giving. Each unit is built around real moments from history: Governor William Bradford dividing the cornfields of Plymouth in 1623, Adam Smith publishing *The Wealth of Nations* in 1776, the silver of Potosí crossing the Atlantic in Spanish treasure fleets, the merchants of Amsterdam founding a bank in 1609 to cure their bad coins, the Dutch East India Company selling the first shares to the public, Andrew Carnegie counting the cost of every ton of steel, the Triangle Shirtwaist fire of 1911, Thomas Edison's laboratory at Menlo Park, the gold window closing on August 15, 1971, and the bank runs that led to deposit insurance in 1933.

Every lesson follows the same path. First comes **the story**. Then **how they figured it out**: what problem stood in the way, what they tried, what failed, what they measured and what they changed. Then **the big idea**, explained for a seventh grader with real vocabulary and simple formulas: incentives, productivity, comparative advantage, supply and demand shifts, spillovers and public goods, vertical integration, debits and credits, accrual accounting, financial ratios, diversification and compound interest. Then **in business today**: how families, shops, companies and banks use the idea now, and what a wise and honest person does with it. Last, the student does it in miniature, with a calculator, a spreadsheet, receipts, price tags and a ledger notebook.

Great businesses are weighed by what they meant for **six stakeholders**: the financiers who lent or invested the money, the risk-takers who started them, the builders who designed and made the product, the workers, the customers and the community. A business is great when it creates real value and serves all six over a long time; it may be big without being great. The year ends with a family market day, and an optional bonus unit, **A Business with a Partner**, walks the student through

choosing a partner, writing a simple contract, running a small business together and splitting the profit fairly, with a parent.

Most videos come from the Federal Reserve banks and Federal Reserve History, Khan Academy, museums and archives, PBS, Accounting Stuff and a few other trusted teaching channels chosen lesson by lesson. Every video was checked for content and accuracy before it was chosen, and none comes from a channel that takes sides in present-day public debates. Some channels end with an invitation to subscribe or a sponsor message; you can stop the video when the teaching ends. Watch together when you can, and pause where the lesson tells you to predict or calculate.

Start with Lesson 1.1 →

WHO IT IS FOR

Written for students in grade 7 (about ages 12–13) who read well on their own, can work with decimals, fractions, percents and simple formulas, and are ready for real vocabulary and longer explanations. A parent or teacher reads along, discusses the stories, plays customer, banker or partner in the projects, and supervises all real selling and money handling. Nothing needs to be bought beyond ordinary household items: a calculator, receipts and store flyers, index cards, play money, a graph-paper notebook and, if you have one, a computer with a free spreadsheet.

HOW TO USE THIS COURSE

1. **The weekly rhythm.** The year has 32 lessons, one a week. Session 1 (50 to 60 minutes) is the warm-up, the video, the teaching and the picture study. Session 2 (50 to 60 minutes) is the project and the ledger notebook. In the last week of each unit, add a third session for the unit review and the portfolio project.
2. **Story, then the big idea.** The core ideas are the heart of each lesson. The paragraphs marked *The story* and *How they figured it out* tell what happened; *The big idea* explains the economic or financial principle, often with a formula and a worked number; *In business today* shows how people use it now. Ask the student to explain each paragraph back in his or her own words, and to check every calculation.
3. **Picture study.** Each lesson has one public-domain painting, print, map or historic photograph. Look at it quietly for two minutes. Then put it away and have the

student describe everything he or she remembers. Bring it back and work through the “look for” items and questions, which point to the work, trade or money in the picture.

4. **The ledger notebook.** Use one graph-paper composition book for the whole year. Every project ends with something counted, calculated and written down: a table with units, a graph, a T-account, a balance sheet, a budget or a stakeholder scorecard. Date every page, show the formula you used, and write one sentence about what the numbers mean and what you would change. Honest records matter more than impressive numbers: “a just weight is his delight” (Proverbs 11:1).
5. **The six stakeholders.** Whenever the course looks at a business, ask what it meant for the financiers, the risk-takers, the builders, the workers, the customers and the community. Unit 4 practices a stakeholder scorecard with a 1–5 rating and a reason for each; use it all year, for businesses in history and in your own town.
6. **Optional books and games.** Some units list free classics such as Adam Smith’s *Wealth of Nations*, Benjamin Franklin’s *The Way to Wealth* and John Wesley’s sermon “The Use of Money,” along with free teaching sites. They are extras. Every lesson can be completed without them.
7. **Unit review and portfolio.** Each unit ends with a review worth 100 points, with calculations to work out and short written answers, and a portfolio project that pulls the unit together: a productivity study, a money timeline, a market-failure report, a stakeholder report, a cost study, a business plan, a set of financial statements or a real family budget. Keep the portfolio pages in one folder for the year.
8. **Money and selling safety.** A parent supervises all selling and all handling of real money. Never sell door to door or meet strangers alone, never give out personal information, passwords or card numbers, and do not sell or open accounts online without a parent. Check your town’s rules before selling food or setting up a stand. The student never borrows or lends money without a parent, and all investing in this course is practice with pretend money.
9. **The family market day.** In the last week of Unit 8, the student sets up a table with the best project from each unit and its ledger pages, sells or shows something he or she has made, and explains to family and guests how it was priced, what it cost and what it earned.

10. **A Business with a Partner (optional bonus unit).** Unit 9 walks the student and a partner (a sibling, cousin or friend, with both families' permission) through choosing a business, writing a short partnership contract, running the business with shared books, and closing the books with a fair profit split and a gift. Use it after market day, over the summer, or alongside the year.

SCOPE AND SEQUENCE

UNIT 1 • WEEKS 1–4

Work and Economic Thinking

Incentives and the Plymouth cornfields; productivity and how nations measure their work with GDP; Adam Smith's *Wealth of Nations*; and the Corn Laws, their repeal in 1846, and the case for trade with comparative advantage.

- 1.1 Incentives: The Cornfields of Plymouth, 1623
- 1.2 Productivity and GDP: Measuring a Nation's Work
- 1.3 Adam Smith and *The Wealth of Nations*, 1776
- 1.4 The Corn Laws and the Case for Trade

UNIT 2 • WEEKS 5–8

The Story of Money

Mercantilism and the Spanish treasure fleets; the Bank of Amsterdam and its trusted bank money; the gold standard and Bretton Woods; and today's fiat dollar and the tools the Federal Reserve has used since 1971.

- 2.1 Mercantilism and the Spanish Treasure Fleets
- 2.2 The Bank of Amsterdam, 1609: Curing Bad Coins with Bank Money
- 2.3 The Gold Standard and Bretton Woods
- 2.4 Fiat Money and the Federal Reserve's Tools After 1971

UNIT 3 • WEEKS 9–12

Markets

Shifts in supply and demand in the whale-oil trade; market failures, spillovers and public goods from London’s Great Stink to the lighthouse; natural monopolies and regulated utilities; and cartels, with the 1973 oil embargo as history.

- 3.1 Shifts in Supply and Demand: Whale Oil and Kerosene
- 3.2 Market Failures: Spillovers, Public Goods and the Great Stink
- 3.3 Natural Monopolies and Regulated Utilities
- 3.4 Cartels and the 1973 Oil Embargo

UNIT 5 • WEEKS 17–20

Workers, Owners and Fair Rules

The Homestead strike of 1892, told plainly; Ford’s \$5 day as a voluntary answer; the Triangle fire, safety codes and workers’ compensation; and when rules help and when they hurt, with price controls from Diocletian to the 1970s.

- 5.1 Capital and Labor: The Homestead Strike of 1892
- 5.2 Ford’s \$5 Day: A Voluntary Answer
- 5.3 The Triangle Fire, Safety Codes and Workers’ Compensation
- 5.4 When Rules Help and When They Hurt: Price Controls

UNIT 4 • WEEKS 13–16

Great Businesses and Their Stakeholders

The six stakeholders tested on the Dutch East India Company, the first public company; Carnegie Steel and vertical integration; Rockefeller’s Standard Oil, its efficiency and its monopoly; and Sears and the mail-order revolution.

- 4.1 The Dutch East India Company: The First Public Company
- 4.2 Carnegie Steel and Vertical Integration
- 4.3 Rockefeller’s Standard Oil: Efficiency and Monopoly
- 4.4 Sears and the Mail-Order Revolution

UNIT 6 • WEEKS 21–24

Entrepreneurship and Sales

Edison’s invention factory at Menlo Park; raising money with savings, loans, partners and investors, from Hewlett and Packard’s garage; honest persuasion and the sales process at National Cash Register; and brands and trust in Coca-Cola’s bottle.

- 6.1 Edison’s Menlo Park: The Invention Factory
- 6.2 Raising Money: Savings, Loans, Partners and Investors
- 6.3 Honest Persuasion: The Sales Process at National Cash Register
- 6.4 Brands and Trust: The Coca-Cola Bottle

UNIT 7 • WEEKS 25–28

Accounting

T-accounts, debits and credits; cash versus accrual accounting and the railroads’ problem of wear; the balance sheet, the first credit reports and simple ratios; and cost accounting at Carnegie Steel.

- 7.1 T-Accounts, Debits and Credits: “In the Name of God and of Profit”
- 7.2 Cash versus Accrual: The Railroads Learn to Count Wear
- 7.3 The Balance Sheet and Simple Ratios: Lewis Tappan’s Credit Reports
- 7.4 Cost Accounting at Carnegie Steel

UNIT 8 • WEEKS 29–32

Saving, Investing and Giving

Stocks, bonds and mutual funds; risk and diversification, with the South Sea Bubble as a warning; the 1929 crash, bank runs and the FDIC; and budgeting, credit and the family market day.

- 8.1 Stocks, Bonds and Mutual Funds
- 8.2 Risk, Diversification and the South Sea Bubble
- 8.3 The 1929 Crash, Bank Runs and the FDIC
- 8.4 Budgeting, Credit and the Family Market Day

UNIT 9 • WEEKS 33–36

Bonus: A Business with a Partner

Optional bonus unit: choose a partner and a business, write a simple partnership contract, run it with shared books, and close the books with a fair profit split and a gift.

- 9.1 Choosing a Partner and a Plan: Levi Strauss and Jacob Davis
- 9.2 Write the Contract: Procter, Gamble and the Buttonwood Agreement
- 9.3 Run It Together and Keep Joint Books: Marks and Spencer
- 9.4 Close the Books, Split the Profit and Give: Abraham and Lot

WEEKLY PACING CALENDAR

WEEK	PLAN
I	Session 1: Lesson 1.1 Incentives: The Cornfields of Plymouth, 1623: warm-up, video, teaching and picture study

WEEK	PLAN
	Session 2: Lesson 1.1 project and ledger notebook <i>Two sessions a week is the usual rhythm. Younger children can split a long session in two; older students can do both sessions in one sitting.</i>
2	- Session 1: Lesson 1.2 Productivity and GDP: Measuring a Nation's Work: warm-up, video, teaching and picture study - Session 2: Lesson 1.2 project and ledger notebook
3	- Session 1: Lesson 1.3 Adam Smith and <i>The Wealth of Nations</i>, 1776: warm-up, video, teaching and picture study - Session 2: Lesson 1.3 project and ledger notebook
4	- Session 1: Lesson 1.4 The Corn Laws and the Case for Trade: warm-up, video, teaching and picture study - Session 2: Lesson 1.4 project and ledger notebook - Session 3: Unit 1 review and portfolio project
5	- Session 1: Lesson 2.1 Mercantilism and the Spanish Treasure Fleets: warm-up, video, teaching and picture study - Session 2: Lesson 2.1 project and ledger notebook
6	- Session 1: Lesson 2.2 The Bank of Amsterdam, 1609: Curing Bad Coins with Bank Money: warm-up, video, teaching and picture study - Session 2: Lesson 2.2 project and ledger notebook
7	- Session 1: Lesson 2.3 The Gold Standard and Bretton Woods: warm-up, video, teaching and picture study - Session 2: Lesson 2.3 project and ledger notebook
8	- Session 1: Lesson 2.4 Fiat Money and the Federal Reserve's Tools After 1971: warm-up, video, teaching and picture study - Session 2: Lesson 2.4 project and ledger notebook - Session 3: Unit 2 review and portfolio project
9	- Session 1: Lesson 3.1 Shifts in Supply and Demand: Whale Oil and Kerosene: warm-up, video, teaching and picture study - Session 2: Lesson 3.1 project and ledger notebook

WEEK	PLAN
10	• Session 1: Lesson 3.2 Market Failures: Spillovers, Public Goods and the Great Stink: warm-up, video, teaching and picture study • Session 2: Lesson 3.2 project and ledger notebook
11	• Session 1: Lesson 3.3 Natural Monopolies and Regulated Utilities: warm-up, video, teaching and picture study • Session 2: Lesson 3.3 project and ledger notebook
12	• Session 1: Lesson 3.4 Cartels and the 1973 Oil Embargo: warm-up, video, teaching and picture study • Session 2: Lesson 3.4 project and ledger notebook • Session 3: Unit 3 review and portfolio project
13	• Session 1: Lesson 4.1 The Dutch East India Company: The First Public Company: warm-up, video, teaching and picture study • Session 2: Lesson 4.1 project and ledger notebook
14	• Session 1: Lesson 4.2 Carnegie Steel and Vertical Integration: warm-up, video, teaching and picture study • Session 2: Lesson 4.2 project and ledger notebook
15	• Session 1: Lesson 4.3 Rockefeller's Standard Oil: Efficiency and Monopoly: warm-up, video, teaching and picture study • Session 2: Lesson 4.3 project and ledger notebook
16	• Session 1: Lesson 4.4 Sears and the Mail-Order Revolution: warm-up, video, teaching and picture study • Session 2: Lesson 4.4 project and ledger notebook • Session 3: Unit 4 review and portfolio project
17	• Session 1: Lesson 5.1 Capital and Labor: The Homestead Strike of 1892: warm-up, video, teaching and picture study • Session 2: Lesson 5.1 project and ledger notebook
18	• Session 1: Lesson 5.2 Ford's \$5 Day: A Voluntary Answer: warm-up, video, teaching and picture study • Session 2: Lesson 5.2 project and ledger notebook

WEEK	PLAN
19	• Session 1: Lesson 5.3 The Triangle Fire, Safety Codes and Workers' Compensation: warm-up, video, teaching and picture study • Session 2: Lesson 5.3 project and ledger notebook
20	• Session 1: Lesson 5.4 When Rules Help and When They Hurt: Price Controls: warm-up, video, teaching and picture study • Session 2: Lesson 5.4 project and ledger notebook • Session 3: Unit 5 review and portfolio project
21	• Session 1: Lesson 6.1 Edison's Menlo Park: The Invention Factory: warm-up, video, teaching and picture study • Session 2: Lesson 6.1 project and ledger notebook
22	• Session 1: Lesson 6.2 Raising Money: Savings, Loans, Partners and Investors: warm-up, video, teaching and picture study • Session 2: Lesson 6.2 project and ledger notebook
23	• Session 1: Lesson 6.3 Honest Persuasion: The Sales Process at National Cash Register: warm-up, video, teaching and picture study • Session 2: Lesson 6.3 project and ledger notebook
24	• Session 1: Lesson 6.4 Brands and Trust: The Coca-Cola Bottle: warm-up, video, teaching and picture study • Session 2: Lesson 6.4 project and ledger notebook • Session 3: Unit 6 review and portfolio project
25	• Session 1: Lesson 7.1 T-Accounts, Debits and Credits: "In the Name of God and of Profit": warm-up, video, teaching and picture study • Session 2: Lesson 7.1 project and ledger notebook
26	• Session 1: Lesson 7.2 Cash versus Accrual: The Railroads Learn to Count Wear: warm-up, video, teaching and picture study • Session 2: Lesson 7.2 project and ledger notebook
27	• Session 1: Lesson 7.3 The Balance Sheet and Simple Ratios: Lewis Tappan's Credit Reports: warm-up, video, teaching and picture study • Session 2: Lesson 7.3 project and ledger notebook

WEEK	PLAN
28	• Session 1: Lesson 7.4 Cost Accounting at Carnegie Steel: warm-up, video, teaching and picture study • Session 2: Lesson 7.4 project and ledger notebook • Session 3: Unit 7 review and portfolio project
29	• Session 1: Lesson 8.1 Stocks, Bonds and Mutual Funds: warm-up, video, teaching and picture study • Session 2: Lesson 8.1 project and ledger notebook
30	• Session 1: Lesson 8.2 Risk, Diversification and the South Sea Bubble: warm-up, video, teaching and picture study • Session 2: Lesson 8.2 project and ledger notebook
31	• Session 1: Lesson 8.3 The 1929 Crash, Bank Runs and the FDIC: warm-up, video, teaching and picture study • Session 2: Lesson 8.3 project and ledger notebook
32	• Session 1: Lesson 8.4 Budgeting, Credit and the Family Market Day: warm-up, video, teaching and picture study • Session 2: Lesson 8.4 project and ledger notebook • Session 3: Unit 8 review and portfolio project <i>Last week. Hold a family market day: the student sets up a table with the best project from each unit and its notebook pages, sells or shows something they made, and explains to guests how they priced it and what they earned.</i>
33	• Session 1: Lesson 9.1 Choosing a Partner and a Plan: Levi Strauss and Jacob Davis: warm-up, video, teaching and picture study • Session 2: Lesson 9.1 project and ledger notebook <i>Optional bonus unit: run a real small business. Do it after market day, over the summer, or alongside the year.</i>
34	• Session 1: Lesson 9.2 Write the Contract: Procter, Gamble and the Buttonwood Agreement: warm-up, video, teaching and picture study • Session 2: Lesson 9.2 project and ledger notebook

WEEK	PLAN
35	• Session 1: Lesson 9.3 Run It Together and Keep Joint Books: Marks and Spencer: warm-up, video, teaching and picture study • Session 2: Lesson 9.3 project and ledger notebook
36	• Session 1: Lesson 9.4 Close the Books, Split the Profit and Give: Abraham and Lot: warm-up, video, teaching and picture study • Session 2: Lesson 9.4 project and ledger notebook • Session 3: Unit 9 review and portfolio project

MATERIALS

Ledger notebook (a graph-paper composition book)

One for the whole year: tables, graphs, T-accounts, balance sheets, budgets and stakeholder scorecards.

A calculator

A basic one is fine. A free spreadsheet (Google Sheets or LibreOffice Calc) helps in Units 1, 7 and 8 and in the bonus business.

Play money or slips of paper marked \$1, \$5, \$10, \$20 and \$100, and a jar of coins

For auctions, bank games, trading and making change.

Index cards, sticky notes, markers and masking tape

For price tags, trading cards, signs, T-accounts and bids.

Store flyers, receipts and a few utility bills

Save them through the year for price surveys, ledgers and the budget project. A parent may cover account numbers.

A kitchen scale and a timer

For productivity tests, coin weighing and assembly-line contests.

Household supplies for small projects

Paper, scissors, a ruler, paper cups, simple baking or craft supplies for market day and the bonus business.

Optional: one of the books or resources listed in a unit

Never required. See the list in each unit.

GRADING

Grades come mostly from the projects and the ledger notebook, because business and money are learned by doing, calculating and recording. A project whose numbers did not turn out well but are honestly recorded and explained earns full credit.

PART	%
Projects (effort, careful calculation and the improve-it step)	40
Ledger notebook (dated pages, formulas shown, tables with units, honest records)	20
Unit reviews	15
Portfolio projects	25

Scale: A 90–100, B 80–89, C 70–79, D 60–69. Below 60: redo the project or review with help.

- Grade the reasoning, not just the answer. Did the student predict, measure carefully, show the formula, record honestly, explain the numbers and suggest an improvement?
- A ledger page earns full marks when it has a date, a title, labeled columns with units, correct totals, the formula used and one sentence about what the numbers mean.
- On the unit reviews, give partial credit on calculations when the method is right and an arithmetic slip is the only error.
- Keep each unit's portfolio in one folder. Together they make a fine record of the year and the centerpiece of the family market day.

A NOTE TO PARENTS

You do not need to be an economist or an accountant to teach this course. Read the story together, watch the video, and then be the student's customer, supplier, banker or partner in the project. Ask "What are the incentives here?", "Who gains and who

bears the cost?” and “How do you know? Show me the numbers.” Those three questions are most of what a good business teacher does.

Seventh graders are ready for history told honestly. Great businesses are shown with their strengths and their failings, and the hard chapters, such as the forced labor of the Potosí mines, the Dutch East India Company’s part in the slave trade, the Homestead strike and the Triangle fire, are told plainly and briefly, without graphic detail, with their moral lesson in view. The lessons on fair rules are taught as settled history: what problem a law or custom fixed, how it worked and what it cost, alongside rules that went wrong. Nothing in the course asks you or your child to take a side in present-day public debates.

Real money should always be handled with you nearby. When the student sells something, you are the partner who keeps the cash box, checks the change and makes sure no one is cheated. Above all, the course hopes to raise a young person who works heartily, deals honestly, saves wisely and gives cheerfully. *Fabricando fit faber*: by making, one becomes a maker.

UNIT 1

WORK AND ECONOMIC THINKING

Economics is the study of how people choose to use what is scarce: time, land, tools, skill and money. In this unit you will learn to think like an economist by asking four questions about any situation. What are the **incentives**, the rewards and costs that push people one way or another? How **productive** is the work, and how do we measure it? How does **dividing the work and trading** make people richer? And who gains and who loses when the rules of trade change?

The answers come from true stories: Governor William Bradford dividing the cornfields of Plymouth Colony in 1623, the economists who first measured a whole nation's output during the Great Depression, Adam Smith publishing *The Wealth of Nations* in 1776, and the long fight in Britain over the Corn Laws, which ended in 1846. Behind all of them stands an older truth: God made people to work, to “dress and keep” the world He gave them (Genesis 2:15), and good work done heartily is a calling, not a curse.

PREREQUISITES

- Knows scarcity, opportunity cost and specialization at a simple level (earlier grades or Grade 5)
- Can multiply and divide decimals and find a percent
- Can read a simple table and bar graph

MASTERY CHECKLIST

- ☐ I can explain what an incentive is and predict how a change in incentives will change what people do.
- ☐ I can calculate productivity as output per hour and explain why it raises living standards.
- ☐ I can explain what GDP measures, how it is calculated, and what it leaves out.
- ☐ I can summarize the main ideas of Adam Smith's

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- ☐ I can use opportunity cost to find comparative advantage and show that both sides can gain from trade.

OPTIONAL BOOKS AND GAMES FOR THIS UNIT

- ***An Inquiry into the Nature and Causes of the Wealth of Nations*, by Adam Smith (1776)**: Free at Project Gutenberg. Read Book I, chapter 1 (the pin factory) aloud in Lesson 1.3; strong readers may try chapter 2 as well. Ages 12 and up, with a parent to help with the long sentences.
- ***Of Plymouth Plantation*, by William Bradford**: Free at Project Gutenberg. Governor Bradford's own history of the Pilgrims. Find the year 1623 for the story in Lesson 1.1. The old spelling is part of the fun. Ages 12 and up.
- **Federal Reserve Bank of St. Louis: Econ Lowdown**: Free lessons, videos and online courses on scarcity, incentives, productivity, GDP and trade, made by the St. Louis Fed for students and teachers. Good extra practice for every lesson in this unit.

Not required. Every project in this unit works without them. School Launch has no ties to these authors, publishers or companies.

LESSONS IN THIS UNIT

1.1	Incentives: The Cornfields of Plymouth, 1623	2 sessions of 50 minutes
1.2	Productivity and GDP: Measuring a Nation's Work	2 sessions of 50 minutes
1.3	Adam Smith and <i>The Wealth of Nations</i> , 1776	2 sessions of 50 minutes
1.4	The Corn Laws and the Case for Trade	2 sessions of 50 minutes

UNIT 1 REVIEW

Answer each question. Show your work for every calculation and use complete sentences for explanations. The review is worth 100 points.

1. **8 pts**
What is an incentive? Give one positive incentive and one negative incentive a business might use, and one incentive that is not about money.
2. **8 pts**
What changed at Plymouth Colony in 1623, and why did it work?

3. **8 pts**

Explain how the Hanoi rat bounty of 1902 backfired. What lesson does it teach about designing rewards?

4. **8 pts**

A worker assembles 72 lamps in an 8-hour day. With a new jig she assembles 90 lamps in 8 hours. Find her productivity before and after, and the percent increase.

5. **8 pts**

A small country has consumption of \$600 million, investment of \$150 million, government purchases of \$200 million, exports of \$90 million and imports of \$140 million. Its population is 50,000. Find GDP and GDP per person.

6. **8 pts**

Why do economists use real GDP instead of nominal GDP to compare one year with another?

7. **8 pts**

Name three valuable things that GDP does not measure.

8. **8 pts**

According to Adam Smith, what is the real wealth of a nation, and what limits the division of labor?

9. **8 pts**

What did Smith mean by the invisible hand? What must be true for it to work well?

10. **10 pts**

In one day, Country A can make 20 bolts of cloth or 10 tons of grain. Country B can make 6 bolts of cloth or 6 tons of grain. Find each country's opportunity cost of 1 ton of grain. Which country has the comparative advantage in grain, and which in cloth?

11. **10 pts**

Who gained and who lost from Britain's Corn Laws? Why were they repealed in 1846?

12. **8 pts**

Short answer: Explain in four or five sentences why two people or two nations can both gain from trade even when one is better at making everything.

ANSWER KEY

1. An incentive is a reward or cost that encourages people to act a certain way. Examples: a bonus for good sales (positive); a fine for late returns (negative); praise, pride in good work, love of family, or serving God (non-money).
2. Governor Bradford ended the common store for corn and gave each family its own plot to plant for itself. Because each family kept the fruit of its own work, people worked harder, more land was planted, and the harvest was much better.
3. The city paid for rat tails, so some people cut off tails and released the rats to breed, and some raised rats. The reward encouraged getting tails, not killing rats. Lesson: ask what people will actually do to earn a reward, and watch for unintended consequences.
4. Before: $72 \div 8 = 9$ lamps per hour. After: $90 \div 8 = 11.25$ lamps per hour. Increase: $(11.25 - 9) \div 9 \times 100 = 25\%$.
5. $GDP = 600 + 150 + 200 + (90 - 140) = \$900$ million. GDP per person = $\$900,000,000 \div 50,000 = \$18,000$.
6. Nominal GDP can rise just because prices rose, even if no more was produced. Real GDP removes the effect of inflation, so it shows whether the country actually produced more.
7. Any three: work done at home by family members; volunteer and church work; leisure and rest; health; honesty and trust; the beauty of a place; harm such as pollution.
8. The goods and services its people produce and enjoy, not its stock of gold and silver. The division of labor is limited by the extent of the market: how many buyers producers can reach.
9. In a market with competition, people working for their own and their families' good are led to serve others, like a baker who must bake good bread to keep customers. It works only with competition, honesty, kept contracts, protected property and fair courts; Smith warned against merchants conspiring to raise prices.
10. A: 1 ton of grain costs $20 \div 10 = 2$ bolts of cloth. B: 1 ton of grain costs $6 \div 6 = 1$ bolt. B has the comparative advantage in grain (lower cost); A has the comparative advantage in cloth (for A, 1 bolt costs 0.5 ton; for B, 1 ton).
11. Landowners and their farmers gained from high grain prices; factory workers paid more for bread, and manufacturers lost foreign customers. They were repealed after years of persuasion by the Anti-Corn Law League (Cobden and

Bright) and after the Irish potato famine of 1845 led Prime Minister Robert Peel to change his mind.

12. A good answer explains that what matters is opportunity cost, not speed. Each side gives up less by making what it makes at lowest opportunity cost. When each specializes, total output rises. Trading at a price between the two opportunity costs lets both end up with more than they could make alone. Example from the lesson or the project.

PORTFOLIO PIECE: A PRODUCTIVITY AND TRADE STUDY OF ONE JOB

Choose one real job done in your home, your church or a family business, such as baking bread, packing orders, mowing lawns or preparing a church meal. Measure its productivity, find at least one way to raise it, and test your idea with real counts. Then look at the incentives involved and at how the job depends on trade with many other workers. Write a two-page report with your data table, a graph, your incentive analysis, a “family tree” of the trades behind the job, and your recommendation.

LOOK FOR	WHAT IT MEANS
Measurement	Productivity is measured carefully before and after a change, in output per hour, with the percent change correctly calculated.
Economic thinking	The report correctly uses at least four ideas from the unit: incentives, productivity, division of labor, comparative advantage, opportunity cost or the extent of the market.
Incentives	The report names the real incentives of the people doing the job, including non-money ones, and suggests a sensible way to improve them without unintended consequences.
Records and graphs	Tables and a graph are dated, labeled with units, and match the counts in the ledger notebook.
Recommendation	Clear, practical advice that would help the work be done better, and that respects the people who do it.

1.1 INCENTIVES: THE CORNFIELDS OF PLYMOUTH, 1623

OBJECTIVES

- Define an incentive and give examples of positive and negative incentives, both money and non-money.
- Tell how Governor William Bradford changed the way Plymouth Colony farmed in 1623 and what happened.
- Explain how badly designed incentives can backfire, using the rat bounty in Hanoi in 1902.
- Run an incentive experiment at home and record the results.

Warm-up. List five things you did this week. For each, write why you did it: because you wanted the reward, to avoid a penalty, because someone you love asked, because it was right, or because you enjoy it. Which reasons were about money? Which were not?

WATCH

What are Incentives?

Marginal Revolution University • 2:02

<https://www.youtube.com/watch?v=U3z0Rxummx>

WHEN TO WATCH

After the warm-up, before the Plymouth story.

KEY TERMS

incentive

A reward or a cost that encourages people to act in a certain way.

negative incentive

A cost or penalty for doing something, such as a fine, a lost treat or wasted effort.

positive incentive

A reward for doing something: pay, a prize, praise, a share of the harvest.

common store

A shared supply into which everyone puts what he produces and from which everyone draws, no matter how much he worked.

unintended consequence

A result of a rule or a choice that its makers did not plan or expect.

CORE IDEAS

The story. In November 1620 the *Mayflower* anchored off Cape Cod with about a hundred passengers, many of them Pilgrims who had left England to worship freely. To pay for the voyage, they had made an agreement with a group of London merchants, called the Adventurers, who invested in the colony. For the first seven years, everything the colonists grew, caught or made was to go into a **common store**, and each person would draw food and clothing from it. Half the settlers died in the first hard winter. The harvests of 1621 and 1622 were not enough, and by the spring of 1623 the colony was hungry again.

How they figured it out. Governor William Bradford noticed a problem. Under the common store, a strong young man who worked hard all day got the same share as one who did little, and many felt it was unfair to work for other men's families without any return. Some grumbled; some worked slowly. So in the spring of 1623, Bradford and the leading men of the colony decided that each family would plant corn for itself on its own plot of land, assigned by the size of the family. Bradford wrote in his history that the change "made all hands very industrious." Far more corn was planted. Women and children, who had not worked the fields before, now went out willingly to plant. After a dry early summer and then good rain, the harvest that fall was much better, and Bradford recorded that from then on the colony had not suffered such a general want of food.

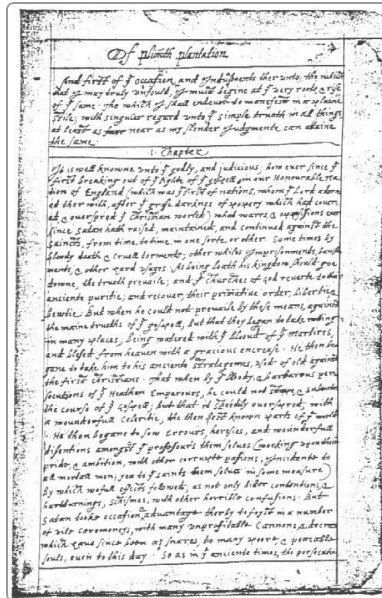
The big idea. An **incentive** is a reward or cost that changes what people choose to do. Economists say "people respond to incentives," and history keeps proving it. When people can keep the fruit of their work, they usually work harder and more carefully. But incentives are not only about money. People also work for love of family, for honor, for the joy of a job well done, and, most of all, for God: "whatsoever ye do, do it heartily, as to the Lord, and not unto men" (Colossians 3:23). Good leaders design rules so that doing right and doing well point the same way.

Think it through. Incentives can also backfire. In 1902 the French rulers of Hanoi, in what is now Vietnam, were fighting rats that carried plague through the new city sewers. They offered a small reward for every rat tail brought in. Thousands of tails

arrived, but the rats did not seem to grow fewer. Officials soon saw tailless rats running in the streets: some people were cutting off the tails and letting the rats go to breed more. Others began raising rats. The program was ended. The lesson: when you design a reward, ask what people will actually do to get it. That is an **unintended consequence**.

In business today. Every business runs on incentives. A sales clerk paid only by how much he sells may push customers to buy what they do not need; a wise owner also rewards honest service and happy customers. A factory that pays only by the number of pieces may get many pieces of poor quality; so it checks quality too. When you see any rule or reward, ask: What will people do because of it, including things the makers never meant?

PICTURE STUDY



The Manuscript of Of Plimoth Plantation, William Bradford, Written from about 1630 to 1650 · Ink on paper, a bound handwritten book · State Library of Massachusetts, Boston

Image: [Wikimedia Commons](#), public domain

Governor William Bradford wrote the history of Plymouth Colony by hand over many years. The book was kept in Boston, disappeared during the American Revolution, and turned up in a bishop's library in London. In 1897 it was returned to Massachusetts. Much of what we know about the common store and the change of 1623 comes from these pages.

Look closely

- Look at the handwriting. How long do you think it took to write a whole book this way?
- Find any words you can read. Old spellings such as “ye” for “the” are common in this book.
- Notice the condition of the paper. Why would a record like this be so valuable to historians and economists?

Talk about it

1. Bradford wrote down what worked and what did not. Why is an honest record of a failure as useful as a record of a success?
2. If you had to keep a history of your family's work this year, what would you record?

3. What incentive did Bradford have to tell the truth in his history, even about the colony's mistakes?

PROJECT

The Incentive Experiment

You will test the idea that people respond to incentives by running the same simple job under three different rules, measuring how much gets done and how well, and explaining the results.

You will need

- A simple, useful household job that can be counted, such as folding towels, matching socks, sorting coins by type, or folding letters into envelopes
- A timer
- Small rewards agreed with a parent (for example, a few minutes of a favorite activity, or pretend tokens)
- Ledger notebook and a calculator
- Two or more family members to take part

Steps

1. With a parent, choose the job and a fair test of quality (for example, a towel counts only if it is folded neatly in thirds).
2. **Round 1, the common store.** Everyone works for 5 minutes. All finished pieces go into one pile, and everyone shares the reward equally, no matter how many he did. Record each person's count and the number that pass the quality check.
3. **Round 2, piece rate.** Everyone works for 5 minutes, and each person earns one token for every piece he finishes. Record counts and quality.
4. **Round 3, piece rate with a quality check.** Each person earns one token for every piece that passes the quality check, and loses one for every piece that fails. Record counts and quality.
5. Make a table in your ledger: Round, Rule, Total pieces, Pieces that passed, Percent that passed ($\text{passed} \div \text{total} \times 100$).
6. Draw a bar graph comparing the three rounds.

7. Interview each worker: How did each rule make you feel? Did you try harder in one round? Did anyone rush and make mistakes?
8. Write a paragraph explaining what happened and why. Which rule produced the most good work? Was there any unintended consequence?

Tips

- Keep the rounds the same length and the job the same, so the only thing you change is the rule. That is what makes it a fair test.
- People get faster with practice. If you can, run the rounds in a different order on a second day and see whether the results hold.

Check your work

- ☐ I can explain what an incentive is and give money and non-money examples.
- ☐ I recorded counts and quality for all three rounds and calculated the percent that passed.
- ☐ I can explain why Bradford's change of 1623 worked, and why the Hanoi rat bounty backfired.

LEDGER NOTEBOOK

1. Draw a two-column chart: "Incentives that work well" and "Incentives that backfire." Give three examples of each from history, business or home.
2. Sketch the Plymouth cornfields before and after 1623: one big common field, then many family plots. Label who planted each.
3. Design a reward for a household or business problem (for example, keeping a shop clean). Then write how someone might "game" it, and how you would fix the rule.

From history. The colonists' debt to the London Adventurers was not fully settled until the 1640s. In 1626 a group of Plymouth leaders, including Bradford, agreed to take on the colony's debt themselves in return for control of its trade, and they paid it off over many years, mostly with beaver furs.

COMMON MISTAKES

- Thinking incentives are only about money. Love, duty, honor, faith and the satisfaction of good work are powerful incentives too.

- Thinking a reward will always get the result you want. People respond to what the rule actually rewards, not to what its makers hoped.
- Thinking the Pilgrims were lazy. They were hungry, sick and overworked; the problem was a rule that separated work from its reward.

Make it a game · Incentive Design Duel. Challenge: get your parent to hop three times using only a positive money incentive, then only a positive non-money incentive, then only a negative incentive. Score each by what you can name. Then find an unintended consequence of each. Tell what changed at Plymouth in 1623 when Governor Bradford gave each family its own field.

Scripture. “In all labour there is profit: but the talk of the lips tendeth only to penury.” (Proverbs 14:23, KJV)

Work brings real fruit; mere talk brings poverty. The Plymouth farmers found that when each family could see the profit of its own labor, the fields filled up.

1.2 PRODUCTIVITY AND GDP: MEASURING A NATION'S WORK

OBJECTIVES

- Calculate labor productivity as output per hour and explain how tools, skills and better methods raise it.
- Tell how Simon Kuznets and the U.S. Commerce Department first measured national income in 1934.
- Explain what GDP measures, calculate GDP per person, and tell the difference between nominal and real GDP.
- Name important things that GDP does not measure.

Warm-up. Time yourself writing the alphabet by hand three times. Then type it three times, if you can. Calculate letters per minute for each. Which way is more productive? What made the difference: you, or your tool?

WATCH

Gross Domestic Product – Economic Lowdown

Federal Reserve Bank of St. Louis • 7:52

<https://www.youtube.com/watch?v=1lI5IQHcYP8>

WHEN TO WATCH

After the story of Kuznets, before the big idea.

BACKUP VIDEO

What is Productivity? | Back to Basics

IMF • 2:57

<https://www.youtube.com/watch?v=ht7Yxcd4QLk>

Before the productivity project.

KEY TERMS

productivity

How much is produced for each hour of work (or each worker); output ÷ hours of work.

capital goods

Tools, machines and buildings used to make other goods.

gross domestic product (GDP)

The total market value of all final goods and services produced in a country in one year.

GDP per person

GDP divided by the number of people in the country; a rough measure of the average standard of living.

nominal and real GDP

Nominal GDP is measured in each year's own prices; real GDP removes the effect of rising prices so that years can be compared fairly.

CORE IDEAS

The story. In 1830 an American farmer with a walking plow, a sickle and a flail needed about 250 to 300 hours of work to produce 100 bushels of wheat. By 1890, with a steel plow, a seeder, a reaper-binder, a threshing machine and horses, the same 100 bushels took about 40 to 50 hours. The farmer was not six times stronger. His tools, his methods and his knowledge were better. That is **productivity**: how much one hour of work can produce. Rising productivity is the main reason families today can have far more food, clothing and comfort than families two hundred years ago.

How they figured it out. For a long time no one knew how much a whole nation produced. When the Great Depression struck in 1929, factories closed and millions lost their jobs, but leaders had only scattered numbers: freight-car loadings, stock prices, steel output. In 1932 the U.S. Senate asked the Commerce Department to measure the nation's income. The work was led by Simon Kuznets, a young economist who had come to America from the Russian Empire. His small team gathered figures from tax returns, factories, farms, railroads and stores, and in January 1934 they delivered a report on national income from 1929 to 1932. It showed that the nation's income had fallen by about half. For the first time, people could see the size of the disaster in one number. Kuznets also warned that a nation's welfare cannot simply be read from its national income.

The big idea. **Productivity** = output ÷ hours of work. If a baker makes 120 loaves in 8 hours, his productivity is $120 \div 8 = 15$ loaves per hour. If a better oven lets him make 160 loaves in 8 hours, productivity rises to 20 loaves per hour, a gain of $(20 - 15) \div 15 \times 100 \approx 33\%$. Productivity rises with better **capital goods** (tools and machines), better

skills, better methods and better organization. Out of Kuznets's work grew **gross domestic product**, or GDP: the market value of all final goods and services produced in a country in a year. Economists often add it up as spending: $GDP = C + I + G + NX$, that is, what households spend (consumption), what businesses spend on new capital (investment), what governments spend on goods and services, and exports minus imports. Dividing GDP by the population gives **GDP per person**. Because prices rise over time, economists use **real GDP**, adjusted for inflation, to compare years.

Think it through. GDP counts what is bought and sold, so it leaves out much that matters. A parent who cooks, teaches and cares for children at home adds nothing to GDP, but hire someone to do the same work and GDP rises. Volunteer work, church work and neighborly help are left out. GDP rises when a town rebuilds after a flood, even though the town is not better off than before the flood. And GDP does not measure honesty, health, rest or the beauty of a place. It is a useful measuring stick, not a measure of everything good.

In business today. Businesses track productivity all the time: orders packed per hour, patients seen per day, miles driven per delivery. A company that raises productivity can pay its workers more, lower its prices, or both. Nations watch real GDP each quarter to see whether the economy is growing or shrinking. A wise reader of these numbers remembers what they leave out, and that the purpose of work is not only more output but service to God and neighbor.

PICTURE STUDY



A 33-Horse Combined Harvester, Walla Walla, Washington, Unknown photographer (Robert N. Dennis collection of stereoscopic views), About 1900–1910 · Stereoscopic photograph · New York Public Library
Image: [Wikimedia Commons](#), public domain

This stereoscopic card was printed with two nearly identical pictures side by side; in a viewer they looked three-dimensional. Its printed title presents the machine as the descendant of the old sickle and flail. A combined harvester cut, threshed and cleaned wheat in one pass across the field, work that once took many men many days.

Look closely

- Count the horses, or estimate them in rows. Why would a machine need so many?
- Find the men on the machine. How many workers does it take to run it?
- Look at the field. Which part has been harvested, and which part is still standing?
- Compare this with a farmer cutting wheat by hand with a sickle. What has changed in the work of one hour?

Talk about it

1. If this machine let a few men do the work of fifty with sickles and flails, what happened to the productivity of each worker?

2. What did the farmer have to invest in to get this productivity? What risks did he take?
3. What new jobs did machines like this create, even as they reduced the need for harvest hands?

PROJECT

Measure and Raise Productivity

You will measure your productivity at a simple job, find a way to raise it with a better tool or method, measure again, and calculate the percent gain. Then you will calculate GDP for a tiny pretend island.

You will need

- A repeatable job: making paper envelopes, cutting coupons, making sandwiches for the family, or stuffing envelopes
- A timer and a calculator
- Any tool or setup that might help (a ruler and pencil for marking, a template, a paper cutter used with a parent, a better work layout)
- Ledger notebook

Steps

1. Do the job for 10 minutes by your usual method. Count the finished items that are good enough to use. $\text{Productivity} = \text{good items} \div \text{hours}$ (10 minutes = $1/6$ hour, so multiply your count by 6 for items per hour).
2. Think like Ford's engineers: What slows you down? Write three ideas for a better tool, a template, a better layout or a better order of steps.
3. Try your best idea. Work another 10 minutes and count the good items. Calculate items per hour.
4. Calculate the percent change: $(\text{new} - \text{old}) \div \text{old} \times 100$.
5. Try a second idea, or combine two, and measure once more. Record all results in a table: Trial, Method, Good items, Items per hour, Percent change from first trial.
6. **GDP of Pine Island.** On a pretend island of 50 people, in one year households buy \$40,000 of food and clothing (C), the island's businesses build a new boat worth \$8,000 (I), the island council pays \$5,000 for a new dock (G), the island exports \$6,000 of fish and imports \$4,000 of tools ($\text{NX} = 6,000 - 4,000$). Calculate $\text{GDP} = \text{C} + \text{I} + \text{G} + \text{NX}$, and GDP per person.

7. Next year prices on Pine Island rise 10% and the people produce exactly the same things. What happens to nominal GDP? To real GDP? Write your answer and your reasoning.
8. Write a paragraph: Name three things that make life on Pine Island good that GDP does not count.

Tips

- Count only good items. Productivity that produces junk is not real productivity.
- Small changes in layout, such as putting materials in the order you use them, often make a large difference.

Check your work

- ☐ I can calculate productivity in items per hour and a percent change.
- ☐ I calculated GDP and GDP per person for Pine Island correctly (\$55,000 and \$1,100).
- ☐ I can name at least three good things GDP does not measure.

LEDGER NOTEBOOK

1. Draw a bar graph of the hours needed to grow 100 bushels of wheat in 1830 (about 275 hours, the middle of the range) and in 1890 (about 45 hours). Write the percent decrease.
2. Write the GDP formula, $GDP = C + I + G + NX$, and give one example of spending from your own family or town for each letter.
3. Make a list: "Work my family does that GDP does not count." Estimate how many hours a week it adds up to.

From history. Simon Kuznets later received the Nobel Prize in economics in 1971 for his work on measuring economic growth. During World War II, national income figures helped American planners judge how many planes, ships and tanks the country could produce while still feeding and clothing its people.

COMMON MISTAKES

- Thinking productivity means working longer hours. Productivity is output per hour; working smarter, with better tools and methods, is what raises it.
- Counting the same thing twice in GDP. Only final goods count: the flour a baker buys is already included in the price of the bread he sells.

- Comparing nominal GDP across years without adjusting for rising prices. Use real GDP for fair comparisons.
- Thinking a higher GDP always means people are better off. It is a useful measure, but it leaves out home work, volunteer work, health and much else.

Make it a game · Raise the Rate. Sort a pile of forty paper scraps or socks into piles by color and time yourself for sixty seconds. Calculate output per hour. Then invent a better method, such as using a tray, and run it again. How much did productivity rise? Divide the total by the number of players to find output per person, like GDP per person.

Scripture. “Prepare thy work without, and make it fit for thyself in the field; and afterwards build thine house.” (Proverbs 24:27, KJV)

Wise people prepare the productive work first, the field that will feed them, and then enjoy the fruit. Investing in good tools and methods before spending is the root of rising productivity.

1.3 ADAM SMITH AND *THE WEALTH OF NATIONS*, 1776

OBJECTIVES

- Tell the story of Adam Smith and how he came to write *The Wealth of Nations*.
- Explain Smith's main ideas: the division of labor, the extent of the market, self-interest guided by competition (the "invisible hand"), and the true wealth of a nation.
- Explain Smith's warnings about merchants who conspire to raise prices and his view of the duties of government.
- Trace the many workers and trades that go into one ordinary product.

Warm-up. Pick up a pencil (or a spoon, or a pair of socks). List every material in it and every kind of worker you think helped make it and bring it to you. Try for at least ten. How many of those people do you know?

WATCH

Adam Smith's Invisible Hand Theory Explained | Economics

Federal Reserve Bank of St. Louis • 6:45

<https://www.youtube.com/watch?v=53rKW8JRYhQ>

WHEN TO WATCH

After the story, before the big idea. Pause when the invisible hand is first explained and say it in your own words.

BACKUP VIDEO

Adam Smith Tercentenary | The Wealth of Nations

University of Glasgow Adam Smith Business School • 4:59

https://www.youtube.com/watch?v=2p5Hr_Dd6Ps

KEY TERMS

division of labor

Splitting a job into many small tasks, each done by a different worker who becomes skilled at it.

extent of the market

How many buyers a producer can reach; Smith taught that the larger the market, the more the work can be divided.

self-interest

Caring for one's own needs and the needs of one's family; not the same as selfishness, which ignores others.

invisible hand

Smith's picture of how, in a market with competition and honest rules, people seeking their own good are led to serve the good of others.

mercantilism

The older belief that a nation grows rich by piling up gold and silver and by selling more abroad than it buys.

CORE IDEAS

The story. Adam Smith was born in 1723 in Kirkcaldy, a small port in Scotland. He studied at the University of Glasgow and at Oxford, and in 1751 he became a professor at Glasgow, later teaching moral philosophy: the study of right and wrong, justice and human nature. His first great book, *The Theory of Moral Sentiments* (1759), asked how people learn to care about others and to judge their own conduct. Later he traveled through France as a tutor to a young duke and met the French thinkers who were studying how economies work. Back in Kirkcaldy, he spent about ten years writing. On March 9, 1776, his second book was published in London: *An Inquiry into the Nature and Causes of the Wealth of Nations*. Many call it the founding book of modern economics.

How they figured it out. Smith did not sit in an armchair and guess. He walked through workshops, read customs records and merchants' accounts, and compared prices and wages in many countries and centuries. In a small pin workshop he saw ten workers, each doing one or two of about eighteen steps, make about 48,000 pins a day, some 4,800 for each worker, while one man working alone might struggle to make twenty. He noticed that a village carpenter must do every kind of woodwork, while a city has separate cabinetmakers, wheelwrights and joiners, because a city has enough customers. And he saw that nations that had piled up gold and silver were often not the ones whose people ate and lived best.

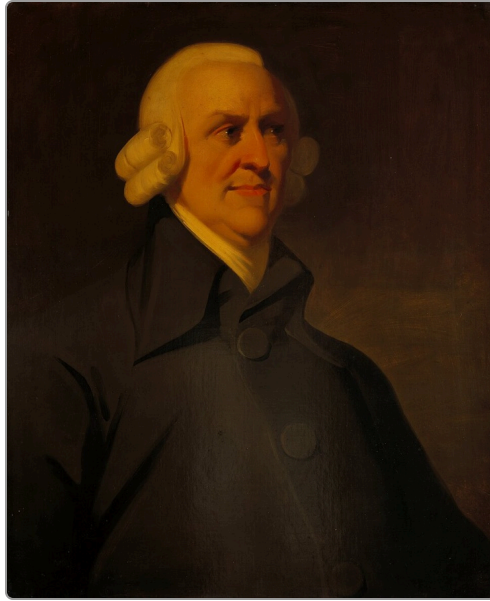
The big idea. Smith taught that the true **wealth of a nation** is not its pile of gold but the goods and services its people can produce and enjoy. That wealth grows with the **division of labor**, and the division of labor is limited by the **extent of the market**: better roads, canals, ships and freer trade let producers reach more buyers and

specialize more. In a market with competition, a baker bakes good bread not mainly out of kindness to strangers but because he needs customers; yet in serving his own family's needs, he feeds the town. Smith wrote that such a person is "led by an invisible hand" to serve the public good. But Smith was no friend of greedy merchants. He warned that when people of the same trade meet together, the talk often ends in a plan to raise prices, and he taught that government has real duties: defense, honest courts and justice, and public works such as roads and bridges that private buyers would not pay for alone.

Think it through. Smith's two books belong together. The invisible hand works only among people who keep their promises, tell the truth and respect the property of others, which is what *The Theory of Moral Sentiments* is about. Self-interest is not the same as selfishness. Scripture teaches a parent to provide for his own house (1 Timothy 5:8) and also to love his neighbor as himself; an honest market lets both happen at once.

In business today. Every supermarket shelf shows Smith's ideas at work. Thousands of farmers, truckers, packers and shopkeepers in many countries, most of whom will never meet, cooperate to put food in front of you, guided by prices and competition rather than by a central order. Business leaders still study Smith's warnings too: competition must be protected, contracts enforced, and fraud punished, or the hand that serves the public becomes a hand that picks its pocket.

PICTURE STUDY



Adam Smith (the Muir Portrait), Unknown Scottish artist, About 1800 · Oil on canvas · Scottish National Portrait Gallery, Edinburgh

Image: [Wikimedia Commons](#), public domain

Smith did not like to sit for portraits, and only a few likenesses of him were made in his lifetime. This painting, made after his death and named for the family who once owned it, is one of the best-known images of him. It hangs in the Scottish National Portrait Gallery in Edinburgh, the city where Smith spent his last years as a commissioner of customs.

Look closely

- Look at Smith's face. What kind of man does the painter show: a merchant, a soldier, a scholar?
- Look at his clothes. Are they rich or plain? What might that say about how he lived?
- Notice the plain background. Why might the painter keep the attention on Smith himself?

Talk about it

1. Smith spent his last years collecting customs duties on goods coming into Scotland. Why is that surprising for the man who argued for freer trade?
2. Smith was a professor of moral philosophy, not of business. Why might a teacher of right and wrong write the founding book of economics?

3. If Smith visited a supermarket today, which of his ideas would he see first?

PROJECT

The Wealth of One Pencil: Tracing the Division of Labor

Adam Smith showed that even simple things are made by the cooperation of many specialized workers. You will trace one ordinary product back to its materials and trades, build a chart of the division of labor behind it, and test Smith's idea that the extent of the market limits specialization.

You will need

- One ordinary product: a wooden pencil, a loaf of bread, a cotton T-shirt or a jar of peanut butter
- Ledger notebook, a large sheet of paper and colored pencils
- Library books or reliable websites, chosen with a parent
- The free text of *The Wealth of Nations*, Book I, chapter 1 (optional)

Steps

1. Read aloud the short passage from *The Wealth of Nations* where Smith describes the pin workshop (Book I, chapter 1), or the summary in the lesson.
2. Calculate: if 10 workers make 48,000 pins a day, how many is that per worker? If one worker alone could make at most 20, how many times more productive is each worker in the workshop?
3. Choose your product. List every material in it (for a pencil: cedar wood, graphite, clay, wax, paint, brass, rubber).
4. For each material, find out where it might come from and which trades are needed: loggers, miners, chemists, truck drivers, ship crews, factory workers, salesmen, bankers who lend to the factory.
5. Draw a large “family tree” chart with your product at the bottom and its materials and trades branching out above it. Try to reach at least 25 different kinds of workers.
6. Circle in color the workers who could not have specialized without a large market (for example, a graphite miner needs thousands of pencil factories as customers).

7. Write a paragraph in Smith's spirit: How does the market "invisibly" coordinate all these people? What honest rules must they all keep for it to work?

Tips

- Leonard Read's essay "I, Pencil" (1958) tells this story from a pencil's point of view; a parent may read it with you as an extra.
- You will not find every worker. Make sensible guesses and label them "likely."

Check your work

- ☐ I can explain the division of labor and calculate the pin workshop's output per worker (4,800 a day, about 240 times one worker alone).
- ☐ I can explain what Smith meant by the invisible hand, and why it needs honesty and competition.
- ☐ I can name the duties Smith said government should keep.

LEDGER NOTEBOOK

1. Write Smith's three big ideas as a chain: Division of labor → needs a large market → competition guides self-interest to serve others. Draw a small picture for each link.
2. Make a timeline of Smith's life: 1723 born; 1751 professor at Glasgow; 1759 *Theory of Moral Sentiments*; 1764–1766 France; 1776 *Wealth of Nations*; 1778 commissioner of customs; 1790 died.
3. Copy a short saying of Smith's from the lesson, and under it write one example from a shop you know.

From history. Smith asked that most of his unpublished papers be burned before he died, and his friends did so. He left his money largely to his family, but after his death friends discovered that he had quietly given away a great deal to people in need during his life.

COMMON MISTAKES

- Thinking Smith taught that greed is good. He taught that self-interest, under competition, honest rules and moral sense, serves others; he condemned merchants who conspired against the public.
- Thinking Smith believed government should do nothing. He listed defense, justice and public works as its duties.

- Thinking a nation's wealth is its gold and money. Smith taught that wealth is the goods and services its people produce and enjoy.

Make it a game · Pencil Chain Chase. Hold up a pencil. In turn with your parent, name one worker or step needed to make it, such as the logger, graphite miner, truck driver or paint maker, without repeating. See how long the chain runs. Then say how Adam Smith would explain the pencil with the division of labor and the invisible hand.

1.4 THE CORN LAWS AND THE CASE FOR TRADE

OBJECTIVES

- Tell the history of Britain's Corn Laws from 1815 to their repeal in 1846, and who gained and who lost.
- Explain absolute and comparative advantage, and calculate opportunity costs from a table.
- Show with numbers how two trading partners can both gain from trade.
- Explain how the Anti-Corn Law League persuaded a nation with facts, meetings and the penny post.

Warm-up. You can rake leaves in 1 hour and wash the car in 1 hour. Your older brother can rake in 30 minutes and wash the car in 45 minutes. He is faster at both. Is there any way you could both finish sooner by splitting the jobs? Write your guess.

WATCH

The Corn Laws (Political Reform in 19th Century Britain - Part 3). #REPEEL

Tom Richey • 8:05

<https://www.youtube.com/watch?v=-iostWBLJ0M>

WHEN TO WATCH

After the story, before the comparative-advantage math.

BACKUP VIDEO

Comparative advantage specialization and gains from trade | Microeconomics | Khan Academy

Khan Academy • 8:56

<https://www.youtube.com/watch?v=xx9xNJIP0Jo>

Before the project, to see the opportunity-cost table worked out.

KEY TERMS

Corn Laws

British laws (1815–1846) that kept out or taxed imported grain to keep the price of British grain high; in Britain “corn” meant all grain, especially wheat.

tariff

A tax on goods brought in from another country.

absolute advantage

Being able to produce more of something with the same time and resources than someone else.

comparative advantage

Being able to produce something at a lower opportunity cost than someone else.

gains from trade

The extra goods both sides end up with when each specializes in what it does at lowest opportunity cost and they trade.

CORE IDEAS

The story. In 1815 Britain had just ended a long war with Napoleon’s France. During the war, foreign grain had been hard to get, and British landowners had grown rich on high grain prices. Parliament, filled mostly with landowners, passed a Corn Law in 1815 that kept out foreign wheat until the price of British wheat rose above 80 shillings a quarter, a very high price. Bread was the main food of working families, and in the growing factory towns many families spent a large share of their wages on it. The landowners and their tenant farmers gained from the law. Factory workers, who paid more for bread, and manufacturers, whose foreign customers could not sell grain to Britain to earn the money to buy British cloth, were hurt.

How they figured it out. In 1817 the economist David Ricardo explained why trade can help both nations even when one is better at everything; he called it **comparative advantage**. In 1838 a group of Manchester businessmen founded the Anti-Corn Law League, led by Richard Cobden, a calico printer, and John Bright, a Quaker mill owner. They gathered facts about wages and bread prices, printed millions of pamphlets, sent speakers across the country, and used the new penny

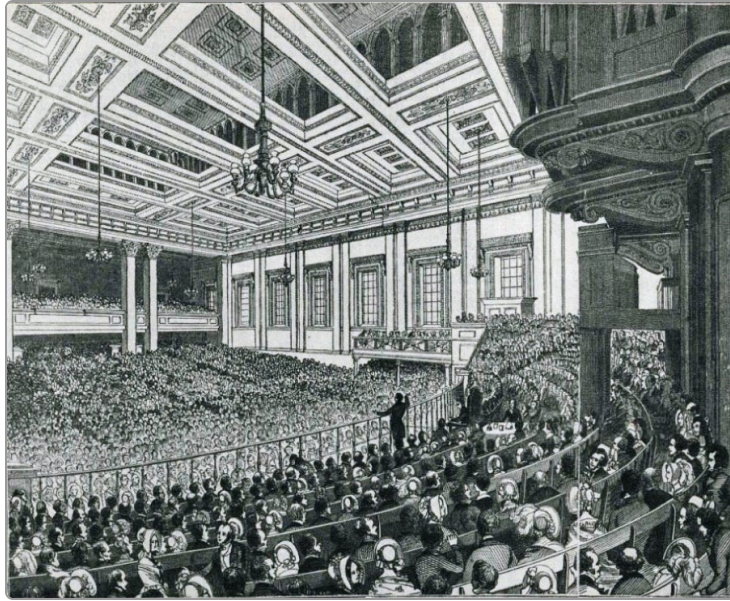
post (1840) to mail their arguments cheaply to voters. Many ministers and churchgoers joined, calling cheap bread a matter of mercy to the poor. In 1845 a blight destroyed the potato crop in Ireland and a terrible famine began. The prime minister, Sir Robert Peel, who had once defended the Corn Laws, changed his mind. In 1846 Parliament repealed them, with the duty on wheat falling to a small fee by 1849. Peel's own party split over it, and he soon lost office, but he said he had done what was right for the country.

The big idea. Comparative advantage means producing at a lower **opportunity cost**. Suppose that in a day Anna can bake 12 loaves or sew 4 shirts, and Ben can bake 6 loaves or sew 3 shirts. Anna is faster at both: she has the **absolute advantage** in both. But look at opportunity costs. For Anna, 1 shirt costs 3 loaves ($12 \div 4$). For Ben, 1 shirt costs only 2 loaves ($6 \div 3$). So Ben has the comparative advantage in shirts, and Anna in bread (for her, 1 loaf costs $1/3$ shirt; for Ben, $1/2$ shirt). Give each of them two days. If each splits the time evenly, together they make 18 loaves and 7 shirts. Now let Ben sew both days (6 shirts) while Anna bakes for a day and three-quarters (21 loaves) and sews for only a quarter of a day (1 shirt). Together they make 21 loaves and the same 7 shirts: three extra loaves from the same work. Trading at a price between their two costs, say $2\frac{1}{2}$ loaves per shirt, they can share those extra loaves so that both end up better off than working alone. That is the **gain from trade**.

Who gained? After repeal, bread prices in Britain did not fall right away, but over the next decades, as railways and steamships brought grain from America, Russia and elsewhere, food became cheaper and British factories sold more cloth and machines abroad. British farm workers and landowners faced hard times from the 1870s, when cheap prairie wheat arrived, and many moved to the towns or emigrated. Trade made the nation as a whole richer, but it did not make every person better off at once, and wise people remember those who bear the cost of change.

In business today. Every family and every business uses comparative advantage. A doctor who types quickly still hires a typist so she can spend her time on patients. A small bakery buys flour instead of growing wheat. Companies buy parts from suppliers who make them at lower cost. The rule for any person or business: do what you do at lowest opportunity cost, trade honestly for the rest, and keep learning new skills as the market changes.

PICTURE STUDY



A Meeting of the Anti-Corn Law League, Unknown engraver, 1846 · Wood engraving · Published in London

Image: [Wikimedia Commons](#), public domain

The Anti-Corn Law League held great public meetings in halls in London, Manchester and other cities, where speakers such as Richard Cobden and John Bright set out the facts about bread prices and wages. Pictures like this one were printed in the illustrated newspapers of the 1840s and spread the League's message even further.

Look closely

- Look at the size of the crowd. How many people do you think are in the hall?
- Find the platform and the speaker. How did people hear a speech in a hall this big without microphones?
- Look at the people's clothes. Do they look like landowners, factory owners, workers, or a mix?

Talk about it

1. The League changed a nation's mind with meetings, facts and the penny post, not with violence. Why does peaceful persuasion matter in a free country?
2. Who in this hall would gain from cheaper bread? Who outside the hall might lose?

3. If you wanted to persuade your town of something today, what would you use instead of a great meeting hall?

Safety first. Use scissors and staplers carefully. Keep the game friendly: the goal is to discover how trade works, not to beat your partner.

PROJECT

The Trading Game: Proving the Gains from Trade

You will measure your own productivity and a family member's at two simple tasks, find each person's opportunity costs and comparative advantage, and then prove with real counts that specializing and trading makes more for both of you.

You will need

- Two simple, countable tasks, such as folding paper airplanes and making paper chains (links), or folding napkins and matching socks
- Paper, tape or a stapler, scissors
- A timer, a calculator and the ledger notebook
- A partner: a parent, brother or sister

Steps

1. Each person spends 3 minutes on Task A and 3 minutes on Task B. Count good items. Record a table: Person, Task A per 3 minutes, Task B per 3 minutes.
2. Find the absolute advantage: who makes more of each?
3. Find each person's opportunity cost of one Task B item, in Task A items ($A \text{ count} \div B \text{ count}$), and the opportunity cost of one Task A item ($B \text{ count} \div A \text{ count}$).
4. Decide who has the comparative advantage in each task.
5. **No trade.** Each person spends 3 minutes on each task. Add up the totals for both people (you already have these numbers).
6. **Specialize.** Each person spends 6 minutes only on his or her comparative-advantage task. Count the totals.
7. Compare the two totals. Usually specializing gives much more of one good and a little less of the other. Use the opportunity costs to decide whether the gain is worth more than the loss. Then agree on a trading price between the two opportunity costs and show how both of you could end up better off.

8. Write a paragraph: How does your game explain why Richard Cobden and John Bright wanted Britain to trade cloth for grain?

Tips

- Your numbers may not come out perfectly, because people get tired or faster. That is real data. Explain what happened honestly.
- If one person is faster at both tasks, the game is even more interesting. Comparative advantage still works.

Check your work

- ☐ I can calculate opportunity costs from a table and identify comparative advantage.
- ☐ I showed with my counts whether specializing produced more in total.
- ☐ I can explain who gained and who lost when Britain repealed the Corn Laws.

LEDGER NOTEBOOK

1. Copy the Anna and Ben table and fill in the opportunity cost of one loaf and of one shirt for each.
2. Make a timeline: 1815 Corn Law; 1817 Ricardo's *Principles*; 1838 Anti-Corn Law League; 1840 penny post; 1845 Irish potato blight; 1846 repeal; 1849 duty falls to a small fee.
3. Draw a scale with landowners on one side and factory workers and manufacturers on the other. Write what each side gained or lost from the Corn Laws.

From history. Richard Cobden spent so much time on the League that his own calico-printing business suffered and he nearly went bankrupt. Friends and supporters raised a large gift for him after repeal in thanks for his years of work.

COMMON MISTAKES

- Confusing absolute and comparative advantage. Being faster at everything does not mean you should do everything yourself; compare opportunity costs.
- Thinking trade must have a winner and a loser. In a voluntary trade, both sides expect to gain, or they would not trade.
- Thinking repeal helped everyone right away. Trade made the nation richer over time, but some farmers and farm workers bore real costs.

Make it a game • Trade Table Showdown. Your parent writes a table: two countries, each with daily output of wheat and cloth. You calculate each country's opportunity cost and name who has the comparative advantage. Then add a tariff and see who gains and loses. Do three tables in five minutes. Finish by saying why the Corn Laws ended in 1846.

Scripture. “He that withholdeth corn, the people shall curse him: but blessing shall be upon the head of him that selleth it.” (Proverbs 11:26, KJV)

Solomon saw that holding back grain to drive up its price harms the hungry, while bringing it to market is a blessing. Many Christians in the 1840s quoted this verse against the Corn Laws.

UNIT 1

WORK AND ECONOMIC THINKING

Economics is the study of how people choose to use what is scarce: time, land, tools, skill and money. In this unit you will learn to think like an economist by asking four questions about any situation. What are the **incentives**, the rewards and costs that push people one way or another? How **productive** is the work, and how do we measure it? How does **dividing the work and trading** make people richer? And who gains and who loses when the rules of trade change?

The answers come from true stories: Governor William Bradford dividing the cornfields of Plymouth Colony in 1623, the economists who first measured a whole nation's output during the Great Depression, Adam Smith publishing *The Wealth of Nations* in 1776, and the long fight in Britain over the Corn Laws, which ended in 1846. Behind all of them stands an older truth: God made people to work, to “dress and keep” the world He gave them (Genesis 2:15), and good work done heartily is a calling, not a curse.

PREREQUISITES

- Knows scarcity, opportunity cost and specialization at a simple level (earlier grades or Grade 5)
- Can multiply and divide decimals and find a percent
- Can read a simple table and bar graph

MASTERY CHECKLIST

- ☐ I can explain what an incentive is and predict how a change in incentives will change what people do.
- ☐ I can calculate productivity as output per hour and explain why it raises living standards.
- ☐ I can explain what GDP measures, how it is calculated, and what it leaves out.
- ☐ I can summarize the main ideas of Adam Smith's

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- ☐ I can use opportunity cost to find comparative advantage and show that both sides can gain from trade.

OPTIONAL BOOKS AND GAMES FOR THIS UNIT

- ***An Inquiry into the Nature and Causes of the Wealth of Nations*, by Adam Smith (1776)**: Free at Project Gutenberg. Read Book I, chapter 1 (the pin factory) aloud in Lesson 1.3; strong readers may try chapter 2 as well. Ages 12 and up, with a parent to help with the long sentences.
- ***Of Plymouth Plantation*, by William Bradford**: Free at Project Gutenberg. Governor Bradford's own history of the Pilgrims. Find the year 1623 for the story in Lesson 1.1. The old spelling is part of the fun. Ages 12 and up.
- **Federal Reserve Bank of St. Louis: Econ Lowdown**: Free lessons, videos and online courses on scarcity, incentives, productivity, GDP and trade, made by the St. Louis Fed for students and teachers. Good extra practice for every lesson in this unit.

Not required. Every project in this unit works without them. School Launch has no ties to these authors, publishers or companies.

LESSONS IN THIS UNIT

1.1	Incentives: The Cornfields of Plymouth, 1623	2 sessions of 50 minutes
1.2	Productivity and GDP: Measuring a Nation's Work	2 sessions of 50 minutes
1.3	Adam Smith and <i>The Wealth of Nations</i> , 1776	2 sessions of 50 minutes
1.4	The Corn Laws and the Case for Trade	2 sessions of 50 minutes

UNIT 1 REVIEW

Answer each question. Show your work for every calculation and use complete sentences for explanations. The review is worth 100 points.

1. **8 pts**
What is an incentive? Give one positive incentive and one negative incentive a business might use, and one incentive that is not about money.
2. **8 pts**
What changed at Plymouth Colony in 1623, and why did it work?

3. **8 pts**

Explain how the Hanoi rat bounty of 1902 backfired. What lesson does it teach about designing rewards?

4. **8 pts**

A worker assembles 72 lamps in an 8-hour day. With a new jig she assembles 90 lamps in 8 hours. Find her productivity before and after, and the percent increase.

5. **8 pts**

A small country has consumption of \$600 million, investment of \$150 million, government purchases of \$200 million, exports of \$90 million and imports of \$140 million. Its population is 50,000. Find GDP and GDP per person.

6. **8 pts**

Why do economists use real GDP instead of nominal GDP to compare one year with another?

7. **8 pts**

Name three valuable things that GDP does not measure.

8. **8 pts**

According to Adam Smith, what is the real wealth of a nation, and what limits the division of labor?

9. **8 pts**

What did Smith mean by the invisible hand? What must be true for it to work well?

10. **10 pts**

In one day, Country A can make 20 bolts of cloth or 10 tons of grain. Country B can make 6 bolts of cloth or 6 tons of grain. Find each country's opportunity cost of 1 ton of grain. Which country has the comparative advantage in grain, and which in cloth?

11. **10 pts**

Who gained and who lost from Britain's Corn Laws? Why were they repealed in 1846?

12. **8 pts**

Short answer: Explain in four or five sentences why two people or two nations can both gain from trade even when one is better at making everything.

ANSWER KEY

1. An incentive is a reward or cost that encourages people to act a certain way. Examples: a bonus for good sales (positive); a fine for late returns (negative); praise, pride in good work, love of family, or serving God (non-money).
2. Governor Bradford ended the common store for corn and gave each family its own plot to plant for itself. Because each family kept the fruit of its own work, people worked harder, more land was planted, and the harvest was much better.
3. The city paid for rat tails, so some people cut off tails and released the rats to breed, and some raised rats. The reward encouraged getting tails, not killing rats. Lesson: ask what people will actually do to earn a reward, and watch for unintended consequences.
4. Before: $72 \div 8 = 9$ lamps per hour. After: $90 \div 8 = 11.25$ lamps per hour. Increase: $(11.25 - 9) \div 9 \times 100 = 25\%$.
5. $GDP = 600 + 150 + 200 + (90 - 140) = \$900$ million. GDP per person = $\$900,000,000 \div 50,000 = \$18,000$.
6. Nominal GDP can rise just because prices rose, even if no more was produced. Real GDP removes the effect of inflation, so it shows whether the country actually produced more.
7. Any three: work done at home by family members; volunteer and church work; leisure and rest; health; honesty and trust; the beauty of a place; harm such as pollution.
8. The goods and services its people produce and enjoy, not its stock of gold and silver. The division of labor is limited by the extent of the market: how many buyers producers can reach.
9. In a market with competition, people working for their own and their families' good are led to serve others, like a baker who must bake good bread to keep customers. It works only with competition, honesty, kept contracts, protected property and fair courts; Smith warned against merchants conspiring to raise prices.
10. A: 1 ton of grain costs $20 \div 10 = 2$ bolts of cloth. B: 1 ton of grain costs $6 \div 6 = 1$ bolt. B has the comparative advantage in grain (lower cost); A has the comparative advantage in cloth (for A, 1 bolt costs 0.5 ton; for B, 1 ton).
11. Landowners and their farmers gained from high grain prices; factory workers paid more for bread, and manufacturers lost foreign customers. They were repealed after years of persuasion by the Anti-Corn Law League (Cobden and

Bright) and after the Irish potato famine of 1845 led Prime Minister Robert Peel to change his mind.

12. A good answer explains that what matters is opportunity cost, not speed. Each side gives up less by making what it makes at lowest opportunity cost. When each specializes, total output rises. Trading at a price between the two opportunity costs lets both end up with more than they could make alone. Example from the lesson or the project.

PORTFOLIO PIECE: A PRODUCTIVITY AND TRADE STUDY OF ONE JOB

Choose one real job done in your home, your church or a family business, such as baking bread, packing orders, mowing lawns or preparing a church meal. Measure its productivity, find at least one way to raise it, and test your idea with real counts. Then look at the incentives involved and at how the job depends on trade with many other workers. Write a two-page report with your data table, a graph, your incentive analysis, a “family tree” of the trades behind the job, and your recommendation.

LOOK FOR	WHAT IT MEANS
Measurement	Productivity is measured carefully before and after a change, in output per hour, with the percent change correctly calculated.
Economic thinking	The report correctly uses at least four ideas from the unit: incentives, productivity, division of labor, comparative advantage, opportunity cost or the extent of the market.
Incentives	The report names the real incentives of the people doing the job, including non-money ones, and suggests a sensible way to improve them without unintended consequences.
Records and graphs	Tables and a graph are dated, labeled with units, and match the counts in the ledger notebook.
Recommendation	Clear, practical advice that would help the work be done better, and that respects the people who do it.

UNIT 2

THE STORY OF MONEY

Money is one of the most useful things people have ever invented, and one of the most misunderstood. It does three jobs: it is a **medium of exchange** (we trade with it), a **unit of account** (we measure prices and keep books with it), and a **store of value** (we save with it). In this unit you will follow money through four centuries and learn what makes it trustworthy and what ruins it.

You will see Spain grow rich and then poor on the silver of Potosí, while the old belief called mercantilism taught that gold and silver were the same as wealth. You will see the merchants of Amsterdam cure their bad coins by founding a bank in 1609. You will follow the gold standard to the great conference at Bretton Woods in 1944, and then to August 15, 1971, when the dollar's last link to gold was cut. Last, you will learn how today's fiat money works and the tools the Federal Reserve uses to try to keep its value steady. Through it all runs an old command: "Thou shalt not have in thy bag divers weights" (Deuteronomy 25:13). Honest money is a just weight.

PREREQUISITES

- Knows barter, commodity money and the first coins (earlier grades)
- Knows supply and demand at a simple level
- Can calculate a percent change and work with simple ratios

MASTERY CHECKLIST

- ☐ I can explain money's three jobs and the qualities of good money.
- ☐ I can explain what mercantilism taught, why Adam Smith disagreed, and what the flood of American silver did to prices in Europe.
- ☐ I can explain how the Bank of Amsterdam made money more trustworthy, and why it finally failed.
- ☐ I can explain how the gold standard and the Bretton Woods system worked, and why they ended.
- ☐ I can explain what fiat money is, what gives it value, and how the Federal Reserve's main tools work.

OPTIONAL BOOKS AND GAMES FOR THIS UNIT

- **Federal Reserve History**: Free essays and timelines from the Federal Reserve System on the gold standard, Bretton Woods, the closing of the gold window in 1971 and the Great Inflation of the 1970s. Good reading for Lessons 2.3 and 2.4. Ages 12 and up.
- **Adam Smith, “Digression concerning Banks of Deposit, particularly concerning that of Amsterdam,” in *The Wealth of Nations*, Book IV, chapter 3**: Free. Smith’s own description of how the Bank of Amsterdam worked, written while it was still trusted. A parent may read a few paragraphs aloud with Lesson 2.2.

Not required. Every project in this unit works without them. School Launch has no ties to these authors, publishers or companies.

LESSONS IN THIS UNIT

2.1 Mercantilism and the Spanish Treasure Fleets	2 sessions of 50 minutes
2.2 The Bank of Amsterdam, 1609: Curing Bad Coins with Bank Money	2 sessions of 50 minutes
2.3 The Gold Standard and Bretton Woods	2 sessions of 50 minutes
2.4 Fiat Money and the Federal Reserve’s Tools After 1971	2 sessions of 50 minutes

UNIT 2 REVIEW

Answer each question. Show your work for every calculation and use complete sentences for explanations. The review is worth 100 points.

1. **6 pts**
Name money’s three jobs and give an example of each.
2. **8 pts**
What did mercantilists believe made a nation rich? How did Adam Smith answer them?

3. 8 pts

A town has \$2,000 of money and sells 400 loaves of bread a week at \$5. If the money supply rises to \$3,000 and bread production stays the same, about what price would you expect for bread? What is the percent increase?

4. 8 pts

Why did the silver of Potosí not make Spain permanently rich? Give two reasons.

5. 8 pts

What problem was the Bank of Amsterdam created to solve in 1609, and how did it solve it?

6. 8 pts

A merchant pays 2,100 guilders in ordinary coins for 2,000 guilders of bank money. What is the agio, in guilders and as a percent?

7. 8 pts

What destroyed the Bank of Amsterdam's good name?

8. 8 pts

Under Bretton Woods, gold was \$35 an ounce and £1 = \$2.80. How many ounces of gold did \$7,000 buy? How many pounds did a British exporter receive for \$5,600?

9. 8 pts

Explain the strain in the Bretton Woods system that Robert Triffin warned about.

10. 8 pts

What happened on August 15, 1971? What kind of money do we have today?

11. 10 pts

Name three tools of the Federal Reserve. To fight inflation, which way would the Fed use each one?

12. 12 pts

Short answer: Explain in four or five sentences why printing more money does not make a country richer. Use one example from history.

ANSWER KEY

1. Medium of exchange (paying for groceries), unit of account (comparing prices or keeping books in dollars), store of value (saving money for next year).
2. They believed a nation was rich when it piled up gold and silver by selling more abroad than it bought and controlling colonial trade. Smith answered that wealth is the goods and services people produce and enjoy, not money; more money without more goods only raises prices.
3. About \$7.50 (money up 50%, so prices rise about 50%). Percent increase: $(7.50 - 5) \div 5 \times 100 = 50\%$.
4. Any two: more silver raised prices (inflation) instead of producing more goods; Spain spent it on wars and imports; it borrowed against future silver and defaulted; its own workshops lost customers to foreign makers because costs were high.
5. Merchants were paid in hundreds of kinds of coins, many clipped or worn, so no one knew what a payment was worth. The bank weighed and tested coins, credited accounts at true value in bank guilders, and made payments by book transfer, so the unit was honest and no coins had to change hands.
6. 100 guilders; $100 \div 2,000 \times 100 = 5\%$.
7. In the 1780s it secretly lent large amounts from its vaults to the Dutch East India Company and the city while still claiming every guilder was backed by silver. When this came out in the 1790s, trust collapsed; the bank closed in 1819.
8. $7,000 \div 35 = 200$ ounces. $5,600 \div 2.80 = \text{£}2,000$.
9. The world needed more dollars for trade, so foreigners held more and more dollars. Eventually they held more than the United States had gold to cover at \$35 an ounce, so the promise to pay gold could not be kept if many asked at once.
10. President Nixon closed the gold window: the United States stopped exchanging dollars for gold for foreign governments (he also froze wages and prices for 90 days). By 1973 currencies floated. Today we have fiat money, not backed by metal.
11. Open market operations: sell government bonds to take money out. Interest on reserves: raise it so banks lend less. Discount rate: raise it. (Reserve requirements: raise them.) Each makes borrowing more expensive and slows the growth of money and spending.

12. A good answer explains that wealth is goods and services, not money; if money grows faster than goods, prices rise and each dollar buys less, so no one is truly richer. Some people lose, especially savers and people on fixed wages. Example: Spain's silver, Diocletian's coins, the Continental, Weimar Germany or the 1970s.

PORTFOLIO PIECE: A TIMELINE OF TRUST: FOUR HUNDRED YEARS OF MONEY

Make an illustrated timeline of money from 1545 (the silver of Potosí) to today, with at least twelve dated events from this unit and earlier lessons, each with a sentence explaining why it mattered for trust in money. Add a price study: find what three ordinary goods (such as bread, milk and a postage stamp) cost in three different years using old receipts, family memories or a reliable source, calculate the percent change, and explain the change. End with a one-page essay answering the question, "What makes money trustworthy?"

LOOK FOR	WHAT IT MEANS
Accuracy	At least twelve events with correct dates and correct explanations.
Price study	Three goods in three years, with sources named and percent changes correctly calculated.
Understanding	The essay correctly uses ideas from the unit: money's three jobs, inflation, convertibility, reserves, fiat money and the central bank's tools.
Presentation	The timeline is neat, to scale or clearly spaced, and illustrated with careful drawings of coins, notes, buildings or maps.

2.1 MERCANTILISM AND THE SPANISH TREASURE FLEETS

OBJECTIVES

- Tell how the silver of Potosí and the Spanish treasure fleets carried a flood of silver to Europe and to China.
- Explain why more silver did not make Spain permanently rich, using the idea of inflation.
- Explain what mercantilism taught and why Adam Smith said it confused money with wealth.
- Calculate how a rising money supply changes prices in a simple model.

Warm-up. Imagine that tomorrow every person in your family wakes up with ten times as much money, but the stores have exactly the same goods. What will happen to prices at the stores by next week? Write your prediction and your reason.

WATCH

Potosi: The Silver Mine that Changed the World

The History Guy: History Deserves to Be Remembered • 13:43

<https://www.youtube.com/watch?v=5BebknA0PeU>

WHEN TO WATCH

After the story, before the big idea.

Note: Includes a few sentences on the harsh forced labor in the Potosí mines, told without graphic detail.

BACKUP VIDEO

MERCANTILISM, Explained [AP Euro Review—Unit 3 Topic 4]

Heimler's History • 5:05

https://www.youtube.com/watch?v=C0T7g_2cXVo

With the big idea, to review what mercantilism taught.

KEY TERMS

mercantilism

The belief, common from about 1500 to 1800, that a nation grows rich by piling up gold and silver, selling more abroad than it buys, and controlling its colonies' trade.

balance of trade

The difference between what a country sells abroad (exports) and what it buys from abroad (imports).

treasure fleet

The convoys of Spanish ships, guarded by warships, that carried silver and goods between Spain and its American colonies.

piece of eight

The Spanish silver coin worth eight reales, also called the Spanish dollar; it was trusted around the world.

inflation

A general rise in prices, which means each unit of money buys less.

CORE IDEAS

The story. In 1545 a mountain called Cerro Rico, “the rich hill,” in the Andes of what is now Bolivia, was found to be full of silver. The mining town of Potosí grew up at its foot, high and cold, and within a few decades it was one of the largest cities in the Americas. Spain also opened great silver mines in Mexico. Each year, from the 1560s on, Spanish **treasure fleets** sailed in convoy, guarded by warships against pirates and enemy navies, from Seville to the Caribbean and back, carrying silver bars and millions of **pieces of eight**. Other ships, the Manila galleons, carried Mexican silver across the Pacific to the Philippines, where it was traded for Chinese silk and porcelain. Spanish silver became the first truly world money.

How they figured it out. The work in the mines was cruel. Under a system called the *mita*, the Spanish rulers forced Native American villages to send men to labor in the Potosí mines, and many died there; enslaved Africans were also brought to work in the town. People made in God’s image were treated as tools, a great wrong that some Spanish priests protested even then. Spain’s kings expected the silver to make them rich and strong forever. Instead, prices in Spain rose and rose: over the 1500s they climbed several times over, and the rise spread across Europe. Spain spent its silver

on wars and imports and borrowed against future fleets; King Philip II's treasury stopped paying its bankers several times, beginning in 1557. Spanish workshops, facing high costs, lost customers to foreign makers. By the 1600s thinkers were asking a hard question: if gold and silver are wealth, why was Spain, with the most of both, not growing richer?

The big idea. Most rulers of the time believed in **mercantilism**: a nation is rich when it piles up gold and silver, so it should sell more abroad than it buys (a favorable **balance of trade**), tax imports, and force its colonies to trade only with it. Adam Smith answered in 1776 that this confused **money** with **wealth**. Wealth is the food, clothing, houses and tools people can produce and enjoy. When the amount of money grows much faster than the goods for sale, each coin buys less: that is **inflation**. A simple model makes it clear. Suppose a town has \$1,000 in money and 500 loaves of bread for sale each week, so bread sells for about \$2. If silver ships double the money to \$2,000 while the bakers still make 500 loaves, people bid up the price toward \$4. No one has more bread; only the numbers are bigger.

Who gained? The silver flood helped some people and hurt others. Merchants and lenders who held goods gained as prices rose; workers whose wages rose slowly, and landowners whose rents were fixed in old money, lost. Chinese merchants gained a steady supply of silver for their trade. Spain's own makers of cloth and tools struggled. And the Native and African workers of Potosí gained nothing but suffering. A nation does not become truly rich by digging up money; it becomes rich by producing goods that serve people, and by dealing justly.

In business today. The piece of eight lives on: when the United States set up its own coinage in 1792, the new silver dollar was based on the Spanish dollar, and Spanish coins were legal money in the United States until 1857. Mercantilist ideas live on too, whenever someone says that a country wins only by selling more than it buys. A wise business owner remembers Smith's lesson: what matters is not the pile of money in the till, but the real value the business creates for its customers.

PICTURE STUDY



The Imperial Town of Potosí, Gaspar Miguel de Berrío, 1758 · Oil on canvas · Museo Colonial Charcas, Sucre, Bolivia

Image: [Wikimedia Commons](#), public domain

Gaspar Miguel de Berrío was a painter born in Potosí itself. Two centuries after silver was found, he painted his town as a map-like panorama: the streets, plazas and many churches below, and the Cerro Rico rising above. By then the richest ores were gone, but the mountain was still being mined.

Look closely

- Look at the shape of the mountain. How does it tower over the town?
- Find the churches and plazas. How large was the town that grew up because of the silver?
- Look for roads, mills or water channels leading from the mountain. How was silver ore carried down and processed?
- Look for the people. Where do you think the miners lived?

Talk about it

1. Why would a whole city grow up in such a high, cold place?
2. Who did the hardest work in this town, and who gained the most from it?
3. If the mountain made Spain's silver supply grow very fast, what would you predict happened to prices in Spain?

PROJECT

The Silver Fleet Arrives: An Inflation Experiment

You will run a small market at home with a fixed supply of goods, then let a “treasure fleet” arrive with extra money and watch what happens to prices. You will record every sale and calculate the percent change in prices.

You will need

- 12 small, identical goods for sale, such as crackers, stickers or pencils
- Play money: \$10 for each of three or four buyers in Round 1, and another \$10 each for Round 2
- Index cards for bids, a pencil and the ledger notebook
- A parent to act as the seller

Steps

1. **Round 1.** Give each buyer \$10. The seller offers the 12 goods one at a time by auction: buyers write bids on cards, and the highest bid wins. Record each winning price in a table.
2. Calculate the average price in Round 1 (total of winning bids ÷ number sold).
3. **The fleet arrives.** Collect any money left over and give it back, then give each buyer another \$10, so each now starts with \$20. The seller has the same 12 goods.
4. **Round 2.** Run the same auction. Record each winning price and calculate the average.
5. Calculate the percent change in the average price: $(\text{Round 2 average} - \text{Round 1 average}) \div \text{Round 1 average} \times 100$.
6. Compare with the money supply: it went up 100%. Did prices go up by about the same percent, more, or less? Why?
7. **Round 3 (optional).** Keep \$20 each, but the seller now has 24 goods (more production). What happens to prices?
8. Write a paragraph explaining why Spain's silver did not make the Spanish people permanently richer, and what would have made them richer.

Tips

- Keep the goods identical, so the only thing that changes is the money supply.
- Real markets are messier than this game: people save some of their money, and production changes too. That is why prices in history rose more slowly than the silver poured in.

Check your work

- ☐ I can explain why more money without more goods leads to higher prices.
- ☐ I calculated the average price in each round and the percent change.
- ☐ I can explain the difference between money and wealth.

LEDGER NOTEBOOK

1. Draw a world map and trace the silver routes: Potosí to the Pacific coast and to Panama, the treasure fleets to Havana and Seville, and the Manila galleons from Acapulco to Manila and on to China.
2. Make a two-column chart: “What mercantilists believed” and “What Adam Smith answered.”
3. Sketch a piece of eight and label its parts. Write how many reales it was worth and where it was used.

From history. The Spanish system of treasure fleets lasted, with interruptions, from the 1560s until the late 1700s. Several fleets were lost in hurricanes or captured by enemies, and treasure hunters still search the coasts of Florida and the Caribbean for their wrecks. The Manila galleons crossed the Pacific from 1565 to 1815.

COMMON MISTAKES

- Thinking more money always makes a country richer. Real wealth is goods and services; more money without more goods only raises prices.
- Thinking a favorable balance of trade is the goal of trade. People trade to get goods they value more than what they give up.
- Leaving out the people who did the work. The silver of Potosí was mined largely by forced labor, and an honest history must say so.

Make it a game • Silver Debate. Hold a two-minute debate. First you argue as a mercantilist: more silver makes Spain rich forever. Your parent answers with inflation. Then swap. A judge, who can be a stuffed animal, awards points to the side that uses the terms balance of trade, treasure fleet and piece of eight correctly.

Scripture. “And the king made silver to be in Jerusalem as stones” (1 Kings 10:27, KJV)

In Solomon’s day silver became so plentiful that it was as common as stones. When anything becomes as common as stones, it is valued like stones. That is the lesson Spain learned with the silver of Potosí.

2.2 THE BANK OF AMSTERDAM, 1609: CURING BAD COINS WITH BANK MONEY

OBJECTIVES

- Explain the problem of clipped, worn and mixed coins in Amsterdam around 1600.
- Tell how the Bank of Amsterdam created trusted “bank money” and settled payments by moving entries in its books.
- Explain why bank money traded at a premium, and calculate the premium.
- Explain how secret loans destroyed the bank’s good name in the 1790s.

Warm-up. Gather ten coins from a jar. Weigh them on a kitchen scale, one kind at a time. Do coins of the same kind all weigh exactly the same? If coins were made of real silver and some were worn or shaved, how would a shopkeeper know what each one was worth?

WATCH

The Bank of Amsterdam: The World's First Central Bank?

Miles Harris • 13:18

<https://www.youtube.com/watch?v=x5yh4HcusOE>

WHEN TO WATCH

After the story, before the bank-money project.

Note: From a small independent history channel; few good films exist on the Bank of Amsterdam. It is clear and calm, with paintings, coins and maps. A parent may want to watch the first few minutes first.

KEY TERMS

clipping

Shaving or cutting bits of metal off the edge of a coin to steal the silver or gold, making the coin worth less than it claims.

bank money

Money held as a credit in a bank’s books rather than as coins in hand; at Amsterdam, credits that were always counted at full, honest weight.

giro (book transfer)

Paying someone by moving an amount from your account to his in the bank's books, without any coins changing hands.

agio

The premium people would pay for bank money over the same amount in ordinary coins, because bank money was more trustworthy.

reserve

The coins and precious metal a bank actually holds to back the credits in its books.

CORE IDEAS

The story. Around 1600 Amsterdam was becoming the busiest trading city in the world. Ships arrived from the Baltic with grain and timber, from Spain and Portugal with salt and fruit, and soon from Asia with spices. But the merchants had a maddening problem with their money. Hundreds of different coins from many countries and mints passed through the city. Many were worn thin, and many had been **clipped** by cheats who shaved off silver. Some local mints struck light coins on purpose. A merchant paid with a bag of coins could not know what it was really worth without weighing and testing every piece, and money changers charged fees to sort it out. Trust, the very heart of money, was leaking away.

How they figured it out. On January 31, 1609, the city of Amsterdam founded the *Wisselbank*, the Exchange Bank of Amsterdam, in the town hall. A merchant could bring in his coins, and the bank would weigh and test them and credit his account in its books with their true value in silver, in a unit called the bank guilder. Payments were then made by **book transfer**: the payer came to the bank, and the clerks moved the amount from his account to the account of the person he owed. No coins had to change hands, so no one worried about clipping. The city also required that large bills of exchange, the paper orders merchants used to pay each other across Europe, be paid through the bank. Soon merchants from London to Venice wanted to be paid in Amsterdam bank money. It was so trusted that people paid a premium, called the **agio**, often around 4 or 5 percent, to get bank money instead of ordinary coins.

The big idea. Money works only when people trust that a unit means the same thing every time. The Bank of Amsterdam turned a pile of untrustworthy coins into a single, honest **unit of account** kept in careful books. Its rule was simple: every bank

guilder in the books was supposed to be backed by silver in the vaults, its **reserve**. The agio is easy to calculate. If a merchant must pay 1,050 guilders in ordinary coins to get 1,000 guilders of bank money, the premium is $50 \div 1,000 \times 100 = 5\%$. People pay more for what they can trust.

Think it through. For more than 150 years the bank kept its good name. Adam Smith wrote about it in 1776 as a model of a trustworthy bank. But in the 1780s, in hard times, the bank began quietly lending large sums from its vaults to the Dutch East India Company and to the city of Amsterdam, while still telling the public that every guilder was backed by silver. When the truth came out in the 1790s, the agio collapsed and people rushed to take their money out. The bank never recovered and was closed in 1819. Its long success came from honest books; its fall came from secret ones.

In business today. Almost all money today is bank money: numbers in accounts, moved by book transfer when you pay with a check, a debit card or a bank transfer. Banks now hold only part of their deposits in reserve and lend the rest, openly and under rules and inspections, and their depositors are protected by deposit insurance (Unit 8). The lesson of Amsterdam still holds: a bank, a business or a person is only as good as his books and his word.

PICTURE STUDY



The Town Hall on the Dam, Amsterdam, Gerrit Adriaensz. Berckheyde, 1672 · Oil on canvas ·
Rijksmuseum, Amsterdam

Image: [Wikimedia Commons](#), public domain

Amsterdam's grand new town hall was built between 1648 and 1665, the proudest building of the richest trading city in Europe. The Bank of Amsterdam kept its vaults of silver and gold in its lower floors, and merchants came here to have their payments recorded in the bank's great books. Gerrit Berckheyde painted the town hall and the square around it many times.

Look closely

- Look at the size of the town hall compared with the people in front of it. What message did the city want to send to visiting merchants?
- Find the people crossing the square. What jobs might they have? Can you see any carts or goods?
- Look at the light and shadow on the building. How does the painter make it look solid and lasting?

Talk about it

1. Why would a bank want its vaults inside a building like this one, rather than in a merchant's house?
2. The bank's success depended on trust. How does a building like this help people trust what is kept inside?

3. What happened when people learned that the bank's vaults held less silver than its books claimed?

PROJECT

Open the Bank of Amsterdam

You will be the clerks of the Bank of Amsterdam. Merchants will bring in a mixed bag of coins, some of them “clipped.” You will weigh and value them, credit accounts in bank guilders, make payments by book transfer, and calculate the agio.

You will need

- Play coins made from cardboard circles of different sizes, some with edges trimmed to show clipping (or real coins with a sticky note for “clipped”)
- A kitchen scale that reads in grams
- A ledger with a page for each merchant: Date, Deposit, Paid out, Received, Balance (in bank guilders)
- Index cards for payment orders

Steps

1. Make a “full-weight” rule: a good coin of each kind weighs a certain amount and is worth a set number of guilders. A clipped coin is worth less in proportion to its weight. Write the rule in your ledger.
2. Three merchants bring bags of 10 mixed coins. Weigh each bag’s coins and calculate the true value. Credit each merchant’s account with the true value, not the face value.
3. Calculate for each bag: face value, true value, and the loss from clipping as a percent of face value.
4. Merchant A owes Merchant B 30 guilders. Write a payment order on an index card, signed by A. Move 30 guilders in the books from A’s page to B’s page. Check that the total of all accounts did not change.
5. Make at least four more payments between merchants. After each one, check that the total in the books still equals the true value of the coins in the vault.
6. **The agio.** A merchant wants 200 guilders of bank money and offers 208 guilders in ordinary coins. Calculate the agio in percent. Decide whether that

is a fair price, given how many ordinary coins are clipped.

7. **The secret loan.** The “city” asks the clerks to lend it half the coins in the vault, secretly. Write what will happen to the books, to the vault, and to the bank’s good name if the loan is discovered.
8. Write a paragraph: Why did merchants trust the Bank of Amsterdam, and what destroyed that trust?

Tips

- The test of good bookkeeping: after every transfer, the total of all accounts must equal what is in the vault. If it does not, find the mistake before you go on.
- Weighing is real work. That is exactly why merchants were glad to let the bank do it once and then pay by book transfer.

Check your work

- ☐ I can explain why clipped and mixed coins made trade difficult.
- ☐ My ledger shows deposits at true value and transfers that keep the total unchanged.
- ☐ I can calculate the agio as a percent and explain why people paid it.

LEDGER NOTEBOOK

1. Draw a merchant’s page from the bank’s ledger with five entries, and show the balance after each.
2. Draw two coins side by side: a full-weight coin and a clipped one. Label the weight of each and the value lost.
3. Make a timeline: 1609 bank founded; 1648–1665 new town hall built; 1776 Smith praises the bank; 1780s secret loans; 1790s trust collapses; 1819 bank closed.

From history. In the 1680s the Bank of Amsterdam also began lending to merchants against deposits of silver and gold bars, giving them a receipt they could later use to buy the metal back. These receipts were traded among merchants, a step toward modern banking.

COMMON MISTAKES

- Thinking the bank printed paper money. It mostly kept accounts in its books; payments moved by book transfer.

- Thinking a bank is safe just because it is big or grand. Its safety depends on honest books and real reserves.
- Thinking the agio was a fee charged by the bank. It was the extra value people placed on trustworthy bank money compared with ordinary coins.

Make it a game • Move the Entry. You are the clerk at the Bank of Amsterdam in 1609. Draw a ledger with two merchant accounts. Your parent calls eight payments, and you settle each by moving an entry, not coins. Explain why clipped and worn coins caused trouble, and what agio means. No wrong balance allowed in your book.

Scripture. “Thou shalt not have in thy bag divers weights, a great and a small.” (Deuteronomy 25:13, KJV)

A clipped coin is a false weight: it claims more than it is. The Bank of Amsterdam was built on one honest weight for every guilder, and it fell when its books stopped telling the truth.

2.3 THE GOLD STANDARD AND BRETTON WOODS

OBJECTIVES

- Explain how the classical gold standard worked and why it kept prices steady over long periods but caused hard times in others.
- Tell what happened to the gold standard in World War I, the Great Depression and 1933–1934.
- Explain the Bretton Woods system of 1944: fixed exchange rates, the dollar at \$35 an ounce, the IMF and the World Bank.
- Calculate exchange rates and gold values under a fixed system, and explain why the system came under strain.

Warm-up. Look at a dollar bill. What does it promise? Then ask a parent or grandparent: “Could you ever trade paper money for gold or silver at a bank?” Write down what you learn, and keep it for Lesson 2.4.

WATCH

Bretton Woods

Marginal Revolution University • 8:25

<https://www.youtube.com/watch?v=wuOOK7aU1TY>

WHEN TO WATCH

After the story of Bretton Woods, before the exchange-rate project.

BACKUP VIDEO

Understanding the Gold Standard & Purchasing Power

Federal Reserve Bank of St. Louis • 3:14

<https://www.youtube.com/watch?v=lpuzA7EZ7bY>

Before the story, as a short introduction to the gold standard.

KEY TERMS

gold standard

A money system in which a unit of money is defined as a fixed weight of gold, and paper money can be exchanged for gold at that rate.

convertible

Able to be exchanged for gold (or another asset) at a promised fixed rate.

exchange rate

The price of one country's money in terms of another's, such as how many British pounds one U.S. dollar buys.

fixed exchange rate

An exchange rate that governments promise to hold steady, buying or selling their money to keep it there.

International Monetary Fund (IMF)

An organization set up at Bretton Woods in 1944 to watch over exchange rates and lend to countries short of foreign money.

CORE IDEAS

The story. In 1717 Sir Isaac Newton, then Master of the Royal Mint, set the value of the gold guinea at 21 shillings, and Britain slowly drifted onto gold. By the 1870s Britain, Germany, the United States and many other countries defined their money as a fixed weight of gold. A U.S. dollar was set at about one twentieth of an ounce: an ounce of gold was worth \$20.67. Anyone could take paper dollars to the Treasury and receive gold coins at that rate; the money was **convertible**. Because each currency was fixed to gold, each was also fixed to every other, so a merchant in New York always knew what a British pound was worth. Trade and lending across the world grew greatly in the years before 1914.

How they figured it out. The gold standard had a strength and a weakness. The strength: governments could not create money much faster than gold was mined, so over long periods prices stayed fairly steady. The weakness: when gold was scarce, money was tight, prices and wages had to fall, and debtors such as farmers suffered; when new gold was found, as in California in 1848 or South Africa in 1886, money loosened. In World War I nations left the gold standard to print money for the war. Afterward they tried to return, but in the Great Depression of the 1930s, banks failed and people rushed to trade paper for gold. In 1933 the U.S. government ordered most gold coins and bars turned in to the Federal Reserve, and in January 1934 it raised the official price of gold to \$35 an ounce, so each dollar now stood for less gold. In July 1944, while World War II was still raging, delegates from 44 nations met at the Mount Washington Hotel in Bretton Woods, New Hampshire, to plan a steadier system for after the war. The leading planners were Harry Dexter White of the U.S. Treasury and the British economist John Maynard Keynes.

The big idea. The **Bretton Woods system** tied the world to the dollar and the dollar to gold. The United States promised to exchange dollars held by foreign governments for gold at \$35 an ounce. Other nations fixed their currencies to the dollar, a **fixed exchange rate**: for example, from 1949 to 1967 one British pound was set at \$2.80. The conference also created the **International Monetary Fund** to lend to countries short of dollars, and the World Bank to lend for rebuilding and development. For about 25 years the system worked well, and world trade grew. But it had a hidden strain. The world needed more and more dollars to trade, and the United States supplied them by spending and investing abroad. By the 1960s foreign governments held more dollars than the United States had gold to cover at \$35 an ounce. The economist Robert Triffin warned of this as early as 1960: the more dollars the world held, the less anyone could trust the promise of gold.

Try it. At \$35 an ounce, how much gold did \$1,000 buy? $1,000 \div 35 \approx 28.6$ ounces. If a British exporter earned \$2,800 from American customers in 1960, how many pounds did he receive at \$2.80 to the pound? $2,800 \div 2.80 = \text{£}1,000$. Under a fixed system, those answers stayed the same year after year, which made planning easy, until the day the promise could no longer be kept.

In business today. Exchange rates now float: they change every minute as people buy and sell currencies. Businesses that buy or sell abroad must plan for that risk, and some sign contracts to fix a rate in advance. The IMF and the World Bank, born at Bretton Woods, still exist. And the lesson of the gold standard remains: money is trusted when its makers keep their promises, and trust is lost when promises grow larger than what stands behind them.

PICTURE STUDY



The Opening Session of the Bretton Woods Conference, U.S. government photographer, July 1944 · Photograph · Mount Washington Hotel, Bretton Woods, New Hampshire

Image: [Wikimedia Commons](#), public domain

For three weeks in July 1944, more than 700 delegates from 44 nations met in a grand resort hotel in the mountains of New Hampshire. They argued over exchange rates, gold and loans, often late into the night, and signed agreements that shaped the world's money for a generation. Here the U.S. Secretary of the Treasury, Henry Morgenthau Jr., opens the conference.

Look closely

- Count the flags behind the speaker. What do they tell you about who came to the conference?
- Find the speaker and the men seated on the stage. Who do you think they are?
- Look at the microphone and the lectern. How would the speaker's words reach the delegates and the newspapers?

Talk about it

1. Why would nations still at war in 1944 spend time planning money for after the war?
2. The delegates chose to tie their currencies to the dollar. What does that tell you about the United States in 1944?

3. What promise did the United States make at Bretton Woods, and what would happen if it could not keep it?

PROJECT

Trading Under Fixed Rates: The Bretton Woods Game

You will set up three pretend countries with their own money, fix their exchange rates to the dollar and the dollar to gold, trade goods between them, and then see what happens when one country prints too many dollars.

You will need

- Play money in three colors (or slips of paper marked “dollars,” “pounds” and “francs”)
- 20 small objects to stand for gold bars (buttons, beads or wrapped candies), kept by the “U.S. Treasury”
- Goods to trade, such as cards marked “wheat,” “cloth” and “machines”
- A calculator and the ledger notebook

Steps

1. Set the rules: 1 gold bar = \$35. \$2.80 = £1. \$1 = 4 francs (your own number). Write them in your ledger.
2. Calculate: How many pounds is one gold bar worth? How many francs? How many francs equal one pound?
3. The United States sells 10 machines to Britain for \$100 each. How many pounds must Britain pay? Record the trade.
4. France sells wheat to the United States for 2,000 francs. How many dollars does the United States pay? Record it.
5. **Turning dollars into gold.** At the end of the round, any foreign country may trade dollars for gold bars at \$35 each. Record how many bars leave the U.S. Treasury.
6. **The strain.** Now the United States prints \$1,000 more and spends it abroad. Foreign countries now hold many more dollars. The Treasury still has only its remaining gold bars. Calculate how many bars the foreigners could ask for, and whether the Treasury can pay.
7. Write what you would do as the U.S. Treasury: stop printing, raise the price of gold, or close the gold window. What would each choice mean for trust in

the dollar?

Tips

- Always write the unit with every number: \$, £, francs or bars. Mixing them up is the most common mistake in exchange-rate problems.
- To change dollars into pounds, divide by the number of dollars per pound. To change pounds into dollars, multiply.

Check your work

- ☐ I can convert between currencies at a fixed exchange rate.
- ☐ I can explain how the dollar was tied to gold under Bretton Woods.
- ☐ I can explain why the system came under strain as more dollars were held abroad.

LEDGER NOTEBOOK

1. Draw a diagram of the Bretton Woods system: gold at the top, the dollar tied to it at \$35 an ounce, and other currencies tied to the dollar below.
2. Make a timeline: 1717 Newton sets the guinea; 1870s classical gold standard; 1914 war suspends it; 1933–1934 gold turned in and repriced at \$35; July 1944 Bretton Woods; 1960 Triffin's warning.
3. Write a short list of the strengths and weaknesses of the gold standard.

From history. Every delegate at Bretton Woods had to be housed and fed in one hotel for three weeks. The Mount Washington Hotel had been closed during the war and was hurriedly repaired for the conference. The room where the final agreements were signed is still called the Gold Room.

COMMON MISTAKES

- Thinking ordinary Americans could trade dollars for gold under Bretton Woods. Only foreign governments and central banks could, at \$35 an ounce.
- Thinking the gold standard meant prices never changed. Prices rose and fell, sometimes painfully, but tended to stay steady over long periods.
- Mixing up dividing and multiplying in exchange-rate problems. Write the units and check that they cancel.

Make it a game • Fixed Rate Bazaar. Use three colors of beans as three currencies, with fixed exchange rates written on a card. Your parent calls trades, and you convert fast. Then change one rate with no warning, like gold in 1933 to 1934, and watch what happens to trade. Explain how the gold standard worked and what Bretton Woods and the IMF added.

Scripture. “The silver is mine, and the gold is mine, saith the LORD of hosts.” (Haggai 2:8, KJV)

Nations have tied their money to gold, and gold has seemed the surest wealth of all. But all of it belongs to God, and people are only stewards of it for a while.

2.4 FIAT MONEY AND THE FEDERAL RESERVE'S TOOLS AFTER 1971

OBJECTIVES

- Tell what happened on August 15, 1971, and why the Bretton Woods system ended by 1973.
- Explain what fiat money is and what gives today's dollar its value.
- Explain the Federal Reserve's main tools: open market operations, the interest rate it pays on reserves, the discount rate and reserve requirements.
- Describe the Great Inflation of the 1970s and how it was brought down, and calculate the effect of inflation on what money buys.

Warm-up. Find a receipt or a store flyer from at least a few years ago, or ask a grandparent what a loaf of bread, a gallon of milk or a movie ticket cost when he or she was your age. Compare with today's price. Calculate how many times more it costs now.

WATCH

Fed Functions: Conducting Monetary Policy

Federal Reserve • 3:48

<https://www.youtube.com/watch?v=xHQJBNO0yQc>

WHEN TO WATCH

After the big idea, before the Fed-tools project.

BACKUP VIDEO

The Federal Reserve System | The Fed Explained

Federal Reserve Bank of St. Louis • 11:12

https://www.youtube.com/watch?v=YJ_jW6T1yGQ

For a fuller explanation of how the Federal Reserve is organized and what it does.

KEY TERMS

fiat money

Money that is not backed by gold or silver but is accepted because the law makes it legal tender for debts and taxes and because people trust it.

legal tender

Money that the law says must be accepted in payment of debts.

monetary policy

What a central bank does to influence the amount of money and credit and the level of interest rates, in order to keep prices steady and the economy healthy.

open market operations

The central bank's buying and selling of government bonds to add money to the banking system or take it out.

federal funds rate

The interest rate banks charge each other for overnight loans of reserves; the Federal Reserve sets a target for it.

CORE IDEAS

The story. By 1971 foreign governments held far more dollars than the United States had gold to cover at \$35 an ounce, and some began asking for gold. On Sunday evening, August 15, 1971, President Richard Nixon announced on television that the United States would stop exchanging dollars for gold: the “gold window” was closed. He also announced a 90-day freeze on wages and prices and a tax on imports. Nations tried to patch together new fixed rates that December, but by March 1973 the major currencies were floating, their values set day by day in the market. For the first time in history, nearly all the world's money was **fiat money**, backed by no metal at all.

How they figured it out. Without the discipline of gold, the 1970s brought a hard lesson. Prices rose faster year after year. Oil prices jumped in 1973 and again in 1979, and the Federal Reserve allowed money and credit to grow quickly, hoping to keep jobs plentiful. People came to expect inflation and asked for higher wages and prices to keep up, which pushed prices higher still. By 1980 consumer prices were rising about 13.5% a year. In 1979 Paul Volcker became chairman of the Federal Reserve,

and the Fed slowed the growth of money sharply. Interest rates climbed to near 20% in 1980 and 1981, and there were two painful recessions with many jobs lost. But inflation fell, to about 3 or 4 percent by 1983, and stayed lower for decades. Congress had already given the Fed, in 1977, the goals of maximum employment and stable prices, and in 2012 the Fed announced a target of 2% inflation a year.

The big idea. A fiat dollar has value because the law makes it **legal tender** for debts, because taxes must be paid in dollars, and above all because people trust that it will buy about as much next year as this year. That trust depends on how much money is created. The Federal Reserve's **monetary policy** uses several tools. In **open market operations**, the Fed buys government bonds from banks, paying with new reserves (more money in the system) or sells bonds (taking money out). It pays interest on the reserves banks keep at the Fed; raising that rate encourages banks to lend less and keeps the **federal funds rate** near its target. Banks can borrow from the Fed at the **discount rate**. And the Fed can set **reserve requirements**, the share of deposits banks must hold back, though in recent years it has relied mostly on its other tools. When the Fed raises interest rates, borrowing costs more, spending slows and inflation tends to fall; when it lowers them, the opposite.

Try it. Inflation shrinks what money buys. If prices rise 4% a year, something that costs \$100 today will cost about \$104 next year, \$108.16 the year after ($100 \times 1.04 \times 1.04$), and about \$148 in ten years (100×1.04^{10}). At 13.5% a year, as in 1980, the same \$100 basket would cost about \$355 in ten years. That is why saving in money is hard when inflation is high, and why steady prices are a gift to savers, workers and honest lenders.

In business today. Businesses watch the Federal Reserve closely, because interest rates affect what it costs to borrow for a new building or a new truck, and inflation affects what they pay for materials and what they must charge. Families feel it in loan rates and in the price of groceries. Money is a measuring stick for the whole economy, and a measuring stick should not stretch. "Divers weights, and divers measures, both of them are alike abomination to the LORD" (Proverbs 20:10).

PICTURE STUDY



The Federal Reserve Board Building, Newly Finished, Unknown photographer, 1937 · Photograph · Washington, D.C.

Image: [Wikimedia Commons](#), public domain

The Board of Governors of the Federal Reserve meets in this marble building on Constitution Avenue in Washington, finished in 1937 and later named for Marriner S. Eccles, who led the Fed from 1934 to 1948. Here, eight times a year, the Federal Open Market Committee decides whether to raise, lower or hold its target for interest rates.

Look closely

- Look at the style of the building. Is it decorated or plain? What does that suggest about the work done inside?
- Look at the steps, the columns and the entrance. How does the building make a visitor feel?
- Compare this building with the Amsterdam town hall in Lesson 2.2. How are they alike?

Talk about it

1. No gold is stored in this building. What, then, stands behind the dollar today?
2. Why might a central bank want a building that looks solid, calm and lasting?
3. If you could ask the people who work here one question about money, what would it be?

PROJECT

Be the Federal Reserve: Steering the Money Supply

You will run a small pretend economy with a bank, borrowers and a store, and use the Fed's tools to fight inflation and to help when business is slow. Then you will calculate what inflation does to savings over ten years.

You will need

- Play money and a “bank” box
- Cards marked “government bond, \$100”
- A store with 10 goods and price tags (index cards)
- A calculator or free spreadsheet, and the ledger notebook

Steps

1. **Set up:** the bank has \$500 in reserves and 5 government bonds. Two borrowers want loans to buy goods from the store. The store has 10 goods priced at \$20 each.
2. **Too much money.** The “Fed” buys 4 bonds from the bank, paying \$400 of new money. The bank lends it to the borrowers, who rush to the store. The store has only 10 goods, so it raises prices by \$5 each. Record the new prices and the percent increase.
3. **Fighting inflation.** Now the Fed sells 4 bonds back to the bank and raises the interest rate it pays on reserves, so the bank prefers to keep money at the Fed. Fewer loans are made. The store has unsold goods and lowers prices. Record what happens.
4. **Slow business.** Imagine the store is selling little and has laid off a worker. Which tool would the Fed use now, and in which direction? Write your answer and reasoning.
5. In a spreadsheet or by calculator, make a table showing what \$100 of goods will cost each year for 10 years at 2%, at 4% and at 13.5% inflation. (Each year, multiply the year before by 1.02, 1.04 or 1.135.)
6. Graph the three lines on graph paper or in the spreadsheet.

7. Write a paragraph explaining in your own words why printing more money does not make a country richer.

Tips

- In the real economy, the Fed's actions take months or even years to have their full effect. That makes its job much harder than in the game.
- To find the price after several years of steady inflation, multiply by $(1 + \text{rate})$ once for each year.

Check your work

- ☐ I can explain what happened on August 15, 1971, and what fiat money is.
- ☐ I can explain how open market operations and interest rates work in both directions.
- ☐ My inflation table is correct (for example, about \$121.90 after 10 years at 2%, \$148.02 at 4%, and \$354.75 at 13.5%).

LEDGER NOTEBOOK

1. Draw a dashboard with three dials labeled “open market operations,” “interest on reserves” and “discount rate.” For each, draw arrows showing which way to turn it to fight inflation.
2. Make a timeline: 1913 Federal Reserve Act; 1944 Bretton Woods; August 15, 1971 gold window closed; 1973 currencies float; 1977 employment and price goals; 1979 Volcker; 1980 inflation about 13.5%; 2012 2% target.
3. Copy your three inflation lines and write one sentence about what each would mean for someone saving \$100 in a jar.

From history. Paper money in the United States once said it could be redeemed in gold or silver. Federal Reserve notes printed since 1963 say simply that “This note is legal tender for all debts, public and private.” Silver certificates, which could be exchanged for silver, stopped being redeemable in silver in 1968.

COMMON MISTAKES

- Thinking the dollar is worthless because it is not backed by gold. It has value because people accept it, the law requires it for debts and taxes, and its supply is limited.
- Thinking the Federal Reserve prints all the paper money. The Bureau of Engraving and Printing prints the bills; the Fed decides how much money and

credit there should be and puts the bills into circulation.

- Thinking printing money makes a country richer. More money without more goods only raises prices, as in Spain, Weimar Germany and other places in history.

Make it a game • Turn the Dial. You are the Federal Reserve. Your parent reads economic news, such as prices rising fast or jobs scarce. You choose: buy or sell bonds in open market operations, and raise or lower the federal funds rate. Move beans in or out of a money bowl. Defend each choice. Tell what happened on August 15, 1971.

UNIT 2

THE STORY OF MONEY

Money is one of the most useful things people have ever invented, and one of the most misunderstood. It does three jobs: it is a **medium of exchange** (we trade with it), a **unit of account** (we measure prices and keep books with it), and a **store of value** (we save with it). In this unit you will follow money through four centuries and learn what makes it trustworthy and what ruins it.

You will see Spain grow rich and then poor on the silver of Potosí, while the old belief called mercantilism taught that gold and silver were the same as wealth. You will see the merchants of Amsterdam cure their bad coins by founding a bank in 1609. You will follow the gold standard to the great conference at Bretton Woods in 1944, and then to August 15, 1971, when the dollar's last link to gold was cut. Last, you will learn how today's fiat money works and the tools the Federal Reserve uses to try to keep its value steady. Through it all runs an old command: "Thou shalt not have in thy bag divers weights" (Deuteronomy 25:13). Honest money is a just weight.

PREREQUISITES

- Knows barter, commodity money and the first coins (earlier grades)
- Knows supply and demand at a simple level
- Can calculate a percent change and work with simple ratios

MASTERY CHECKLIST

- ☐ I can explain money's three jobs and the qualities of good money.
- ☐ I can explain what mercantilism taught, why Adam Smith disagreed, and what the flood of American silver did to prices in Europe.
- ☐ I can explain how the Bank of Amsterdam made money more trustworthy, and why it finally failed.
- ☐ I can explain how the gold standard and the Bretton Woods system worked, and why they ended.
- ☐ I can explain what fiat money is, what gives it value, and how the Federal Reserve's main tools work.

OPTIONAL BOOKS AND GAMES FOR THIS UNIT

- **Federal Reserve History**: Free essays and timelines from the Federal Reserve System on the gold standard, Bretton Woods, the closing of the gold window in 1971 and the Great Inflation of the 1970s. Good reading for Lessons 2.3 and 2.4. Ages 12 and up.
- **Adam Smith, “Digression concerning Banks of Deposit, particularly concerning that of Amsterdam,” in *The Wealth of Nations*, Book IV, chapter 3**: Free. Smith’s own description of how the Bank of Amsterdam worked, written while it was still trusted. A parent may read a few paragraphs aloud with Lesson 2.2.

Not required. Every project in this unit works without them. School Launch has no ties to these authors, publishers or companies.

LESSONS IN THIS UNIT

2.1 Mercantilism and the Spanish Treasure Fleets	2 sessions of 50 minutes
2.2 The Bank of Amsterdam, 1609: Curing Bad Coins with Bank Money	2 sessions of 50 minutes
2.3 The Gold Standard and Bretton Woods	2 sessions of 50 minutes
2.4 Fiat Money and the Federal Reserve’s Tools After 1971	2 sessions of 50 minutes

UNIT 2 REVIEW

Answer each question. Show your work for every calculation and use complete sentences for explanations. The review is worth 100 points.

1. **6 pts**
Name money’s three jobs and give an example of each.
2. **8 pts**
What did mercantilists believe made a nation rich? How did Adam Smith answer them?

3. (8 pts)

A town has \$2,000 of money and sells 400 loaves of bread a week at \$5. If the money supply rises to \$3,000 and bread production stays the same, about what price would you expect for bread? What is the percent increase?

4. (8 pts)

Why did the silver of Potosí not make Spain permanently rich? Give two reasons.

5. (8 pts)

What problem was the Bank of Amsterdam created to solve in 1609, and how did it solve it?

6. (8 pts)

A merchant pays 2,100 guilders in ordinary coins for 2,000 guilders of bank money. What is the agio, in guilders and as a percent?

7. (8 pts)

What destroyed the Bank of Amsterdam's good name?

8. (8 pts)

Under Bretton Woods, gold was \$35 an ounce and £1 = \$2.80. How many ounces of gold did \$7,000 buy? How many pounds did a British exporter receive for \$5,600?

9. (8 pts)

Explain the strain in the Bretton Woods system that Robert Triffin warned about.

10. (8 pts)

What happened on August 15, 1971? What kind of money do we have today?

11. (10 pts)

Name three tools of the Federal Reserve. To fight inflation, which way would the Fed use each one?

12. (12 pts)

Short answer: Explain in four or five sentences why printing more money does not make a country richer. Use one example from history.

ANSWER KEY

1. Medium of exchange (paying for groceries), unit of account (comparing prices or keeping books in dollars), store of value (saving money for next year).
2. They believed a nation was rich when it piled up gold and silver by selling more abroad than it bought and controlling colonial trade. Smith answered that wealth is the goods and services people produce and enjoy, not money; more money without more goods only raises prices.
3. About \$7.50 (money up 50%, so prices rise about 50%). Percent increase: $(7.50 - 5) \div 5 \times 100 = 50\%$.
4. Any two: more silver raised prices (inflation) instead of producing more goods; Spain spent it on wars and imports; it borrowed against future silver and defaulted; its own workshops lost customers to foreign makers because costs were high.
5. Merchants were paid in hundreds of kinds of coins, many clipped or worn, so no one knew what a payment was worth. The bank weighed and tested coins, credited accounts at true value in bank guilders, and made payments by book transfer, so the unit was honest and no coins had to change hands.
6. 100 guilders; $100 \div 2,000 \times 100 = 5\%$.
7. In the 1780s it secretly lent large amounts from its vaults to the Dutch East India Company and the city while still claiming every guilder was backed by silver. When this came out in the 1790s, trust collapsed; the bank closed in 1819.
8. $7,000 \div 35 = 200$ ounces. $5,600 \div 2.80 = \text{£}2,000$.
9. The world needed more dollars for trade, so foreigners held more and more dollars. Eventually they held more than the United States had gold to cover at \$35 an ounce, so the promise to pay gold could not be kept if many asked at once.
10. President Nixon closed the gold window: the United States stopped exchanging dollars for gold for foreign governments (he also froze wages and prices for 90 days). By 1973 currencies floated. Today we have fiat money, not backed by metal.
11. Open market operations: sell government bonds to take money out. Interest on reserves: raise it so banks lend less. Discount rate: raise it. (Reserve requirements: raise them.) Each makes borrowing more expensive and slows the growth of money and spending.

12. A good answer explains that wealth is goods and services, not money; if money grows faster than goods, prices rise and each dollar buys less, so no one is truly richer. Some people lose, especially savers and people on fixed wages. Example: Spain's silver, Diocletian's coins, the Continental, Weimar Germany or the 1970s.

PORTFOLIO PIECE: A TIMELINE OF TRUST: FOUR HUNDRED YEARS OF MONEY

Make an illustrated timeline of money from 1545 (the silver of Potosí) to today, with at least twelve dated events from this unit and earlier lessons, each with a sentence explaining why it mattered for trust in money. Add a price study: find what three ordinary goods (such as bread, milk and a postage stamp) cost in three different years using old receipts, family memories or a reliable source, calculate the percent change, and explain the change. End with a one-page essay answering the question, "What makes money trustworthy?"

LOOK FOR	WHAT IT MEANS
Accuracy	At least twelve events with correct dates and correct explanations.
Price study	Three goods in three years, with sources named and percent changes correctly calculated.
Understanding	The essay correctly uses ideas from the unit: money's three jobs, inflation, convertibility, reserves, fiat money and the central bank's tools.
Presentation	The timeline is neat, to scale or clearly spaced, and illustrated with careful drawings of coins, notes, buildings or maps.

MARKETS

A market is any place or way in which buyers and sellers meet to trade: a farmers' market, a store, an auction, a stock exchange or a website. In earlier years you learned that prices are signals, set by supply and demand. In this unit you will go further. You will learn to tell a **movement along** a demand or supply curve from a **shift** of the whole curve, and to predict what happens to price and quantity when something changes, using the true story of whale oil and kerosene.

You will also study the things markets do poorly. Some costs spill over onto neighbors who never agreed to pay them, as when London's river turned into a sewer in the Great Stink of 1858. Some goods, like lighthouses and city sewers, are hard to sell one customer at a time. Some industries, like water pipes and power lines, work best with only one network, so towns regulate them. And sometimes sellers band together in a **cartel** to raise prices, as the oil-exporting countries did in 1973. Markets are among God's good gifts to human society, but they work best with honest rules, and Scripture reminds sellers to look "every man also on the things of others" (Philippians 2:4).

PREREQUISITES

- Knows supply, demand and equilibrium price at a simple level
- Knows competition and monopoly at a simple level (earlier grades)
- Can read and draw a line graph from a table

MASTERY CHECKLIST

- ☐ I can draw supply and demand curves from a table and find the equilibrium price and quantity.
- ☐ I can tell a shift of a curve from a movement along it, and name what shifts demand and what shifts supply.
- ☐ I can explain spillovers (externalities) and public goods, and why markets handle them poorly.
- ☐ I can explain why some industries are natural monopolies and how regulated utilities work.
- ☐ I can explain how a cartel raises prices and why cartels tend to break down.

OPTIONAL BOOKS AND GAMES FOR THIS UNIT

- **Federal Reserve Bank of St. Louis: Econ Lowdown**: Free lessons and online courses on supply and demand, market structures and price signals. A good place for extra practice with curves and shifts.
- **New Bedford Whaling National Historical Park**: Free pages from the National Park Service on the whaling city that “lit the world,” its ships, workers and trade, and the decline of whaling after kerosene arrived. Good for Lesson 3.1.

Not required. Every project in this unit works without them. School Launch has no ties to these authors, publishers or companies.

LESSONS IN THIS UNIT

3.1 Shifts in Supply and Demand: Whale Oil and Kerosene

2 sessions of 50 minutes

3.2 Market Failures: Spillovers, Public Goods and the Great Stink

2 sessions of 50 minutes

UNIT 3 REVIEW

Answer each question. Show your work for every calculation and draw graphs where asked. Use complete sentences for explanations. The review is worth 100 points.

1. **8 pts**

What is the difference between a movement along a demand curve and a shift of the demand curve? Give an example of each.

2. **8 pts**

Explain the rise and fall of the whale-oil trade using supply and demand shifts.

3. **10 pts**

At \$3, buyers want 90 and sellers offer 30. At \$4, buyers want 70 and sellers offer 50. At \$5, buyers want 60 and sellers offer 60. At \$6, buyers want 50 and sellers offer 70. Find the equilibrium. If a frost cuts supply by 20 at every price, what is the new equilibrium?

4. **8 pts**

What is a negative spillover? How was London's Great Stink an example?

5. **8 pts**

What is a public good, and what is the free-rider problem? Give one example of a public good.

6. **8 pts**

How were many English lighthouses paid for, according to Ronald Coase? What does this show?

7. **10 pts**

A town's electric network costs \$200,000 a year in fixed costs, and each customer costs \$150 a year to serve. Find the average cost per customer with 1,000 customers and with 4,000 customers.

8. **8 pts**

Why are natural monopolies usually regulated or publicly owned? Name one weakness of regulation.

9. **10 pts**

Five producers each sell 20 barrels at \$3. They form a cartel and each cuts to 12 barrels, and the price rises to \$7. Find each producer's revenue before and after. If one cheats and sells 20 at \$7 while the others keep to 12, what does the cheater earn?

10. **8 pts**

What happened to the price of oil in 1973–1974, and why did it fall again in the 1980s?

11. **6 pts**

Why did long lines form at gas stations in 1973–1974?

12. **8 pts**

Short answer: In four or five sentences, explain why markets usually serve customers well, and name two situations in which they need help from honest rules.

ANSWER KEY

1. A movement along the curve is caused by a change in the good's own price (cookies drop from \$1 to 50¢, so people buy more). A shift is caused by anything else (a cheaper substitute appears, incomes change, tastes change), and moves the whole curve.
2. As whales grew scarce and voyages longer and costlier, supply shifted left, so the price rose and quantity fell. Then cheap kerosene, a substitute, arrived after 1859, so demand for whale oil shifted left, and both its price and quantity fell.
3. Equilibrium \$5 and 60 units. New supply: \$5 → 40, \$6 → 50. At \$6 buyers want 50 and sellers offer 50, so the new equilibrium is \$6 and 50 units: price up, quantity down.
4. A cost that falls on people outside a trade who did not choose it. Households and factories dumped sewage into the Thames, saving themselves trouble but putting the stench and disease on everyone else downstream.
5. A good that one person's use does not use up and that is hard to keep people from using. Because people can enjoy it without paying, many will not pay (free riders), so a market may not provide enough of it. Examples: a lighthouse, a city sewer system, national defense, a flood wall.
6. By light dues collected from ships at the ports, by private owners and Trinity House. It shows that some public goods can be paid for by fees or private arrangements when there is a place to collect from the users.
7. 1,000: $200,000 \div 1,000 + 150 = \$350$. 4,000: $200,000 \div 4,000 + 150 = \$200$.
8. One network serves everyone most cheaply, but a single unregulated owner could charge whatever it liked because customers have no choice. So commissions set fair rates or towns own the service. Weaknesses: little reason to cut costs when a return is guaranteed; regulators may become too friendly with the company; holding companies like Insull's can hide risk.
9. Before: $20 \times 3 = \$60$ each. After: $12 \times 7 = \$84$ each. Cheater: $20 \times 7 = \$140$ (until the extra supply pushes the price down).
10. It rose from about \$3 to nearly \$12 a barrel, about four times, after OPEC raised prices and Arab producers cut output and stopped sales to the U.S. It fell in the 1980s because high prices brought new supply from outside OPEC (Alaska, the North Sea), people used less, and members cheated on their quotas; by 1986 it was near \$10.

11. Supply fell, but price controls kept gasoline prices below the level that would have balanced supply and demand, so more people wanted gas than there was gas to sell at that price.
12. A good answer explains that prices signal what is scarce, competition rewards better products and lower prices, and people trade freely for mutual gain. Markets need help with spillovers such as pollution, public goods such as sewers or lighthouses, natural monopolies, cartels and price-fixing, and fraud.

PORTFOLIO PIECE: A MARKET REPORT ON ONE GOOD OR SERVICE IN OUR TOWN

Choose one good or service sold in your town, such as gasoline, eggs, bread, haircuts, water or internet service. Record its price at three or more sellers (or over several weeks, if there is only one seller), with dates. Draw a supply-and-demand graph for it and explain one event that has shifted, or could shift, its supply or demand. Then decide what kind of market it is: many sellers, a few, or one; regulated or not. Name any spillovers it creates. End with a page of advice to a family buying it and to a business selling it.

LOOK FOR	WHAT IT MEANS
Data	At least six dated price observations from named sellers, recorded honestly in a table.
Graph	A labeled supply-and-demand graph with a shift correctly drawn and explained.
Market structure	The kind of market is correctly identified with evidence, including any regulation or spillovers.
Advice	Practical, honest advice for buyers and sellers that uses ideas from the unit.

3.1 SHIFTS IN SUPPLY AND DEMAND: WHALE OIL AND KEROSENE

OBJECTIVES

- Draw supply and demand curves from a table and find the equilibrium price and quantity.
- Tell a movement along a curve from a shift of the curve, and name the main things that shift demand and supply.
- Explain the rise and fall of the whale-oil trade as shifts in supply and demand.
- Predict how price and quantity change when supply or demand shifts.

Warm-up. Think about the price of strawberries in June and in January, or the price of a snow shovel the day before a big storm. Write two sentences: What changed, the number of buyers or the amount for sale? Which way did the price go?

WATCH

What Shifts the Demand Curve?

Marginal Revolution University • 9:54

<https://www.youtube.com/watch?v=XYr8natwhuY>

WHEN TO WATCH

After the big idea. Pause after each of the five causes and give a whale-oil or kerosene example of your own.

BACKUP VIDEO

The Forgotten Fuel: How Did Whale Oil Light the World Before Petroleum?

History of Simple Things • 8:12

https://www.youtube.com/watch?v=uP_4soL0O_g

After the story, to see the whaling ships and lamps.

KEY TERMS

demand curve

A line showing how much buyers want to buy at each price; it slopes down, because people buy more when the price is lower.

supply curve

A line showing how much sellers will offer at each price; it slopes up, because higher prices encourage more production.

equilibrium

The price at which the quantity buyers want equals the quantity sellers offer; where the two curves cross.

shift

A move of the whole curve, caused by something other than the good's own price, such as a new invention, a change in income, or the price of a substitute.

substitute

A good that can be used in place of another, such as kerosene instead of whale oil for a lamp.

CORE IDEAS

The story. Before electric lights, people lit their homes with candles and oil lamps. The finest lamp oil and candles came from the sperm whale, and the town of New Bedford, Massachusetts, grew rich by sending ships after them. By the 1840s American whaling ships made up most of the world's whaling fleet. A voyage could last three or four years, sailing into the Pacific and the Arctic, and whale oil lit lighthouses, factories and parlors and greased the machines of the new factories. But the whales near home grew scarce, voyages grew longer and more dangerous, and the price of whale oil rose sharply in the 1840s and 1850s. Many families could not afford it and burned cheaper but dangerous fuels or went to bed at dark.

How they figured it out. High prices are a signal, and inventors answered it. In the 1840s and 1850s, Abraham Gesner, a Canadian doctor and geologist, learned to distill a clear lamp oil from coal, which he called kerosene. Then on August 27, 1859, at Titusville, Pennsylvania, a man named Edwin Drake struck oil with a drilled well about 69 feet deep. Refiners soon learned to make kerosene cheaply from petroleum. Within a few years kerosene was much cheaper than whale oil and burned brightly in a simple lamp. Demand for whale oil collapsed. The Civil War and a disaster in 1871, when ice trapped and crushed 33 whaling ships off Alaska, hurt the fleet further, and the great age of American whaling ended. Kerosene, in turn, later gave way to the electric light.

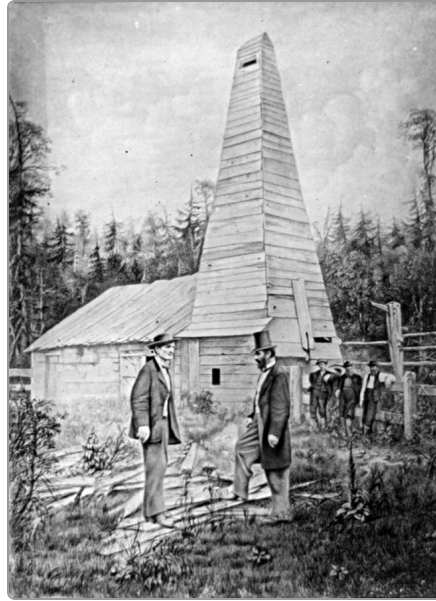
The big idea. A change in a good's own price causes a **movement along** its curves. A change in anything else causes a **shift** of a whole curve. Demand shifts when buyers' incomes change, when the price of a **substitute** or a complement changes, when

tastes or expectations change, or when the number of buyers changes. Supply shifts when the cost of producing changes, when technology changes, when the number of sellers changes, or when nature helps or hurts (a drought, a frost, scarce whales). The whale-oil story had two shifts. First, **supply decreased** (shifted left) as whales grew scarce and voyages cost more: the price rose and the quantity sold fell. Then, when cheap kerosene arrived, **demand decreased** (shifted left): both the price and the quantity of whale oil fell.

Try it. Suppose that at \$2 a gallon buyers want 80 gallons and sellers offer 20; at \$3, buyers want 60 and sellers offer 40; at \$4, buyers want 50 and sellers offer 50; at \$5, buyers want 40 and sellers offer 60. The equilibrium is \$4 and 50 gallons, where the amounts match. Now cheap kerosene arrives and buyers want 30 gallons fewer at every price. At \$3 buyers now want 30 and sellers offer 40; at \$2 buyers want 50 and sellers offer 20. The new equilibrium lies between \$2 and \$3 a gallon, with fewer gallons sold. Draw both demand curves and see where each crosses the supply curve.

In business today. Business owners who understand shifts are ready for change. A shop that sells film for cameras, maps or video rentals has watched demand shift left as new products arrived. A farmer watches the weather because a frost shifts supply. Rising prices for a scarce good send a signal to inventors and suppliers everywhere: find a better way. The whale-oil story also shows something good: when a market price rose, people looked for a substitute, and in the end the whales were spared.

PICTURE STUDY



The First Oil Well: Edwin Drake at Titusville, Unknown photographer, About 1859–1866 · Photograph · Titusville, Pennsylvania

Image: [Wikimedia Commons](#), public domain

Edwin Drake was hired by a group of investors to find out whether oil could be drilled for, the way salt water was. Townspeople called it “Drake’s Folly.” In August 1859 his driller, William Smith, found oil at about 69 feet. This photograph shows the wooden derrick and engine house of the well; Drake is usually said to be the man in the top hat.

Look closely

- Look at the size of the derrick and the engine house. What does that tell you about how much money the first well needed?
- Find the two men. How are they dressed? Do they look like rich investors or workers?
- Look at the land around the well. How would oil be carried from here to the cities?

Talk about it

1. How did this small well change the market for whale oil? Was it a shift in supply or in demand for whale oil?
2. Why might investors risk their money on “Drake’s Folly” when people were already paying high prices for lamp oil?

3. Who lost when kerosene became cheap? Who gained?

PROJECT

Draw the Market and Shift It

You will survey your family to build a real demand table for a snack, combine it with a supply table, draw the curves, find the equilibrium, and then shift one curve and show what happens.

You will need

- Graph paper, a ruler and two colored pencils
- A list of prices for a snack such as a homemade cookie: 25¢, 50¢, 75¢, \$1.00, \$1.25
- Family members or friends to survey
- Ledger notebook

Steps

1. Ask at least four people: “How many cookies would you buy this week at 25¢? At 50¢? At 75¢? At \$1.00? At \$1.25?” Add up the answers at each price to make a demand table.
2. Make a supply table: as the baker, decide how many cookies you would be willing to bake at each price, considering your time and the cost of ingredients. (Higher prices should bring more cookies.)
3. Draw both curves on graph paper, with price on the vertical axis and quantity on the horizontal axis. Label them D and S.
4. Find the equilibrium price and quantity where the curves cross. Mark it E.
5. **Shift 1.** Butter doubles in price. Decide how many fewer cookies you would bake at each price. Draw the new supply curve S2 in another color. Find the new equilibrium. Did price rise or fall? Quantity?
6. **Shift 2.** Go back to the first supply curve. Now a neighbor opens a bakery selling cookies for 50¢. Ask your buyers how many of your cookies they would now buy at each price. Draw D2 and find the new equilibrium.
7. Fill in a table in your ledger: Change, Which curve shifts, Which way, What happens to price, What happens to quantity.
8. Write a paragraph comparing your cookie shifts with the whale-oil story.

Tips

- A change in the cookie's own price never shifts the demand curve; it is a movement along it. Ask: "Did something other than the price change?"
- Label every axis and every curve. An unlabeled graph cannot be read by anyone else.

Check your work

- ☐ I can draw supply and demand curves and find the equilibrium.
- ☐ I can show a shift in supply and a shift in demand and predict the new price and quantity.
- ☐ I can explain the whale-oil story using shifts.

LEDGER NOTEBOOK

1. Draw the two whale-oil shifts on two small graphs: first supply shifting left (price up), then demand shifting left (price down). Label each.
2. Make a chart with two columns, "Shifts demand" and "Shifts supply," and list at least four causes under each, with an example of each.
3. Sketch a whale-oil lamp and a kerosene lamp side by side. Write what each fuel cost the family in time, money and safety.

From history. New Bedford's whaling ships hired sailors from all over the world, and a young man could earn a share, called a "lay," of the voyage's profit instead of a fixed wage. A greenhand on his first voyage might receive only a very small fraction, and after paying for his clothing and supplies from the ship's store, sometimes came home with very little.

COMMON MISTAKES

- Saying "demand rose" when the price fell and people bought more. That is a movement along the demand curve, not a shift.
- Forgetting that a shift changes both price and quantity. Always say what happens to each.
- Thinking high prices are only bad. High prices also signal producers and inventors to find more or better supply.

Make it a game • Shift or Slide. Tape a supply-and-demand graph to the floor. Your parent calls events, such as kerosene becoming cheap or whale oil becoming scarce. If the price changed, slide along a curve. If something else changed, jump to a new curve and call out what shifted. Find the new equilibrium each time. Keep score of ten events.

3.2 MARKET FAILURES: SPILLOVERS, PUBLIC GOODS AND THE GREAT STINK

OBJECTIVES

- Define a spillover (externality), both negative and positive, and give examples.
- Define a public good and explain the free-rider problem.
- Tell how London solved the Great Stink of 1858 with Joseph Bazalgette's sewers.
- Explain how lighthouses were paid for in England, and weigh public and private solutions.

Warm-up. Your neighbor plays loud music at midnight. Another neighbor plants a beautiful flower garden by the sidewalk. Neither one charges you or pays you. Write one sentence about how each affects you. Who should pay, if anyone?

WATCH

Bazalgette: Saviour of the Great Stink

Institution of Civil Engineers • 5:14

<https://www.youtube.com/watch?v=5k8AnhNkN04>

WHEN TO WATCH

After the story, before the big idea.

Note: From the Institution of Civil Engineers in London, the engineers' society Bazalgette once led.

KEY TERMS

spillover (externality)

A cost or benefit of an activity that falls on people outside the trade who did not choose it.

positive spillover

A benefit that falls on others, such as a neighbor's well-kept garden or a well-educated citizen.

negative spillover

A cost that falls on others, such as smoke, noise or sewage.

public good

A good that one person's use does not use up and that is hard to keep people from using, such as a lighthouse, a sewer system or national defense.

free rider

A person who enjoys a good without paying for it, because he cannot easily be stopped from using it.

CORE IDEAS

The story. In the 1850s London was the largest city in the world, with more than two million people. Most of its human waste drained into cesspits or straight into the River Thames, from which many people still drew their water. Cholera, a deadly disease, swept the city in 1848–1849 and again in 1853–1854. In 1854 a doctor named John Snow traced one outbreak to a single water pump on Broad Street, but many still believed disease came from bad air. Then came the hot, dry summer of 1858. The Thames, thick with sewage, gave off a stench so terrible that it was called the Great Stink. In the new Houses of Parliament beside the river, the curtains were soaked in chemicals to keep out the smell, and members of Parliament could barely work.

How they figured it out. Within weeks, Parliament gave the Metropolitan Board of Works the power and the money to fix the problem. Its chief engineer, Joseph Bazalgette, had already drawn up plans. He designed great **intercepting sewers**, brick tunnels running beside the river that caught the waste of the old sewers before it reached the Thames and carried it by gravity and by huge pumping engines far downstream, east of the city. Workers laid about 82 miles of main sewers and some 1,100 miles of street sewers, using hundreds of millions of bricks. Bazalgette deliberately made his tunnels larger than he thought was needed, so that a growing city would not outgrow them. The main system opened in 1865. When cholera struck once more in 1866, it hit hardest in a part of East London not yet connected. After that, the great cholera epidemics in London ended.

The big idea. Markets work beautifully when the people who make a choice bear its costs and enjoy its benefits. They work poorly when costs or benefits **spill over** onto others. Each London household and factory that dumped waste in the river saved itself trouble but put a cost on everyone downstream, a **negative spillover**. No single family could fix the river, and none had a reason to try alone. A sewer system for a whole city is also close to a **public good**: once it is built, everyone in the city benefits, whether or not he pays, so no private seller could easily charge each person for it.

People who benefit without paying are called **free riders**. When free riders are many, a market may never build the thing at all, so people join together through their town or nation to build it and share the cost through taxes or fees.

Think it through. Not every public good needs the government to build it. The economist Ronald Coase studied English lighthouses and found that for centuries many had been built and run by private owners and by Trinity House, an old guild of mariners, paid for by “light dues” collected from ships when they entered port. The port was the place where the free riders could be made to pay. Spillovers, too, can sometimes be settled by neighbors bargaining or by courts enforcing property rights. Wise people ask which solution works best in each case: private bargains, courts, a voluntary association, a fee, or a public project.

In business today. Every business must think about its spillovers. A factory must keep smoke and waste from harming its neighbors, and laws require it; good owners go further because it is right. Towns still build and run sewers, roads and parks, and charge fees or taxes for them. Businesses also create positive spillovers: a new shop on a quiet street brings customers to the shops beside it. The question for an honest business is not only “What does this cost me?” but “What does it cost my neighbors?”

PICTURE STUDY



The Northern Outfall Sewer Under Construction, Illustrated London News, 1861 · Wood engraving ·
Published in London

Image: [Wikimedia Commons](#), public domain

The *Illustrated London News* printed this engraving in 1861 to show readers the great work going on east of the city. The Northern Outfall Sewer carried the waste of North London several miles east, away from the heart of the city. Much of the work was done by hand, with picks, shovels, barrows and bricklayers' trowels, and temporary railways brought in the bricks.

Look closely

- Count the workers you can see. What tools are they using?
- Find the long, low tunnel being built. How is it supported while the bricks are laid?
- Find the railway track and the train. Why would the builders lay a railway beside the sewer?

Talk about it

1. Why could no single family or company in London have built this sewer on its own?
2. Bazalgette made the tunnels bigger than he thought were needed. Was that wise stewardship or wasted money? Why?
3. Who paid for this work, and who benefited? Were they the same people?

PROJECT

The River Town Game: Spillovers and the Free Rider

You and your family will play households living along a river. Each household can earn money by dumping waste into the river, but the waste costs everyone downstream. Then you will try to build a shared sewer and see whether free riders spoil it.

You will need

- Play money or tokens: 20 for each player
- A long strip of blue paper for the river and a cup for the “town fund”
- Small paper scraps to stand for waste
- Ledger notebook and a calculator

Steps

1. Four or more players sit in order along the river. Each round, each player chooses secretly: **dump** (earn 3 tokens) or **haul** waste away properly (earn 1 token, because hauling takes time).
2. Every scrap of waste dumped costs each player downstream 1 token (the river smells and the water is unsafe). Play five rounds and record each player’s earnings in a table.
3. Add up the whole town’s earnings. Compare with what the town would have earned if everyone had hauled.
4. **The sewer.** Now a sewer can be built if the town fund reaches 20 tokens. Once built, no one pays the river cost. Each player decides secretly how many tokens to give. Record the gifts. Was the sewer built? Did anyone give nothing and hope the others would pay?
5. **The fee.** Play again, but this time every player must pay 5 tokens, an equal fee like a town tax. Record the results.
6. Make a table comparing the three rules: everyone chooses, voluntary gifts, and an equal fee. Which gave the town the most total tokens? Which seemed fairest?

7. Write a paragraph explaining the Great Stink using the words spillover, public good and free rider.

Tips

- Keep each player's choice secret until everyone has chosen. That is what makes the free-rider problem real.
- If your family is generous and everyone gives freely, that is a good lesson too. Discuss why a big city of strangers might act differently.

Check your work

- ☐ I can explain a negative spillover and give an example from the game and from history.
- ☐ I can explain what a public good is and why free riders make it hard to pay for.
- ☐ I can compare voluntary, private and public ways of solving a spillover.

LEDGER NOTEBOOK

1. Draw a cross-section of London's river with the old sewers flowing into it, and then with Bazalgette's intercepting sewer catching them. Label the flow.
2. Make a two-column list of negative and positive spillovers you can find in your own town.
3. Sketch a lighthouse and write how it was paid for in England and why the port was the place to collect.

From history. Bazalgette's plan also built the Victoria, Albert and Chelsea embankments along the Thames, which covered the new sewers, created new roads and gardens, and later carried part of the London Underground. Many of his sewers are still in use today, more than 150 years later.

COMMON MISTAKES

- Thinking market failure means markets are bad. It means a particular problem, such as a spillover, that a simple market does not solve on its own.
- Thinking every public good must be built by government. Lighthouses, roads and other goods have sometimes been paid for by fees, associations or private owners.
- Forgetting positive spillovers. Some good things, such as a well-kept house or a good school, also spread benefits to others.

Make it a game • Free Rider Bowl. Each player gets ten beans. Each round, you privately choose how many to put into a shared cleanup bowl; the bowl doubles and splits equally. Anyone can free ride. Play five rounds and watch contributions fall. Define a public good and spillover, and tell how the Great Stink pushed London to build sewers.

Scripture. “Look not every man on his own things, but every man also on the things of others.” (Philippians 2:4, KJV)

A spillover happens when someone looks only at his own things. Paul calls Christians to count the cost of their choices to their neighbors as well.

3.3 NATURAL MONOPOLIES AND REGULATED UTILITIES

OBJECTIVES

- Explain why some industries, such as water pipes, power lines and gas mains, cost least when served by one network.
- Calculate average cost per customer and show how it falls as more customers share a large fixed cost.
- Tell how cities and states began to regulate electric companies and other utilities, and how a utility commission sets rates.
- Weigh the strengths and weaknesses of regulated private utilities and publicly owned ones.

Warm-up. Look outside your home for wires, pipes, meters and manhole covers. List every utility that comes to your house (water, sewer, electricity, gas, telephone, internet). For each, write how many companies you could choose from.

WATCH

Natural Monopoly and the need for Government Regulation

Jason Welker · 15:14

<https://www.youtube.com/watch?v=LhiyJlI5xa0>

WHEN TO WATCH

After the big idea. Watch the first half for the cost curves; the second half explains how regulators set prices.

Note: An economics teacher's whiteboard lesson, a step beyond this lesson. Watch the first half for the falling average-cost curve; the rest is extra for strong students.

BACKUP VIDEO

Edison Illuminating Company | The Henry Ford's Innovation Nation

The Henry Ford · 4:04

<https://www.youtube.com/watch?v=AjOtZeikN2s>

With the story of Edison's first power stations.

KEY TERMS

natural monopoly

An industry in which one firm can serve the whole market at a lower cost than two or more competing firms could, usually because of very high fixed costs.

average cost

Total cost divided by the number of units or customers served.

rate of return

The profit earned each year as a percent of the money invested; regulators often allow a utility a “fair” rate of return.

fixed cost

A cost that does not change with how much is produced, such as building a dam, a power plant or a network of pipes.

public utility

A business that provides an essential service such as water, electricity or gas through a network, and is regulated or owned by the public.

CORE IDEAS

The story. On September 4, 1882, Thomas Edison’s Pearl Street Station in Lower Manhattan began sending electric current through copper wires buried under the streets to light the offices and shops of several dozen customers. Electric light spread fast, and so did the companies that sold it. By the late 1880s many American cities had several electric, telegraph and telephone companies, each stringing its own wires on its own poles, until some streets in New York were darkened by tangled webs of wire. In March 1888 a great blizzard brought many of the poles and wires crashing down, and soon afterward the city forced the companies to put their wires underground. Rival gas and water companies in some cities dug up the same streets to lay competing pipes, and price wars sometimes ruined them all.

How they figured it out. People began to see that some services cost least with one network. Samuel Insull, who had been Edison’s secretary and later led Chicago’s electric company, saw that a large power plant serving many customers could sell electricity far more cheaply than many small ones. In 1898 he told his fellow

electric-company owners that they should accept regulation by the state in return for the right to be the only company serving an area. In 1907 Wisconsin and New York set up state **public utility commissions**, and most states followed. A commission studies the company's costs, lets it charge rates high enough to pay its costs and earn a fair **rate of return** for its investors, and requires it to serve every customer in its territory. Many cities chose another way and owned their water works themselves.

The big idea. A **natural monopoly** exists when the **fixed cost** of the network is so large that one firm can serve everyone more cheaply than several. Suppose a town's water system costs \$3,000,000 to build, and each customer costs \$100 a year to serve. Spread over 30 years, the system costs \$100,000 a year. With 1,000 customers, the **average cost** is $\$100,000 \div 1,000 + \$100 = \$200$ a year each. With 2,000 customers, it is $\$50 + \$100 = \$150$. Now imagine two companies each building a full system and splitting the 2,000 customers: each serves 1,000 at \$200 a year, and the town has paid for two sets of pipes. But a single unregulated owner could charge whatever it liked, because customers have nowhere else to go. So towns either regulate the monopoly's prices or own the service themselves.

Think it through. Regulation has its own problems. A company allowed a fixed return on whatever it spends may have little reason to cut costs, and regulators can become too friendly with the companies they watch. In the 1920s Insull built a tower of holding companies, companies that owned companies, borrowing heavily to control utilities in many states. When the Great Depression came, his empire collapsed in 1932, and thousands of small investors lost their savings. In 1935 Congress passed a law breaking up such holding companies. Good rules must watch the watchers too.

In business today. Your water, electric and gas bills are almost certainly set by a public commission or by your town. In some places, though, new technology has let competition return: many states now let customers choose who generates their electricity, while one company still owns the wires. Telephone service, once a regulated monopoly, now faces competition from cell phones and the internet. A wise citizen asks of every monopoly: What keeps it honest?

PICTURE STUDY



New York After the Blizzard of 1888, Unknown photographer, March 1888 · Photograph · New York City

Image: [Wikimedia Commons](#), public domain

The Great Blizzard of March 11–14, 1888, buried New York in snow and brought down hundreds of telegraph, telephone and electric poles. Communication with other cities was cut for days. The storm helped convince the city to require that its tangle of competing wires be put underground.

Look closely

- Look at the depth of the snow. How would people get to work or to the store?
- Find the poles and wires, if you can. How many separate wires can you count?
- Look at the shops and signs. What businesses would lose money during the storm?

Talk about it

1. Why would competing companies each string their own wires? What was wasteful about that?
2. Who should pay to put the wires underground: the companies, their customers or the city? Why?
3. How is a city street like a shared resource that every utility company wants to use?

PROJECT

Should Our Town Have One Water Company or Two?

You will be a member of a pretend town's utility commission. You will calculate the average cost of water service with one network and with two, set a fair rate for a single regulated company, and write a recommendation to the town.

You will need

- A calculator or free spreadsheet
- Graph paper and the ledger notebook
- A real water or electric bill from your home, with account numbers covered by a parent (optional)

Steps

1. The facts: a water system costs \$4,000,000 to build and lasts 40 years, so it costs \$100,000 a year. Each customer costs \$80 a year to serve (pumping, repairs, billing). The town has 2,500 homes.
2. Make a table showing average cost per customer for 500, 1,000, 1,500, 2,000 and 2,500 customers on one system. (Average cost = $\$100,000 \div \text{customers} + \$80$.)
3. Graph average cost against the number of customers. Describe the shape of the line.
4. **Two companies.** Two companies each build a full system and split the town evenly. Find the average cost per customer for each. How much more does the town pay in total each year than with one system?
5. **Setting a rate.** With one regulated company serving 2,500 homes, the investors put in \$4,000,000 and the commission allows a fair return of 6% a year (\$240,000). Add this to the company's yearly costs (the \$100,000 a year for the system plus \$80 for each home) and divide by 2,500 to find the yearly rate per home. Then find the monthly rate.
6. Look at a real utility bill, if a parent shares one. Find the fixed monthly charge and the charge for each unit used. How are they like your fixed and per-customer costs?

7. Write a one-page recommendation: one company or two, regulated or town-owned? Give at least two reasons and one risk of your plan.

Tips

- Remember that a fixed cost is shared: the more customers share it, the less each one pays.
- Utility bills often split charges into a fixed part and a usage part. That matches the cost structure of the network.

Check your work

- ☐ I can calculate average cost and show that it falls as more customers share a fixed cost.
- ☐ I set a regulated rate that covers costs and a fair return (\$300,000 of yearly costs plus \$240,000 of return = \$540,000; $\div 2,500 = \$216$ a year, or \$18 a month).
- ☐ I can explain why natural monopolies are regulated or publicly owned, and one weakness of regulation.

LEDGER NOTEBOOK

1. Draw a street with two sets of competing water pipes and two sets of wires, then the same street with one of each. Label the waste.
2. Copy your average-cost graph and mark where two companies would each be.
3. Make a timeline: 1882 Pearl Street Station; 1888 blizzard; 1898 Insull calls for regulation; 1907 Wisconsin and New York commissions; 1932 Insull's companies collapse; 1935 holding-company law.

From history. Edison's Pearl Street Station used large steam engines connected to dynamos his workers called "Jumbos," after a famous circus elephant. It was among the first central power stations in the world. A fire damaged it in 1890, and it was later replaced by larger plants.

COMMON MISTAKES

- Thinking every monopoly is a natural monopoly. Most monopolies are not natural; they come from special favors granted by rulers, unfair practices or patents.
- Thinking a regulated utility earns no profit. It is allowed a fair return so that investors will provide the money for the network.

- Forgetting the fixed cost when comparing one company with two. Two networks means paying for the pipes or wires twice.

Make it a game • Falling Average Cost. A water network costs 120 pretend dollars to build. Your parent adds customers: 3, 6, 12, 24. Call out the average cost per customer before they finish counting, then double the network for a second company and call it again. Why does one network cost less? Set a fair rate of return a regulator would allow.

3.4 CARTELS AND THE 1973 OIL EMBARGO

OBJECTIVES

- Explain what a cartel is and how it raises prices by limiting supply.
- Tell the history of OPEC and the oil embargo of 1973–1974, and its effects on prices, gasoline lines and businesses.
- Explain why members of a cartel are tempted to cheat, and why cartels tend to break down.
- Calculate a cartel's revenue before and after it cuts output.

Warm-up. Three kids sell lemonade on the same street at 50¢ a cup. They meet and agree that all three will charge \$1 instead. Write what you think will happen in the next week. Will all three keep the promise? What will the customers do?

WATCH

Oligopolies, duopolies, collusion, and cartels | Microeconomics | Khan Academy

Khan Academy • 8:26

<https://www.youtube.com/watch?v=N0L00FZnhtg>

WHEN TO WATCH

After the big idea, before the cartel game.

KEY TERMS

cartel

A group of sellers who agree to limit how much they produce or to fix prices, so they can charge more than competition would allow.

OPEC

The Organization of the Petroleum Exporting Countries, founded in 1960 by oil-exporting nations to coordinate their oil policies.

embargo

An order that stops trade with a particular country.

quota

The amount each member of a cartel agrees to produce.

price-fixing

An agreement among competitors to set prices instead of competing; illegal in the United States under the Sherman Antitrust Act.

CORE IDEAS

The story. In September 1960, five oil-exporting countries, Iran, Iraq, Kuwait, Saudi Arabia and Venezuela, met in Baghdad and founded **OPEC**. For years it had little power, because oil was plentiful. Then, in October 1973, a war broke out between Israel and its neighbors Egypt and Syria. Arab oil-producing countries announced that they would cut their oil production month by month and stop selling oil to the United States and some other nations that supported Israel: an **embargo**. At the same time, OPEC raised the price it charged for oil. By early 1974 the price of a barrel of crude oil had risen from about \$3 to nearly \$12, about four times as much. The embargo on the United States ended in March 1974, but the high price stayed.

How they figured it out. Americans felt it at once. Gasoline prices jumped, and in many places drivers waited in long lines at gas stations, sometimes for hours, only to find that the pumps had run dry. Part of the reason for the lines was that the government held gasoline prices below what the market would have set, under price controls that went back to 1971, so the price could not rise enough to match the smaller supply (you will study price controls in Unit 5). Some states let cars with license plates ending in odd numbers buy gas on odd days and even plates on even days. Congress set a national speed limit of 55 miles an hour in 1974 to save fuel, and later created an emergency oil reserve. Over the next ten years, the high price did its work as a signal. Families bought smaller cars, carmakers designed engines that went farther on a gallon, factories saved energy, and oil companies drilled new fields in Alaska, the North Sea and elsewhere outside OPEC.

The big idea. A **cartel** raises prices the way a monopoly does: by limiting supply. Suppose four producers each sell 25 barrels a day at \$4 a barrel, earning \$100 each, \$400 together. If they agree to cut to 15 barrels each, and the smaller supply drives the price up to \$10, each earns $15 \times \$10 = \$150$, and together \$600. Every member gains, as long as all keep the agreement. But each member is tempted to cheat: if one secretly sells 25 barrels at \$10 while the others hold back, it earns \$250. If all cheat, the price falls back. That is why cartels tend to break down. In the early 1980s, as

new oil poured in from outside OPEC and some members produced more than their **quotas**, the price slid, and in 1986 it collapsed to around \$10 a barrel.

Think it through. Cartels are not new. Medieval guilds sometimes limited who could practice a trade. In 1924 the world's largest light-bulb makers formed a cartel that agreed to limit the life of their bulbs to about 1,000 hours, so customers would buy more; it lasted until World War II. In the United States, agreements among competitors to fix prices or divide markets have been illegal since the Sherman Antitrust Act of 1890, and executives have gone to prison for **price-fixing**. Nations, though, cannot be taken to court the same way, so a cartel of countries like OPEC is checked mainly by cheating among its members and by competition from new suppliers.

In business today. Honest businesses compete on price and quality instead of plotting with rivals, and the law forbids price-fixing for good reason: it takes money from customers by force of agreement rather than by better service. The prophet Amos condemned merchants who made “the ephah small, and the shekel great” (Amos 8:5), shrinking what they gave and raising what they took. When you hear that sellers have agreed to hold back supply, ask who gains, who pays, and how long the agreement can last.

PICTURE STUDY



A Gasoline Line in Portland, Oregon, David Falconer, for the U.S. Environmental Protection Agency's DOCUMERICA project, 1973–1974 · Color photograph · U.S. National Archives

Image: [Wikimedia Commons](#), public domain

In the 1970s the U.S. government hired photographers to record American life for a project called DOCUMERICA. During the fuel shortage of 1973–1974, David Falconer photographed gas stations in Oregon, the first state to let drivers buy gasoline only on odd or even days by license plate. Its original caption says that after hours of waiting, a driver might reach the pumps only to learn that the car ahead had bought the last gas.

Look closely

- Count the cars you can see waiting. How long might the last driver wait?
- Read the sign on the car in front. What has happened at this station?
- Look at the cars themselves. Are they large or small? How might that change after the shortage?

Talk about it

1. If the price of gasoline had been allowed to rise freely, would the line have been shorter or longer? Why?
2. Who in this picture pays a cost that does not show up in dollars? What is that cost?

3. What could a family, a business or a carmaker do to need less gasoline in the years after this?

PROJECT

The Cartel Game: Will the Agreement Hold?

You and your family will play oil-producing countries in a cartel. You will agree on how much to produce, see what happens to the price, and discover whether everyone keeps the agreement. You will record every round and calculate revenue.

You will need

- Four players (or two players each controlling two countries)
- Cards or slips of paper for secret production choices
- A price chart (below) and a calculator
- Ledger notebook

Steps

1. Write the price chart in your ledger. Total barrels produced by all players → price per barrel: 40 → \$10; 50 → \$8; 60 → \$6; 70 → \$5; 80 → \$4; 90 → \$3; 100 → \$2.
2. **Round 1, competition.** Each player secretly writes “25” barrels. Total = 100, so price = \$2. Each earns $25 \times \$2 = \$50$. Record it.
3. **The agreement.** The players meet and agree that each will produce only 10 barrels. If all keep it, total = 40, price = \$10, and each earns \$100.
4. **Rounds 2 to 6.** Each round, each player secretly writes either 10 (keep the agreement) or 20 (cheat). Reveal, add the total, look up the price, and calculate each player’s revenue. Record a table: Round, Each player’s barrels, Total, Price, Each player’s revenue.
5. After six rounds, total each player’s revenue. Who earned the most? Did the agreement hold?
6. Discuss: How did it feel to be cheated? How would customers feel about the agreement if they knew?
7. **New supply.** Play two more rounds in which a new non-cartel producer adds 30 barrels every round. What happens to the price?

8. Write a paragraph explaining why OPEC's high prices of the 1970s did not last, using the words quota, cheating and new supply.

Tips

- Keep choices secret until everyone reveals, just as cartel members cannot see each other's oil fields.
- Remember the customers who are not at the table. Every dollar the cartel gains comes from buyers who have no choice.

Check your work

- ☐ I can explain how a cartel raises price by limiting supply.
- ☐ I calculated each player's revenue correctly each round.
- ☐ I can explain why cartels tend to break down, and why price-fixing is illegal in the United States.

LEDGER NOTEBOOK

1. Draw a supply-and-demand graph for oil. Show the cartel shifting supply to the left and the price rising.
2. Make a timeline: 1960 OPEC founded; October 1973 embargo; early 1974 oil near \$12 a barrel; March 1974 embargo on the U.S. ends; 1974 55-mph speed limit; 1977 Alaska pipeline opens; 1986 oil near \$10.
3. Write a short list of the ways people, businesses and inventors responded to high oil prices after 1973.

From history. The Trans-Alaska Pipeline, 800 miles long, was approved after the 1973 embargo and opened in 1977, carrying oil from Prudhoe Bay on the Arctic coast to the port of Valdez in the south. For a time it carried a large share of all the oil produced in the United States.

COMMON MISTAKES

- Thinking a cartel can raise prices forever. Cheating and new suppliers usually wear it down over time.
- Thinking the gas lines were caused only by the embargo. Price controls kept prices too low to balance the smaller supply, which made the lines worse.
- Thinking cartels help everyone in the industry and hurt no one. They take money from customers, and they slow the competition that brings better products.

Make it a game • Will the Quota Hold. You and your parent are two oil producers. Each round, secretly play a card: stay in the quota or cheat by pumping extra. Stay-stay earns three each; cheat against stay earns five against one; cheat-cheat earns two each. Play six rounds. Explain why cartels crack and how OPEC's 1973 embargo affected prices.

Scripture. “making the ephah small, and the shekel great, and falsifying the balances by deceit?” (Amos 8:5, KJV)

The ephah was a measure of grain and the shekel a weight of silver. Amos condemned sellers who gave less and charged more by trickery. A cartel does openly what these merchants did in secret: it shrinks supply to raise the price.

MARKETS

A market is any place or way in which buyers and sellers meet to trade: a farmers' market, a store, an auction, a stock exchange or a website. In earlier years you learned that prices are signals, set by supply and demand. In this unit you will go further. You will learn to tell a **movement along** a demand or supply curve from a **shift** of the whole curve, and to predict what happens to price and quantity when something changes, using the true story of whale oil and kerosene.

You will also study the things markets do poorly. Some costs spill over onto neighbors who never agreed to pay them, as when London's river turned into a sewer in the Great Stink of 1858. Some goods, like lighthouses and city sewers, are hard to sell one customer at a time. Some industries, like water pipes and power lines, work best with only one network, so towns regulate them. And sometimes sellers band together in a **cartel** to raise prices, as the oil-exporting countries did in 1973. Markets are among God's good gifts to human society, but they work best with honest rules, and Scripture reminds sellers to look "every man also on the things of others" (Philippians 2:4).

PREREQUISITES

- Knows supply, demand and equilibrium price at a simple level
- Knows competition and monopoly at a simple level (earlier grades)
- Can read and draw a line graph from a table

MASTERY CHECKLIST

- ☐ I can draw supply and demand curves from a table and find the equilibrium price and quantity.
- ☐ I can tell a shift of a curve from a movement along it, and name what shifts demand and what shifts supply.
- ☐ I can explain spillovers (externalities) and public goods, and why markets handle them poorly.
- ☐ I can explain why some industries are natural monopolies and how regulated utilities work.
- ☐ I can explain how a cartel raises prices and why cartels tend to break down.

OPTIONAL BOOKS AND GAMES FOR THIS UNIT

- **Federal Reserve Bank of St. Louis: Econ Lowdown**: Free lessons and online courses on supply and demand, market structures and price signals. A good place for extra practice with curves and shifts.
- **New Bedford Whaling National Historical Park**: Free pages from the National Park Service on the whaling city that “lit the world,” its ships, workers and trade, and the decline of whaling after kerosene arrived. Good for Lesson 3.1.

Not required. Every project in this unit works without them. School Launch has no ties to these authors, publishers or companies.

LESSONS IN THIS UNIT

3.1 Shifts in Supply and Demand: Whale Oil and Kerosene

2 sessions of 50 minutes

3.2 Market Failures: Spillovers, Public Goods and the Great Stink

2 sessions of 50 minutes

UNIT 3 REVIEW

Answer each question. Show your work for every calculation and draw graphs where asked. Use complete sentences for explanations. The review is worth 100 points.

1. **8 pts**

What is the difference between a movement along a demand curve and a shift of the demand curve? Give an example of each.

2. **8 pts**

Explain the rise and fall of the whale-oil trade using supply and demand shifts.

3. **10 pts**

At \$3, buyers want 90 and sellers offer 30. At \$4, buyers want 70 and sellers offer 50. At \$5, buyers want 60 and sellers offer 60. At \$6, buyers want 50 and sellers offer 70. Find the equilibrium. If a frost cuts supply by 20 at every price, what is the new equilibrium?

4. **8 pts**

What is a negative spillover? How was London's Great Stink an example?

5. **8 pts**

What is a public good, and what is the free-rider problem? Give one example of a public good.

6. **8 pts**

How were many English lighthouses paid for, according to Ronald Coase? What does this show?

7. **10 pts**

A town's electric network costs \$200,000 a year in fixed costs, and each customer costs \$150 a year to serve. Find the average cost per customer with 1,000 customers and with 4,000 customers.

8. **8 pts**

Why are natural monopolies usually regulated or publicly owned? Name one weakness of regulation.

9. **10 pts**

Five producers each sell 20 barrels at \$3. They form a cartel and each cuts to 12 barrels, and the price rises to \$7. Find each producer's revenue before and after. If one cheats and sells 20 at \$7 while the others keep to 12, what does the cheater earn?

10. **8 pts**

What happened to the price of oil in 1973–1974, and why did it fall again in the 1980s?

11. **6 pts**

Why did long lines form at gas stations in 1973–1974?

12. **8 pts**

Short answer: In four or five sentences, explain why markets usually serve customers well, and name two situations in which they need help from honest rules.

ANSWER KEY

1. A movement along the curve is caused by a change in the good's own price (cookies drop from \$1 to 50¢, so people buy more). A shift is caused by anything else (a cheaper substitute appears, incomes change, tastes change), and moves the whole curve.
2. As whales grew scarce and voyages longer and costlier, supply shifted left, so the price rose and quantity fell. Then cheap kerosene, a substitute, arrived after 1859, so demand for whale oil shifted left, and both its price and quantity fell.
3. Equilibrium \$5 and 60 units. New supply: \$5 → 40, \$6 → 50. At \$6 buyers want 50 and sellers offer 50, so the new equilibrium is \$6 and 50 units: price up, quantity down.
4. A cost that falls on people outside a trade who did not choose it. Households and factories dumped sewage into the Thames, saving themselves trouble but putting the stench and disease on everyone else downstream.
5. A good that one person's use does not use up and that is hard to keep people from using. Because people can enjoy it without paying, many will not pay (free riders), so a market may not provide enough of it. Examples: a lighthouse, a city sewer system, national defense, a flood wall.
6. By light dues collected from ships at the ports, by private owners and Trinity House. It shows that some public goods can be paid for by fees or private arrangements when there is a place to collect from the users.
7. 1,000: $200,000 \div 1,000 + 150 = \$350$. 4,000: $200,000 \div 4,000 + 150 = \$200$.
8. One network serves everyone most cheaply, but a single unregulated owner could charge whatever it liked because customers have no choice. So commissions set fair rates or towns own the service. Weaknesses: little reason to cut costs when a return is guaranteed; regulators may become too friendly with the company; holding companies like Insull's can hide risk.
9. Before: $20 \times 3 = \$60$ each. After: $12 \times 7 = \$84$ each. Cheater: $20 \times 7 = \$140$ (until the extra supply pushes the price down).
10. It rose from about \$3 to nearly \$12 a barrel, about four times, after OPEC raised prices and Arab producers cut output and stopped sales to the U.S. It fell in the 1980s because high prices brought new supply from outside OPEC (Alaska, the North Sea), people used less, and members cheated on their quotas; by 1986 it was near \$10.

11. Supply fell, but price controls kept gasoline prices below the level that would have balanced supply and demand, so more people wanted gas than there was gas to sell at that price.
12. A good answer explains that prices signal what is scarce, competition rewards better products and lower prices, and people trade freely for mutual gain. Markets need help with spillovers such as pollution, public goods such as sewers or lighthouses, natural monopolies, cartels and price-fixing, and fraud.

PORTFOLIO PIECE: A MARKET REPORT ON ONE GOOD OR SERVICE IN OUR TOWN

Choose one good or service sold in your town, such as gasoline, eggs, bread, haircuts, water or internet service. Record its price at three or more sellers (or over several weeks, if there is only one seller), with dates. Draw a supply-and-demand graph for it and explain one event that has shifted, or could shift, its supply or demand. Then decide what kind of market it is: many sellers, a few, or one; regulated or not. Name any spillovers it creates. End with a page of advice to a family buying it and to a business selling it.

LOOK FOR	WHAT IT MEANS
Data	At least six dated price observations from named sellers, recorded honestly in a table.
Graph	A labeled supply-and-demand graph with a shift correctly drawn and explained.
Market structure	The kind of market is correctly identified with evidence, including any regulation or spillovers.
Advice	Practical, honest advice for buyers and sellers that uses ideas from the unit.

GREAT BUSINESSES AND THEIR STAKEHOLDERS

What makes a business great? Not just being big, rich or famous. In this unit you will weigh four of the most powerful businesses in history by what they meant for their **six stakeholders**: the **financiers** who lent or invested the money, the **risk-takers** who founded and owned them, the **builders** who designed the products and the systems that made them, the **workers** who earned wages there, the **customers** who bought from them, and the **community** around them, from suppliers and neighbors to whole nations. A business is great when it creates real value and serves all six over a long time. It may be big without being great.

You will study the Dutch East India Company, the first company to sell shares to the public; Andrew Carnegie's steel company and its control of every step from mine to rail; John D. Rockefeller's Standard Oil, a marvel of efficiency that became a monopoly; and Sears, Roebuck and Company, whose catalog brought the city store to the farm. Each did real good, and each fell short, some of them gravely. You will learn to give an honest **stakeholder scorecard**, with a 1–5 rating and a reason for each of the six, and you will finish by writing a stakeholder report of your own.

PREREQUISITES

- Knows the six stakeholders and the scorecard (Grade 5, or read Lesson 4.1 slowly)
- Knows supply and demand, competition and monopoly (Unit 3)
- Can calculate averages, percents and percent change

MASTERY CHECKLIST

- ☐ I can name and explain the six stakeholders of a business, and explain why a business may be big without being great.
- ☐ I can explain how the Dutch East India Company raised money by selling shares, and what limited liability and a stock exchange are.
- ☐ I can explain vertical and horizontal integration using Carnegie Steel and Standard Oil.
- ☐ I can tell the difference between winning customers by efficiency and winning by unfair practices.
- ☐ I can give an honest stakeholder scorecard with a 1–5 rating and a specific reason for each of the six.

OPTIONAL BOOKS AND GAMES FOR THIS UNIT

- ***The History of the Standard Oil Company*, by Ida M. Tarbell (1904)**: Free at Project Gutenberg. The famous investigation that led to Standard Oil’s breakup. Read the opening chapter on the oil regions with a parent for Lesson 4.3. Ages 13 and up.
- **“Wealth” (“The Gospel of Wealth”), by Andrew Carnegie (1889)**: Free at Project Gutenberg. Carnegie’s short essay arguing that the rich should give away their fortunes for the public good in their lifetimes. Read part of it with Lesson 4.2.
- **Acquire (board game)**: A family strategy game about founding and merging hotel chains and buying and selling shares. It shows mergers and shareholding in action. Ages 12 and up. Optional; never required.

Not required. Every project in this unit works without them. School Launch has no ties to these authors, publishers or companies.

LESSONS IN THIS UNIT

4.1 The Dutch East India Company: The First Public Company

4.2 Carnegie Steel and Vertical Integration

2 sessions of 50 minutes

4.3 Rockefeller's Standard Oil: Efficiency and Monopoly

2 sessions of 50 minutes

4.4 Sears and the Mail-Order Revolution

2 sessions of 50 minutes

UNIT 4 REVIEW

Answer each question. Show your work for every calculation and use complete sentences for explanations. The review is worth 100 points.

1. **6 pts**

Name the six stakeholders of a business, and explain why a business may be big without being great.

2. **8 pts**

How did the Dutch East India Company raise money, and why did a stock exchange make people more willing to invest?

3. **8 pts**

What is limited liability? Why does it matter to investors?

4. **8 pts**

Give the VOC's lowest two scores on the stakeholder scorecard and explain them.

5. **8 pts**

Explain the difference between vertical and horizontal integration, with an example from Carnegie Steel.

6. **10 pts**

A steelmaker buys ore at \$7 a ton (it costs the mine \$4) and coke at \$5 a ton (it costs \$3). He uses 1 ton of each for every ton of steel and makes 500,000 tons a year. How much would he save each year by owning the mine and the coke works?

7. (8 pts)

What did Andrew Carnegie argue in “The Gospel of Wealth,” and what did he do with his fortune?

8. (8 pts)

Name two of Standard Oil’s efficient methods and two of its unfair methods.

9. (10 pts)

Standard ships 20,000 barrels at a regular rate of 80¢ but gets a 20¢ rebate. A rival ships 2,000 barrels at the full rate, and Standard gets a 15¢ drawback on each of them. Find Standard’s freight cost per barrel, the rival’s, and the drawback money Standard receives.

10. (8 pts)

What did Ida Tarbell do, and what happened to Standard Oil in 1911?

11. (8 pts)

Name three things that helped Sears’s mail-order business grow.

12. (10 pts)

Short answer: Choose one of the four businesses in this unit. In five or six sentences, say whether it was great, using at least four of the six stakeholders and specific facts.

ANSWER KEY

1. Financiers, risk-takers, builders, workers, customers, community. A big business may earn a lot while harming workers, cheating customers or damaging its community; a great one creates real value and serves all six over a long time.
2. It sold shares to the public, from rich merchants to ordinary people. After 1612 the money stayed in the company, so investors could get cash only by selling shares to someone else; the Amsterdam Exchange let them sell any day, so their money was not trapped.
3. A shareholder can lose only what he paid for his shares, not his house or other savings. It lets ordinary people invest in risky ventures without risking ruin.
4. Workers (harsh conditions; many sailors died) and the community (the conquest of the Banda Islands, killing and enslaving people, and the use of slavery). It was very big and profitable, but not great.
5. Vertical: owning different steps of the same chain, such as Carnegie owning ore mines, coke ovens, ships and railroads. Horizontal: buying rivals at the same step, such as Carnegie buying the Homestead Works.
6. Savings per ton: $(\$7 - \$4) + (\$5 - \$3) = \$5$. $500,000 \times \$5 = \$2,500,000$ a year (before counting the cost of running the mine and coke works himself).
7. That the rich should live modestly and give their fortunes away for the public good during their lives; “the man who dies thus rich dies disgraced.” He paid for more than 2,500 libraries, Carnegie Hall, schools, universities and other gifts.
8. Efficient (any two): large modern refineries, using by-products, making its own barrels, tank cars and pipelines. Unfair (any two): secret rebates, drawbacks on rivals’ shipments, threats to rivals, cutting prices below cost to drive out local refiners, spying on rivals’ shipments.
9. Standard: $80¢ - 20¢ = 60¢$ a barrel (\$12,000 total). Rival: 80¢ a barrel (\$1,600). Drawback: $2,000 \times 15¢ = \$300$ to Standard.
10. She researched court records and documents for years and published a careful history of Standard Oil’s methods in McClure’s Magazine (1902–1904). In 1911 the Supreme Court, under the Sherman Antitrust Act of 1890, ordered it broken into 34 separate companies.
11. Any three: railroads and a Chicago base; Rural Free Delivery (1896); Parcel Post (1913); the money-back guarantee; buying in bulk and cutting out middlemen; the Chicago plant’s order schedule; a huge catalog of choices.

12. A good answer names the business, rates or discusses at least four stakeholders with specific facts from the lesson, weighs strengths against failings, and reaches a clear, reasoned judgment.

PORTFOLIO PIECE: A STAKEHOLDER REPORT

Choose one business: your family's business, a local store, farm or factory, or a historical business you have read about. Gather facts by interviewing the owner or a manager (with a parent present), visiting, and reading reliable sources. Write a two- to three-page report that tells the business's story, the main problems it had to solve, and how it raised its money. Include a stakeholder scorecard with a 1–5 rating and a specific reason for each of the six, the average score, a bar graph, and your judgment: Is it great, good, or only big? End with one thing the business does very well and one practical way it could serve a stakeholder better.

LOOK FOR	WHAT IT MEANS
Research	Real facts from an interview, a visit or reliable sources, with every source named.
Story and money	The business's beginning, main problems and how it was financed are clearly and accurately told.
Scorecard	All six stakeholders are rated with honest, specific reasons; the average and the graph are correct.
Fairness	The report shows strengths and weaknesses, avoids unfair guesses, and reaches a reasoned judgment.
Advice	Kind, practical and specific advice that would help the business serve its stakeholders better.

4.1 THE DUTCH EAST INDIA COMPANY: THE FIRST PUBLIC COMPANY

OBJECTIVES

- Tell how the Dutch East India Company (VOC) was founded in 1602 and how it raised money from ordinary citizens by selling shares.
- Explain shares, dividends, limited liability and a stock exchange.
- Weigh the VOC honestly with a stakeholder scorecard, including its use of force and slavery.
- Explain why a business can be big and profitable without being great.

Warm-up. Suppose a voyage to Asia and back takes two years and costs as much as a whole town earns in a year, and one ship in four may never return. Would you put your savings into it alone? What if a thousand neighbors each put in a little? Write what changes.

WATCH

How one of the most profitable companies in history rose to power - Adam Clulow

TED-Ed • 5:04

<https://www.youtube.com/watch?v=OxeTFB84e2k>

WHEN TO WATCH

After the story, before the stakeholder scorecard.

Note: Includes a brief, non-graphic account of the company's violence in the Banda Islands.

KEY TERMS

share (stock)

One of many equal parts of the ownership of a company.

dividend

A part of a company's profit paid out to its shareholders.

limited liability

The rule that a shareholder can lose only what he paid for his shares, not his house or other savings, if the company fails.

stock exchange

A market where shares are bought and sold.

chartered company

A company given special rights by a government, such as a monopoly on a trade, in return for serving the state.

CORE IDEAS

The story. Around 1600, Dutch merchants were sending small fleets around Africa to the East Indies to buy pepper, nutmeg, cloves and mace. A voyage took two years or more, storms and disease killed many sailors, and a single successful fleet could make its backers rich. But the many small Dutch companies were competing against each other in Asia and bidding up prices. In 1602 the government of the Dutch Republic merged them into one company, the *Vereenigde Oostindische Compagnie*, the United East India Company, called the VOC. It received a **charter** giving it the only right among the Dutch to trade east of the Cape of Good Hope, and the power to make treaties, build forts and wage war there.

How they figured it out. The VOC needed far more money than any family could supply, so it did something new: it invited the public to buy **shares**. Anyone could subscribe, from rich merchants to servants, and more than a thousand people did in Amsterdam alone, raising about 6.4 million guilders across all the company's chambers. At first investors expected to be paid back after ten years, but in 1612 the directors kept the money in the company permanently. So an investor who wanted his money back had to sell his shares to someone else, and a busy market in VOC shares grew up in Amsterdam. In 1611 the city opened a new Exchange building, the **Beurs**, where traders met every day at set hours. Shareholders had **limited liability**: they could lose their investment, but not more. The VOC paid its first **dividend** in 1610, partly in spices, and over its long life it paid large dividends many years. It became for a time the largest trading company in the world, with hundreds of ships and tens of thousands of employees.

The big idea. The VOC showed how a company can gather the savings of many people for a risky project too large for any one of them, and how a stock exchange lets owners sell their shares at any time instead of waiting for the company to pay them back. That is how most large companies are financed today. But the VOC also shows that a business can be enormous and profitable without being great. It held a monopoly backed by guns. In 1621, to control the nutmeg trade, the company's governor Jan Pieterszoon Coen conquered the Banda Islands; most of the Bandanese people were killed, driven out or enslaved. The company used enslaved people in its Asian towns and at its colony at the Cape of Good Hope. People are made in God's image and are never property, and no profit can justify such evil.

Stakeholder scorecard: the VOC, about 1700. *Financiers (shareholders):* 4. For most of two centuries, large dividends and a share that could be sold any day; but by the end, the company was deep in debt and its shares lost value. *Risk-takers (founding merchants and directors):* 4. Great wealth for the directors and merchants, though some later directors ran it badly and for themselves. *Builders (shipwrights, navigators, mapmakers, clerks):* 4. Fine ships, careful charts and a huge system of accounts and offices across the world. *Workers (sailors and soldiers):* 1. Low pay, harsh discipline, and voyages on which a large share of the men died of disease. *Customers:* 3. Spices, tea, porcelain and cloth became more available in Europe, but at monopoly prices. *Community:* 1. Dutch cities grew rich, but the peoples of the Banda Islands and others were conquered, enslaved or killed. Overall: one of the biggest businesses in history, and not a great one.

In business today. Shares, dividends, limited liability and stock exchanges are now ordinary parts of business life, and millions of families own small parts of companies, often through retirement savings. The VOC's dark side is a warning too: when a company holds too much power and answers to no honest rule, it may serve its shareholders while trampling everyone else. The company collapsed under debt and corruption and was dissolved at the end of 1799.

PICTURE STUDY



The Courtyard of the Old Exchange in Amsterdam, Emanuel de Witte, 1653 · Oil on panel · Museum Boijmans Van Beuningen, Rotterdam
Image: [Wikimedia Commons](#), public domain

Amsterdam's Exchange, built by the architect Hendrick de Keyser and opened in 1611, was a large courtyard surrounded by covered walks, built over a canal. Every weekday at set hours, merchants and brokers gathered here to buy and sell grain, goods, bills of exchange and shares of the Dutch East India Company. Each trade had its own spot, marked by numbered pillars. Emanuel de Witte painted this scene of the crowded courtyard about forty years after it opened.

Look closely

- Count the groups of people talking. What do you think they are doing?
- Look at the numbers or signs on the pillars, if you can see them. Why would traders of one kind of goods stand together?
- Look at the people's clothes. Do they look rich, plain or a mix? What does that tell you about Dutch merchants?
- Find any people who do not seem to be trading. What might they be doing there?

Talk about it

1. Why would a market for shares need a set place and set hours?

2. How did being able to sell a share here make people more willing to invest in the company?
3. The men in this courtyard grew rich on the VOC's trade. Which stakeholders of the company are not in the picture?

PROJECT

The Spice Voyage Company: Shares, Dividends and a Stock Market

Your family will found a company to send pretend ships to the Spice Islands. You will sell shares, roll dice for each voyage, pay dividends, trade shares at a stock exchange, and record the share price. Then you will give the real VOC an honest scorecard.

You will need

- Play money (\$100 for each investor) and slips of paper for share certificates
- Two dice
- Ledger notebook and graph paper
- Three or more family members as investors

Steps

1. Found the company: it needs \$300 to fit out 3 ships (\$100 each). Sell 30 shares at \$10 each. Write certificates: "The holder owns 1 share of the Spice Voyage Company." Record who owns how many shares.
2. **Voyage.** Roll one die for each ship. 1 = lost at sea (earns \$0); 2–3 = small cargo (\$150); 4–5 = good cargo (\$250); 6 = rich cargo (\$400). Add up the year's revenue.
3. Subtract the cost of next year's ships (\$300). Divide what is left among the 30 shares as a dividend. Record the dividend per share. If revenue is less than \$300, there is no dividend, and the company must decide what to do.
4. **The stock exchange.** After each year, any investor may sell shares to another at any price they agree on. Record every trade: Year, Seller, Buyer, Number of shares, Price per share.
5. Play five years. After each year, record the average trading price. Graph the share price over the five years.
6. Calculate each investor's total return: $(\text{money received from dividends and sales} + \text{value of shares still held at the last price} - \text{money paid}) \div \text{money paid} \times 100$.

7. Discuss: How did limited liability protect the investors? What would have happened to one rich family that paid for all three ships alone and lost two?
8. Make your own six-row scorecard for the real VOC, with a 1–5 rating and a reason for each. You may disagree with the lesson’s ratings, but you must give your reasons.

Tips

- The share price in your game moves because investors guess about future voyages. That is what share prices do on real stock exchanges.
- Keep the ledger carefully: every share must always belong to someone, and the total must stay 30.

Check your work

- ☐ I can explain shares, dividends, limited liability and a stock exchange.
- ☐ My ledger shows every share trade and the dividend each year, and my graph shows the share price.
- ☐ My VOC scorecard has a rating and an honest reason for each of the six stakeholders.

LEDGER NOTEBOOK

1. Draw a map of the VOC’s route from Amsterdam around the Cape of Good Hope to Batavia (now Jakarta) and the Spice Islands.
2. Copy your share-price graph and write one sentence about what made the price rise and fall.
3. Make the six-row scorecard as a bar graph. Under it, write in one sentence why a business may be big without being great.

From history. The oldest known share certificate in the world is a receipt for a VOC share bought in 1606 in the town of Enkhuizen. It was found in a city archive in 2010. In 1609 a merchant named Isaac Le Maire, a former director, also became the first known person to try to profit from a fall in VOC shares.

COMMON MISTAKES

- Thinking the VOC invented trade or companies. Merchants had formed partnerships for centuries; the VOC was the first to sell permanent shares to the general public that could be traded on an exchange.

- Thinking a profitable company must be a good one. The VOC paid rich dividends while doing grave harm.
- Thinking limited liability means investors cannot lose. They can lose everything they put in, but no more.

Make it a game · Voyage Shares. Launch a spice voyage that needs ten beans. Sell ten paper shares at one bean each to your parent and family. Draw a voyage card from a hidden stack: safe return pays two for one, lost ship pays nothing. Limited liability means investors lose only their shares. Hold a stock exchange afterward and trade shares.

4.2 CARNEGIE STEEL AND VERTICAL INTEGRATION

OBJECTIVES

- Tell the story of Andrew Carnegie from bobbin boy to the largest steelmaker in the world.
- Explain vertical and horizontal integration and calculate how owning the supply chain lowers cost.
- Weigh Carnegie Steel with a stakeholder scorecard, including its workers' long hours.
- Explain Carnegie's "Gospel of Wealth" and his giving.

Warm-up. To make a peanut-butter sandwich, list every step from the farm to your plate: wheat, flour, bread, peanuts, peanut butter, jar, store. If you owned the farm, the mill, the bakery and the store, which costs could you cut? Which new risks would you take on?

WATCH

John Rockefeller, Andrew Carnegie Monopoly Styles Explained

Mr. Droste History • 12:24

<https://www.youtube.com/watch?v=yubobVg3oSI>

WHEN TO WATCH

After the story, before the big idea. It compares Carnegie's vertical integration with Rockefeller's horizontal integration, a preview of Lesson 4.3.

BACKUP VIDEO

Man of Steel: Andrew Carnegie | The Gilded Age

American Experience | PBS • 1:17

<https://www.youtube.com/watch?v=vmbRtjN0gAk>

After the lesson, for a short clip from PBS.

KEY TERMS

vertical integration

Owning the businesses at different steps of making a product, from raw materials to finished goods to shipping.

horizontal integration

Buying or merging with competitors that do the same step, to become larger in one stage of an industry.

Bessemer process

A way of making steel cheaply by blowing air through melted iron to burn out impurities, invented in the 1850s.

economies of scale

Lower cost for each unit when a business produces in very large amounts.

philanthropy

Giving money and work for the good of others.

CORE IDEAS

The story. Andrew Carnegie was born in 1835 in Dunfermline, Scotland, the son of a hand-loom weaver whose trade was ruined by the new power looms. In 1848 the family emigrated to Allegheny, Pennsylvania, and twelve-year-old Andrew went to work as a bobbin boy in a cotton mill for \$1.20 a week. He became a telegraph messenger, then a telegraph operator, and then the assistant of Thomas Scott of the Pennsylvania Railroad, where he learned how a great railroad counted its costs. He invested his savings in sleeping cars, oil, bridges and ironworks. On a trip to Britain he saw the **Bessemer process** turning iron into steel cheaply, and he staked his future on it. In 1875 his Edgar Thomson Steel Works opened near Pittsburgh, named after the president of the Pennsylvania Railroad, his best customer for steel rails.

How they figured it out. Carnegie's rule was to keep costs lower than anyone else's. He bought the newest machines and tore out old ones as soon as better ones appeared, even if they still worked. He hired chemists to test ores, which few steelmakers then did. Then he went further. Rather than buy coke, the fuel for his furnaces, he partnered with Henry Clay Frick, who owned coke ovens. Rather than buy iron ore, he leased and bought ore lands near Lake Superior, then the ships to carry the ore across the Great Lakes and a railroad to bring it to his mills. Owning every step, from mine to mill to rail, is called **vertical integration**. He also bought

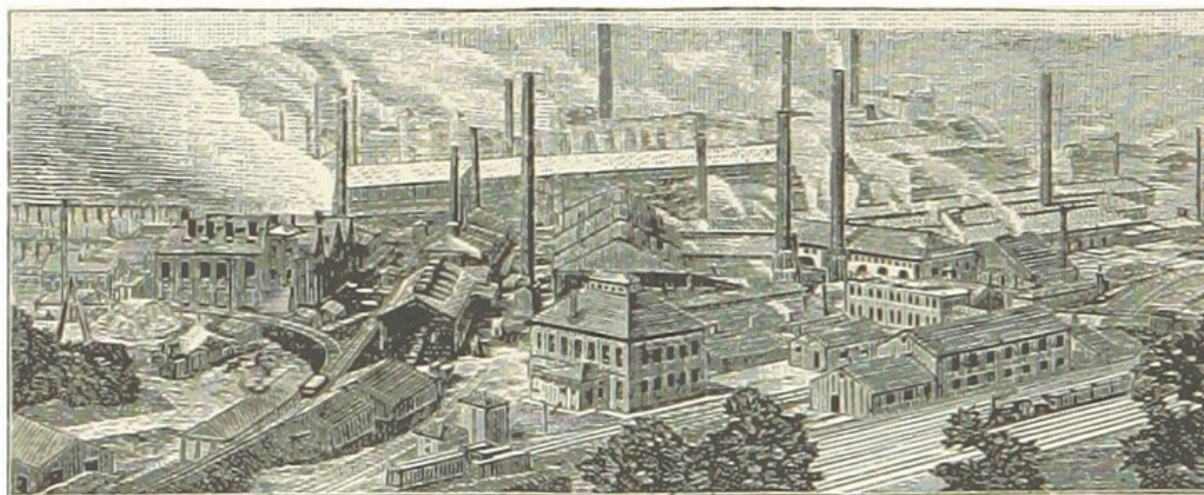
rival steelworks, including the Homestead Works in 1883: **horizontal integration**. The price of steel rails fell from more than \$100 a ton in the early 1870s to under \$20 by the late 1890s. In 1901 Carnegie sold his company to the banker J. P. Morgan for \$480 million, and Morgan combined it with others into U.S. Steel, the first company valued at more than a billion dollars.

The big idea. Vertical integration can lower costs, because each step no longer adds a supplier's profit, and it secures supply. Suppose a steelmaker buys ore for \$6 a ton from a mining company that spends \$4 to mine it, and coke for \$3 that costs \$2 to make. If he owns the mine and the coke ovens, he saves $\$2 + \$1 = \$3$ on the inputs for each ton. On a million tons a year, that is \$3,000,000. Big mills also have **economies of scale**: a huge furnace costs less to run per ton than a small one. But integration has risks: a company that owns everything must manage everything, and if demand falls, it is stuck with mines, ships and mills it cannot easily sell.

Stakeholder scorecard: Carnegie Steel, about 1900. *Financiers*: 5. Enormous profits for Carnegie and his partners, who were paid in full in 1901. *Risk-takers*: 5. Carnegie risked his savings on new technology and became one of the richest men in the world. *Builders*: 5. Engineers and chemists made steel better and cheaper than anywhere else. *Workers*: 2. Wages were often higher than on the farm, but many men worked twelve-hour shifts seven days a week, with a 24-hour "long turn" when shifts changed, in heat and danger; accidents were common, and in 1892 the company crushed the union at Homestead. *Customers*: 5. Cheap, strong steel for rails, bridges, buildings and machines. *Community*: 4. Pittsburgh grew into an industrial giant, though smoke filled its sky and its rivers; and Carnegie gave away most of his fortune.

In business today. Many companies still integrate vertically: some carmakers build their own batteries, some grocery chains own bakeries and dairies, and some technology firms design their own chips. In 1889 Carnegie wrote an essay later called "The Gospel of Wealth," arguing that a rich man should live modestly and give his fortune away for the public good while he lived, because "the man who dies thus rich dies disgraced." He paid for more than 2,500 public libraries, Carnegie Hall, schools and universities. His giving was real and great. Many have asked, though, whether more of his profits should first have gone to the men who worked the long turn.

PICTURE STUDY



BESSEMER : THE EDGAR THOMSON STEEL WORKS AND BLAST-FURNACES.

Bessemer: The Edgar Thomson Steel Works and Blast Furnaces, Unknown engraver, 1891 · Engraving, from a history of Pennsylvania · Braddock, Pennsylvania

Image: [Wikimedia Commons](#), public domain

This engraving was printed in 1891 in a book about Pennsylvania, when the Edgar Thomson Works at Braddock was one of the largest steel mills in the world. It was the first great mill Carnegie built, opened in 1875, and it is still making steel today.

Look closely

- Count the smokestacks and furnaces. What does that tell you about the size of the works?
- Look at the smoke. How do you think it affected the town and the people living nearby?
- Find the river. Why would a steel mill be built beside a river?
- Look for any people in the print. How large are they compared with the mill?

Talk about it

1. The engraver made the mill look grand and powerful. What is impressive about it, and what is troubling?
2. How does this picture show both the builders and the community stakeholders?
3. What would it have been like to work a twelve-hour shift in a place like this?

PROJECT

Own the Chain: A Vertical-Integration Cost Study

You will be a small manufacturer making a simple product at home, such as paper “steel rails” (folded strips of cardstock) or bookmarks. First you will buy your inputs from family “suppliers” who add a profit; then you will own the suppliers. You will calculate the cost per unit each way and weigh the risks.

You will need

- Cardstock or heavy paper, scissors, a ruler, glue or tape
- Play money and price cards for the suppliers
- A timer, a calculator and the ledger notebook

Steps

1. Set up three suppliers: a “mine” that cuts cardstock strips (sells at 8¢ a strip; its cost is 5¢), a “coke works” that cuts tape pieces (sells at 3¢; cost 2¢), and a “railroad” that carries finished rails to the customer (charges 4¢ a rail; cost 3¢).
2. **Buying from suppliers.** Make 20 rails, each needing 2 strips and 2 tape pieces, and ship them. Calculate your total cost and cost per rail.
3. **Owning the chain.** Now you own all three suppliers and pay only their costs. Calculate the new total cost and cost per rail for 20 rails.
4. Calculate the savings per rail and in percent: $(\text{old} - \text{new}) \div \text{old} \times 100$.
5. Scale it up: at Carnegie’s scale, a mill might make a million rails. Multiply your savings per rail by 1,000,000.
6. **The risk.** Suppose orders fall to 5 rails a month, but each supplier you own has fixed costs of 50¢ a month for its tools and space. Calculate your cost per rail now, owning the chain, and compare with buying from suppliers.
7. Write a paragraph: When is vertical integration wise, and when is it risky?
8. Make your own stakeholder scorecard for Carnegie Steel, with a reason for each rating, and write one sentence on what Carnegie could have done for his workers.

Tips

- Keep separate columns for each supplier's price and cost, so you can see exactly where the savings come from.
- Fixed costs do not go away when sales fall. That is the hidden risk of owning everything.

Check your work

- ☐ I can explain vertical and horizontal integration with an example of each.
- ☐ I calculated the cost per rail when buying and when owning the chain, and the percent saved.
- ☐ I can explain at least one risk of vertical integration.

LEDGER NOTEBOOK

1. Draw Carnegie's supply chain as a flow diagram: iron ore mines → Great Lakes ships → railroad → coke ovens and blast furnaces → steel mill → rails to railroads. Mark which parts he owned.
2. Make a timeline: 1835 born; 1848 emigrates; 1875 Edgar Thomson Works; 1883 buys Homestead; 1889 "Wealth" essay; 1901 sells to J. P. Morgan; 1919 dies.
3. Copy the Carnegie scorecard as a bar graph. Write a sentence explaining the lowest bar.

From history. Carnegie gave his first library to Dunfermline, his birthplace, in 1883. Towns that received a Carnegie library had to promise to provide the land and pay to run it every year, so that the gift would be a partnership with the community rather than charity alone.

COMMON MISTAKES

- Confusing vertical and horizontal integration. Vertical owns different steps of the same chain; horizontal buys rivals at the same step.
- Thinking low prices for customers mean every stakeholder was served well. Carnegie's customers got cheap steel, but his workers paid a heavy price in hours and danger.
- Thinking giving money away later cancels every earlier wrong. Generosity is good, but justice to workers comes first (James 5:4).

Make it a game • Chain Cost Duel. Your parent sets the market price of ore, coke and steel per ton. Guess how much cheaper a company saves per ton if it owns every step of the chain, then calculate. Closest guess wins. Explain vertical and horizontal integration, and tell how Andrew Carnegie went from bobbin boy to steel king.

Scripture. “For unto whomsoever much is given, of him shall be much required” (Luke 12:48, KJV)

Carnegie believed that great wealth was a trust to be used for others. Jesus teaches that the more we are given, the more God expects of us, in how we earn as well as in how we give.

4.3 ROCKEFELLER'S STANDARD OIL: EFFICIENCY AND MONOPOLY

OBJECTIVES

- Tell how John D. Rockefeller built Standard Oil from a Cleveland refinery into a company that refined about 90% of America's oil.
- Tell efficiency (lower costs, by-products, scale) from unfair practices (secret rebates and drawbacks, threats, spies).
- Explain Ida Tarbell's investigation and the 1911 breakup under the Sherman Antitrust Act.
- Weigh Standard Oil with a stakeholder scorecard.

Warm-up. Two bakeries sell bread in town. One sells cheaper because it uses a bigger oven and wastes nothing. The other sells cheaper because it secretly pays the only delivery driver in town to charge its rival double. Write which is fair competition and which is not, and why.

WATCH

How Rockefeller Built His Trillion Dollar Oil Empire

Business Casual • 9:07

<https://www.youtube.com/watch?v=9saLsvWcppw>

WHEN TO WATCH

After the story, before the big idea.

Note: An animated business history. Skip the short sponsor message near the start. Its title's "trillion dollar" figure is an estimate in today's money; focus on the methods it explains.

BACKUP VIDEO

Ida Tarbell, writer, investigative journalist, lecturer,, & Pittsburgher | History at Home

Senator John Heinz History Center • 3:11

<https://www.youtube.com/watch?v=oIY48OUVeU4>

With the paragraph on Ida Tarbell.

KEY TERMS

refinery

A factory that separates crude oil into useful products such as kerosene, gasoline and lubricating oil.

rebate

A part of a payment returned to the buyer; Standard Oil received secret discounts from railroads on its own shipments.

drawback

A payment a railroad secretly made to Standard Oil on its competitors' shipments, so that rivals' freight helped pay Standard.

trust

In business history, a group of companies placed under the control of one board of trustees so they act as one; it gave antitrust laws their name.

antitrust law

A law that forbids agreements and actions that destroy competition, such as the Sherman Antitrust Act of 1890.

CORE IDEAS

The story. John D. Rockefeller was born in 1839 in New York State and grew up in Ohio. At sixteen he found a job as an assistant bookkeeper in a Cleveland produce firm, and from his first small wages he gave to his Baptist church and to the poor, keeping careful accounts in a little book he called Ledger A. When oil was struck in Pennsylvania in 1859, Cleveland, with its railroads and lake shipping, became a refining center. In 1863 Rockefeller joined a partner in a refinery. In 1870 he and his partners, including Henry Flagler, formed the Standard Oil Company. Within ten years it refined about nine-tenths of all the oil in the United States.

How they figured it out. Some of Standard Oil's methods were true efficiency. It built the largest, most modern refineries, so the cost of each barrel fell. It made its own barrels and cans, bought its own tank cars and pipelines, and used parts of crude oil that others threw away, making lubricants, paraffin wax and petroleum jelly. Kerosene, the lamp oil that lit American homes, became far cheaper and more reliable. But other methods were not fair. Standard demanded secret **rebates** from railroads on its shipments, and in some cases secret **drawbacks** on its rivals' shipments, so that every barrel a competitor shipped put money in Standard's

pocket. In 1872 it bought out most of its Cleveland rivals in a few weeks, and owners who refused were told plainly they would be ruined. Later it cut prices below cost in one town after another until local refiners gave up, and gathered information on rivals' shipments. In 1882 it organized its many companies into the **Standard Oil Trust**.

The big idea. There are two ways to win customers. One is to serve them better: lower costs, better products, fair prices. The other is to stop rivals from serving them: secret deals, threats, and prices cut only until rivals are gone. Standard Oil did both. Ida Tarbell, whose father's small oil business in Pennsylvania had been squeezed by Standard, spent years studying court records and company documents, and from 1902 to 1904 published her careful history in *McClure's Magazine*. Congress had already passed the **Sherman Antitrust Act** in 1890, forbidding combinations that restrain trade and attempts to monopolize. In 1911 the Supreme Court ordered Standard Oil broken into 34 separate companies. The new companies competed with each other, and many of them still exist under other names.

Stakeholder scorecard: Standard Oil, about 1900. *Financiers (shareholders):* 5. Steady, very large dividends. *Risk-takers:* 5. Rockefeller became the richest man in America. *Builders:* 5. Refineries, pipelines and chemists that set the standard for the industry. *Workers:* 3. Standard paid steady wages and offered pensions to some workers, but the hours were long and refinery work was dangerous. *Customers:* 4. Cheap, safe, reliable kerosene of steady quality, the source of the company's name; but customers lost the protection of competition and in some towns paid more once rivals were gone. *Community:* 2. Jobs and great later giving, but many small refiners and oilmen were driven out by unfair means, and the company's power over railroads and lawmakers was a danger to an honest market.

In business today. Antitrust laws still forbid price-fixing, secret deals that shut rivals out, and abuse of monopoly power, while leaving companies free to grow by serving customers better. Rockefeller, for his part, gave away hundreds of millions of dollars in his lifetime: he founded the University of Chicago and the Rockefeller Institute for Medical Research, and paid for a campaign that nearly wiped out hookworm disease in the American South. His story asks a hard question of every businessperson: Do you win by being better, or by making others worse off? "A false balance is abomination to the LORD: but a just weight is his delight" (Proverbs 11:1).

PICTURE STUDY



Standard Oil Company Works, Cleveland, Unknown photographer, 1889 · Photograph · Cleveland, Ohio; Cleveland Public Library

Image: [Wikimedia Commons](#), public domain

Cleveland was where Standard Oil began, and by 1889 its works there had grown into a sprawling complex of stills, tanks and sheds, served by railroads and by Lake Erie. Photographs like this one show the size of the business that Ida Tarbell set out to investigate.

Look closely

- Count the storage tanks you can see. What do you think is in them?
- Find the railroad tracks and tank cars. Why were the railroads so important to Standard Oil's success, and to its unfair advantage?
- Look for smokestacks and sheds. Which parts are for refining and which for storage and shipping?

Talk about it

1. Which parts of this picture show efficiency, the kind of competition that helps customers?
2. How could a small refiner with one still compete with works like these? What would be fair, and what would not?
3. Which of the six stakeholders can you see signs of in this photograph?

PROJECT

Fair or Foul? The Standard Oil Case File

You will act as an investigator like Ida Tarbell. You will calculate how a railroad rebate and drawback changed the costs of Standard Oil and a small rival, sort Standard's methods into fair and unfair, and give the company your own stakeholder scorecard.

You will need

- Index cards
- A calculator and the ledger notebook
- Colored pencils (green and red)

Steps

1. **The freight problem.** The railroad's regular rate is \$1.00 a barrel. Standard Oil ships 10,000 barrels a month and receives a secret rebate of 25¢ a barrel. A small rival ships 1,000 barrels a month and pays the full rate. Calculate each company's freight cost per barrel and in total.
2. **The drawback.** Now the railroad also pays Standard 20¢ on every barrel the rival ships. Calculate how much the rival's freight puts in Standard's pocket each month.
3. Each refiner spends \$2.00 a barrel to refine. Add freight to find each company's total cost per barrel. If kerosene sells at \$3.10 a barrel, find each company's profit per barrel. What happens if Standard cuts its price to \$2.90?
4. Now separate fair from unfair: Suppose Standard's bigger refinery really cuts its refining cost to \$1.60 a barrel. Recalculate. Which part of Standard's advantage came from efficiency, and which from secret deals?
5. On index cards, write each of Standard's methods from the lesson: large refineries, using by-products, its own barrels, tank cars, pipelines, secret rebates, drawbacks, threats to rivals, price cuts to drive out local rivals, spying on shipments. Mark each card green (fair: serves customers better) or red (unfair: blocks rivals).
6. Write a one-page report as Ida Tarbell might have: What did Standard Oil do well? What did it do wrong? Should the law have broken it up?

7. Make your own six-row stakeholder scorecard for Standard Oil, with a 1–5 rating and a reason for each.

Tips

- Show the units on every line: dollars per barrel or dollars per month. Mixing them up is the most common mistake.
- Be fair to Rockefeller as Tarbell tried to be. She praised his genius for organization even as she exposed his methods.

Check your work

- ☐ I can calculate how rebates and drawbacks changed each refiner's costs.
- ☐ I can tell efficiency apart from unfair practices, with examples of each.
- ☐ I can explain why Standard Oil was broken up in 1911 under the Sherman Act.

LEDGER NOTEBOOK

1. Draw a diagram of how a drawback worked: the rival pays the railroad, the railroad pays Standard. Label the money.
2. Make a two-column chart of Standard Oil's methods: green for efficiency, red for unfair practices.
3. Make a timeline: 1839 born; 1855 first job as bookkeeper; 1859 oil struck in Pennsylvania; 1870 Standard Oil founded; 1882 the trust; 1890 Sherman Act; 1902–1904 Tarbell's history; 1911 breakup into 34 companies.

From history. Rockefeller kept his first account book, Ledger A, all his life. It records his tiny wages as a young bookkeeper, his gifts to his church and to the poor, and his small expenses down to the penny. He later said the habit of keeping accounts taught him to watch every cost.

COMMON MISTAKES

- Thinking Standard Oil was all bad. It made kerosene cheaper and better; the trouble was the unfair way it also destroyed rivals.
- Thinking being big is against the law. The Sherman Act forbids restraining trade and monopolizing by unfair means, not growing by serving customers well.
- Thinking the breakup destroyed the company's value. The 34 companies kept operating, and their shares together were worth more than before.

Make it a game • Standard Oil Trial. Hold a mock trial. As Rockefeller's lawyer, give three efficiencies, such as lower costs, by-products and scale. As the prosecutor, give three unfair practices, such as secret rebates, drawbacks, threats or spies. Your parent, the judge, decides whether the trust must be broken up. Then swap. Explain why antitrust law was needed.

4.4 SEARS AND THE MAIL-ORDER REVOLUTION

OBJECTIVES

- Tell how Richard Sears and Alvah Roebuck built a mail-order business that sold everything from watches to houses to farm families.
- Explain how Rural Free Delivery, Parcel Post and a money-back guarantee helped mail order grow.
- Explain how Sears processed thousands of orders a day with a timed schedule system.
- Weigh Sears with a stakeholder scorecard and calculate shipping and price comparisons.

Warm-up. Imagine you live on a farm in 1890, twenty miles from a small town with one general store. You need a new stove, a pair of boots and a schoolbook. List every problem you face in buying them. What would you hope for?

WATCH

The Sears Catalog: A Retail Revolution

Meghan Carter · 6:10

<https://www.youtube.com/watch?v=6bUbc32xxIU>

WHEN TO WATCH

After the story, before the order-processing project.

BACKUP VIDEO

The Life and Times of Richard Warren Sears - Sears, Roebuck and Company Co-Founder

Retail Rewind · 4:50

<https://www.youtube.com/watch?v=3ZuVMnZsac4>

For more about Richard Sears himself.

KEY TERMS

mail order

Selling goods by catalog or advertisement, taking orders by mail and shipping the goods to the customer.

Parcel Post

The Post Office's package service, begun in 1913, which let businesses mail heavier parcels cheaply.

middleman

A trader who stands between the maker and the buyer, such as a wholesaler or a local storekeeper, and adds a markup.

Rural Free Delivery

The U.S. Post Office's service, begun in 1896, of bringing mail to farm homes instead of making families collect it in town.

money-back guarantee

A seller's promise to return the customer's money if he is not satisfied with what he bought.

CORE IDEAS

The story. In 1886 Richard Sears was a young railroad station agent in North Redwood, Minnesota. A shipment of gold-filled watches arrived for a local jeweler, who refused it. Sears bought the watches himself and sold them to other station agents along the railroad, at a good profit. He started the R. W. Sears Watch Company, and when customers brought watches back for repair, he hired a young watchmaker, Alvah C. Roebuck, through a newspaper advertisement. They moved to Chicago, the great railroad hub, and began selling more and more goods by catalog. By the 1890s, Sears, Roebuck and Company's thick catalog offered clothing, tools, stoves, sewing machines, guns for hunting, medicines, toys, buggies and much more. Farm families called it the "wish book."

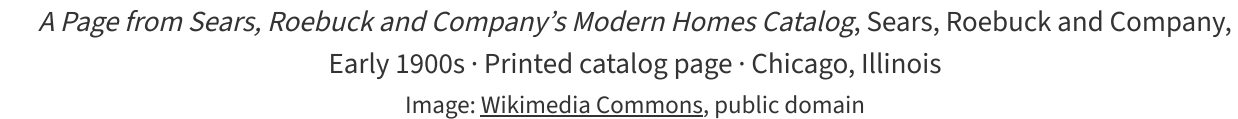
How they figured it out. Mail order had to solve three problems: reaching customers, earning their trust, and delivering the goods. The first was helped by the Post Office. **Rural Free Delivery**, begun in 1896, brought the mail, and the catalog, to farmhouse doors, and **Parcel Post**, begun in 1913, let Sears mail packages cheaply instead of by express. To earn trust from customers who could not see or touch the goods, Sears promised "satisfaction guaranteed or your money back" and wrote

friendly, plain descriptions. To deliver, Sears needed a giant system. Julius Rosenwald, a Chicago clothing maker who became a partner in 1895 and later president, built a huge new plant on Chicago's West Side, opened in 1906. There, each order was given a scheduled time to reach the shipping room, and goods traveled from every department on conveyors and chutes to meet it, so that thousands of orders could be filled each day. From 1908 Sears even sold kit houses by mail: tens of thousands of families built homes from precut lumber shipped by rail.

The big idea. Mail order cut out **middlemen**. A country storekeeper bought from a wholesaler, who bought from a maker, and each added a markup, while the store could carry only a few choices. Sears bought in huge amounts straight from makers, sold on thin margins, and offered thousands of choices. Suppose a stove costs a maker \$10 to produce. A wholesaler sells it to a country store for \$15, and the store sells it for \$22. Sears buys it from the maker for \$11 and sells it for \$16 plus \$2 freight, so the farmer pays \$18 instead of \$22 and has dozens of stoves to choose from. Sears earns only \$5 on each stove, but it sells tens of thousands.

Stakeholder scorecard: Sears, about 1910. *Financiers:* 5. In 1906 Sears raised money by selling shares to the public, and the company grew and paid well for decades. *Risk-takers:* 4. Richard Sears and Julius Rosenwald grew rich; Sears's bold, sometimes exaggerated advertising later had to be toned down. *Builders:* 5. The Chicago plant and its order schedule were an engineering wonder. *Workers:* 4. Thousands of clerks and packers had steady jobs; Rosenwald started a savings and profit-sharing plan for employees in 1916, though the work was fast and closely timed. *Customers:* 4. Low prices, wide choice and a real guarantee; but some early catalogs, like many of the time, also sold patent medicines with promises they could not keep. *Community:* 4. Small-town storekeepers lost business, and some towns protested, but farm families gained greatly; and Rosenwald gave generously, including helping build nearly 5,000 schoolhouses for rural children in the South.

In business today. Online sellers have taken mail order onto the internet, with the same three problems to solve: reaching customers, earning trust with honest descriptions, reviews and easy returns, and delivering fast with huge warehouses and schedules. Sears itself, after a century as America's largest retailer, failed to keep up and lost its lead to others. A business stays great only as long as it keeps serving its customers better than anyone else.



Look closely

- ## Talk about it

- School Launch · schoollaunch.org

3. Which stakeholders gained from the Sears house kits? Did anyone lose?

PROJECT

Run a Catalog Order Room

You will make a small catalog of household goods with honest descriptions and prices, compare the catalog price with a store's, and then run an order room, timing how fast your family can fill orders by two different methods.

You will need

- Paper, colored pencils and a stapler for the catalog
- 10 to 15 small household items to stand for goods (spoons, socks, pencils, books)
- Order forms on index cards, a timer and a calculator
- Ledger notebook and two or more helpers

Steps

1. Make a 4-page catalog with at least 10 items. For each, draw it, write an honest description (size, material, what it is good for, and one thing it is not good for) and a price. Add a guarantee in your own words.
2. **Middleman math.** For three of your items, invent a maker's cost. Calculate the price through a wholesaler (+50%) and then a store (+50% on the wholesaler's price), and compare with your catalog price (maker's cost + 30% + \$1 shipping). Which is cheaper for the customer?
3. Write 10 order cards, each asking for 2 to 4 items.
4. **Method 1.** One person fills each order alone, walking to each item, gathering it, and packing it in a bag. Time all 10 orders.
5. **Method 2, the Sears schedule.** Each helper is in charge of a "department" (a few items). The order clerk calls out an order, each department sends its items to the packing table, and the packer checks and bags them. Time all 10 orders.
6. Calculate orders per minute for each method and the percent change.
7. Record mistakes: wrong items or missing items in each method. Which method was faster? Which was more accurate?

8. Make your own six-row stakeholder scorecard for Sears, and write a paragraph on what an online store today has learned from it.

Tips

- An honest catalog tells customers what an item will not do, too. That is how trust is built when the customer cannot see the goods.
- Speed means little if the orders are wrong. Count accuracy as carefully as time.

Check your work

- ☐ I can explain how mail order cut out middlemen and calculate the price difference.
- ☐ I timed both order methods and calculated orders per minute and accuracy.
- ☐ My scorecard for Sears has a rating and a reason for each of the six stakeholders.

LEDGER NOTEBOOK

1. Draw the path of a stove from maker to farm family two ways: through a wholesaler and a country store, and through Sears by mail. Write the price at each step.
2. Make a timeline: 1886 Sears sells watches; 1887 hires Roebuck; 1893 Sears, Roebuck and Co.; 1895 Rosenwald joins; 1896 Rural Free Delivery; 1906 Chicago plant and public shares; 1908 first house kits; 1913 Parcel Post; 1925 first retail store.
3. Sketch one page of your catalog and circle the words that build trust.

From history. In 1925 Sears opened its first retail store, in Chicago, as more farm families bought cars and could drive to town. Within a few years Sears had hundreds of stores, and the company that began by selling to people far from stores became one of the largest store chains in the world.

COMMON MISTAKES

- Thinking Sears invented mail order. Aaron Montgomery Ward started a general mail-order catalog in Chicago in 1872; Sears became larger.
- Thinking low prices came from cheap quality. Much of Sears's advantage came from buying in bulk, cutting out middlemen and filling orders efficiently.

- Forgetting the losers. Small-town storekeepers lost business to mail order, and some towns resented it.

Make it a game • Order Room Rush. Your parent writes five mail orders for household items. You are the order room clerk: find each item, total the price with shipping, and write the order slip in ninety seconds. One order comes back as a refund under the money-back guarantee. Tell how Rural Free Delivery and Parcel Post helped Sears grow.

Scripture. “She perceiveth that her merchandise is good” (Proverbs 31:18, KJV)

The virtuous woman of Proverbs knows the quality of what she sells. A money-back guarantee is a seller’s promise that he, too, has checked that his merchandise is good.

GREAT BUSINESSES AND THEIR STAKEHOLDERS

What makes a business great? Not just being big, rich or famous. In this unit you will weigh four of the most powerful businesses in history by what they meant for their **six stakeholders**: the **financiers** who lent or invested the money, the **risk-takers** who founded and owned them, the **builders** who designed the products and the systems that made them, the **workers** who earned wages there, the **customers** who bought from them, and the **community** around them, from suppliers and neighbors to whole nations. A business is great when it creates real value and serves all six over a long time. It may be big without being great.

You will study the Dutch East India Company, the first company to sell shares to the public; Andrew Carnegie's steel company and its control of every step from mine to rail; John D. Rockefeller's Standard Oil, a marvel of efficiency that became a monopoly; and Sears, Roebuck and Company, whose catalog brought the city store to the farm. Each did real good, and each fell short, some of them gravely. You will learn to give an honest **stakeholder scorecard**, with a 1–5 rating and a reason for each of the six, and you will finish by writing a stakeholder report of your own.

PREREQUISITES

- Knows the six stakeholders and the scorecard (Grade 5, or read Lesson 4.1 slowly)
- Knows supply and demand, competition and monopoly (Unit 3)
- Can calculate averages, percents and percent change

MASTERY CHECKLIST

- ☐ I can name and explain the six stakeholders of a business, and explain why a business may be big without being great.
- ☐ I can explain how the Dutch East India Company raised money by selling shares, and what limited liability and a stock exchange are.
- ☐ I can explain vertical and horizontal integration using Carnegie Steel and Standard Oil.
- ☐ I can tell the difference between winning customers by efficiency and winning by unfair practices.
- ☐ I can give an honest stakeholder scorecard with a 1–5 rating and a specific reason for each of the six.

OPTIONAL BOOKS AND GAMES FOR THIS UNIT

- ***The History of the Standard Oil Company*, by Ida M. Tarbell (1904)**: Free at Project Gutenberg. The famous investigation that led to Standard Oil’s breakup. Read the opening chapter on the oil regions with a parent for Lesson 4.3. Ages 13 and up.
- **“Wealth” (“The Gospel of Wealth”), by Andrew Carnegie (1889)**: Free at Project Gutenberg. Carnegie’s short essay arguing that the rich should give away their fortunes for the public good in their lifetimes. Read part of it with Lesson 4.2.
- ***Acquire* (board game)**: A family strategy game about founding and merging hotel chains and buying and selling shares. It shows mergers and shareholding in action. Ages 12 and up. Optional; never required.

Not required. Every project in this unit works without them. School Launch has no ties to these authors, publishers or companies.

LESSONS IN THIS UNIT

4.1 The Dutch East India Company: The First Public Company

4.2 Carnegie Steel and Vertical Integration

2 sessions of 50 minutes

4.3 Rockefeller's Standard Oil: Efficiency and Monopoly

2 sessions of 50 minutes

4.4 Sears and the Mail-Order Revolution

2 sessions of 50 minutes

UNIT 4 REVIEW

Answer each question. Show your work for every calculation and use complete sentences for explanations. The review is worth 100 points.

1. **6 pts**

Name the six stakeholders of a business, and explain why a business may be big without being great.

2. **8 pts**

How did the Dutch East India Company raise money, and why did a stock exchange make people more willing to invest?

3. **8 pts**

What is limited liability? Why does it matter to investors?

4. **8 pts**

Give the VOC's lowest two scores on the stakeholder scorecard and explain them.

5. **8 pts**

Explain the difference between vertical and horizontal integration, with an example from Carnegie Steel.

6. **10 pts**

A steelmaker buys ore at \$7 a ton (it costs the mine \$4) and coke at \$5 a ton (it costs \$3). He uses 1 ton of each for every ton of steel and makes 500,000 tons a year. How much would he save each year by owning the mine and the coke works?

7. (8 pts)

What did Andrew Carnegie argue in “The Gospel of Wealth,” and what did he do with his fortune?

8. (8 pts)

Name two of Standard Oil’s efficient methods and two of its unfair methods.

9. (10 pts)

Standard ships 20,000 barrels at a regular rate of 80¢ but gets a 20¢ rebate. A rival ships 2,000 barrels at the full rate, and Standard gets a 15¢ drawback on each of them. Find Standard’s freight cost per barrel, the rival’s, and the drawback money Standard receives.

10. (8 pts)

What did Ida Tarbell do, and what happened to Standard Oil in 1911?

11. (8 pts)

Name three things that helped Sears’s mail-order business grow.

12. (10 pts)

Short answer: Choose one of the four businesses in this unit. In five or six sentences, say whether it was great, using at least four of the six stakeholders and specific facts.

ANSWER KEY

1. Financiers, risk-takers, builders, workers, customers, community. A big business may earn a lot while harming workers, cheating customers or damaging its community; a great one creates real value and serves all six over a long time.
2. It sold shares to the public, from rich merchants to ordinary people. After 1612 the money stayed in the company, so investors could get cash only by selling shares to someone else; the Amsterdam Exchange let them sell any day, so their money was not trapped.
3. A shareholder can lose only what he paid for his shares, not his house or other savings. It lets ordinary people invest in risky ventures without risking ruin.
4. Workers (harsh conditions; many sailors died) and the community (the conquest of the Banda Islands, killing and enslaving people, and the use of slavery). It was very big and profitable, but not great.
5. Vertical: owning different steps of the same chain, such as Carnegie owning ore mines, coke ovens, ships and railroads. Horizontal: buying rivals at the same step, such as Carnegie buying the Homestead Works.
6. Savings per ton: $(\$7 - \$4) + (\$5 - \$3) = \$5$. $500,000 \times \$5 = \$2,500,000$ a year (before counting the cost of running the mine and coke works himself).
7. That the rich should live modestly and give their fortunes away for the public good during their lives; “the man who dies thus rich dies disgraced.” He paid for more than 2,500 libraries, Carnegie Hall, schools, universities and other gifts.
8. Efficient (any two): large modern refineries, using by-products, making its own barrels, tank cars and pipelines. Unfair (any two): secret rebates, drawbacks on rivals’ shipments, threats to rivals, cutting prices below cost to drive out local refiners, spying on rivals’ shipments.
9. Standard: $80¢ - 20¢ = 60¢$ a barrel (\$12,000 total). Rival: 80¢ a barrel (\$1,600). Drawback: $2,000 \times 15¢ = \$300$ to Standard.
10. She researched court records and documents for years and published a careful history of Standard Oil’s methods in McClure’s Magazine (1902–1904). In 1911 the Supreme Court, under the Sherman Antitrust Act of 1890, ordered it broken into 34 separate companies.
11. Any three: railroads and a Chicago base; Rural Free Delivery (1896); Parcel Post (1913); the money-back guarantee; buying in bulk and cutting out middlemen; the Chicago plant’s order schedule; a huge catalog of choices.

12. A good answer names the business, rates or discusses at least four stakeholders with specific facts from the lesson, weighs strengths against failings, and reaches a clear, reasoned judgment.

PORTFOLIO PIECE: A STAKEHOLDER REPORT

Choose one business: your family's business, a local store, farm or factory, or a historical business you have read about. Gather facts by interviewing the owner or a manager (with a parent present), visiting, and reading reliable sources. Write a two- to three-page report that tells the business's story, the main problems it had to solve, and how it raised its money. Include a stakeholder scorecard with a 1–5 rating and a specific reason for each of the six, the average score, a bar graph, and your judgment: Is it great, good, or only big? End with one thing the business does very well and one practical way it could serve a stakeholder better.

LOOK FOR	WHAT IT MEANS
Research	Real facts from an interview, a visit or reliable sources, with every source named.
Story and money	The business's beginning, main problems and how it was financed are clearly and accurately told.
Scorecard	All six stakeholders are rated with honest, specific reasons; the average and the graph are correct.
Fairness	The report shows strengths and weaknesses, avoids unfair guesses, and reaches a reasoned judgment.
Advice	Kind, practical and specific advice that would help the business serve its stakeholders better.

UNIT 5

WORKERS, OWNERS AND FAIR RULES

Every business brings together two kinds of contribution. Owners bring **capital**: money, machines, buildings and the willingness to risk losing them. Workers bring **labor**: their time, strength, skill and care. Neither can produce much without the other, and both deserve honest dealing. Scripture is plain on both sides: “Thou shalt not oppress an hired servant that is poor and needy” (Deuteronomy 24:14), and “whatsoever ye do, do it heartily” (Colossians 3:23). When owners and workers trust each other, both prosper. When trust breaks down, both suffer, and so does the community around them.

In this unit you will study four chapters of that history, taught as settled history rather than as a present-day argument. You will see the Homestead strike of 1892, when trust between Carnegie’s company and its workers broke down. You will see Henry Ford’s \$5 day of 1914, a voluntary answer by an owner. You will see the Triangle fire of 1911 and the safety codes and workers’ compensation laws that followed, rules that worked. And you will see rules that went wrong, from Diocletian’s price edict of AD 301 to the price controls of the 1970s. The teaching point runs through all four: good rules act like a fair referee. They protect honest dealing, safety and children and keep any one side from abusing its power, while leaving people free to work, trade, build and give.

PREREQUISITES

- Knows the six stakeholders and the story of Carnegie Steel (Unit 4)
- Knows supply and demand and how to read a supply-and-demand graph (Unit 3)
- Can calculate percents, percent change and simple averages

MASTERY CHECKLIST

- ☐ I can explain why capital and labor need each other, and what each side contributes and risks.
- ☐ I can tell the story of the Homestead strike plainly and explain what it teaches about trust and bargaining.
- ☐ I can explain why Ford's \$5 day paid for itself, using turnover and productivity.
- ☐ I can explain how the Triangle fire led to safety codes and how workers' compensation works.
- ☐ I can use a supply-and-demand graph to show why a price ceiling causes a shortage, and tell rules that help from rules that hurt.

OPTIONAL BOOKS AND GAMES FOR THIS UNIT

- **Cornell University ILR School: Remembering the 1911 Triangle Factory Fire:** Free archive of documents, photographs, testimony and the new laws that followed the fire. Choose sources with a parent for Lesson 5.3; some photographs of the fire are distressing and are best skipped.
- **The Henry Ford museum: digital collections:** Free. Search "Five Dollar Day" or "Highland Park" for photographs and documents about Ford's workers in 1914, for Lesson 5.2.

Not required. Every project in this unit works without them. School Launch has no ties to these authors, publishers or companies.

LESSONS IN THIS UNIT

5.1 Capital and Labor: The Homestead Strike of 1892

2 sessions of 50 minutes

5.2 Ford's \$5 Day: A Voluntary Answer

2 sessions of 50 minutes

5.3 The Triangle Fire, Safety Codes and Workers' Compensation

2 sessions of 50 minutes

5.4 When Rules Help and When They Hurt: Price Controls

2 sessions of 50 minutes

UNIT 5 REVIEW

Answer each question. Show your work for every calculation and draw graphs where asked. Use complete sentences for explanations. The review is worth 100 points.

1. 8 pts

What do capital and labor each bring to a business, and what does each risk?

2. 8 pts

Tell plainly what happened at Homestead in 1892 and why it left both sides worse off.

3. 8 pts

What is collective bargaining? Name one person or law that helped make it peaceful.

4. 10 pts

A plant has 2,000 jobs and hires 6,000 workers in a year. What is its turnover rate? If each hire costs \$150, what does turnover cost a year? If higher pay cuts hires to 400, how much is saved?

5. 8 pts

Explain why Ford's \$5 day was good business, and name one way it fell short.

6. 8 pts

Name three causes of the deaths in the Triangle fire and the rule that later addressed each.

7. 8 pts

How does workers' compensation work? Why does it give employers a reason to make work safer?

8. **10 pts**

A company's payroll is \$2,000,000 and its rate is \$2.50 per \$100 of payroll. Find its premium. If the rate falls to \$1.75, how much does it save?

9. **8 pts**

What did Diocletian's Edict on Maximum Prices try to do, and what happened?

10. **10 pts**

At \$5 a pound, buyers want 300 pounds of beef and sellers offer 300. A ceiling of \$4 is set. At \$4, buyers want 360 pounds and sellers offer 220. What is the shortage? Name two ways the beef will be divided instead of by price.

11. **6 pts**

What is a price floor, and what does it cause if set above the market price?

12. **8 pts**

Short answer: In four or five sentences, explain the difference between a rule that acts as a fair referee and a rule that tries to command the score. Give one example of each from this unit.

ANSWER KEY

1. Capital brings money, machines and buildings and risks losing them; labor brings time, strength, skill and care and risks the worker's livelihood and sometimes safety.
2. When the union contract ended, the company cut pay rates, refused to deal with the union and locked workers out. Hired Pinkerton guards came by river on July 6 and a gun battle killed men on both sides; the militia reopened the mill with new workers and the strike collapsed. Workers lost jobs and their union, the company lost its good name, and the town lost its peace.
3. Talks between an employer and a union representing many workers to agree on a written contract. Samuel Gompers and the AFL focused unions on wages, hours and keeping contracts; a 1935 law set up union elections and required good-faith bargaining.
4. $6,000 \div 2,000 \times 100 = 300\%$. Cost $6,000 \times \$150 = \$900,000$. New cost $400 \times \$150 = \$60,000$; savings \$840,000.
5. It cut turnover and absenteeism, so Ford spent less on hiring and training and workers worked harder to keep good jobs; productivity and profits rose.
Shortcomings: home inspections by the Sociological Department, most women not eligible at first, the punishing pace, later violence against union organizers.
6. Locked door → doors unlocked and opening outward during work hours; one weak fire escape → standard stairways and fire escapes; flammable scraps and no sprinklers → sprinklers and storage rules; no practice → fire drills. Any three pairs.
7. Employers carry insurance that pays injured workers' medical bills and part of lost wages promptly, no matter who was at fault; workers give up most lawsuits. Premiums depend partly on the safety record, so fewer injuries mean lower premiums.
8. $2,000,000 \div 100 \times 2.50 = \$50,000$. New: $20,000 \times 1.75 = \$35,000$. Savings \$15,000.
9. It set maximum prices for more than a thousand goods and services, with death as the penalty, to stop rising prices caused largely by debased coins. People stopped bringing goods to market, prices rose further, there was bloodshed, and the edict was soon abandoned.
10. $360 - 220 = 140$ pounds. Any two: waiting in line; first come, first served; favoritism; limits per person or coupons; lower quality; black-market sales above \$4.

11. A legal minimum price; it causes a surplus because sellers offer more than buyers want at that price.
12. A good answer explains that referee rules protect honest dealing, safety and fair bargaining while leaving people free to work and trade (fire codes, workers' compensation, honest weights, laws for peaceful bargaining), while score-commanding rules fix outcomes such as prices, causing shortages, surpluses and black markets (Diocletian's edict, 1970s price controls).

PORTFOLIO PIECE: A FAIR-RULES CASEBOOK

Make a casebook of four short case studies, one page each: one labor dispute (Homestead or another from history), one voluntary answer by an employer (Ford's \$5 day, Hershey, Cadbury or a local business you interview), one rule that worked (a safety code, workers' compensation, honest weights or child-labor laws), and one rule that backfired (a price control from history). For each, tell the problem, what was done, what it cost, who gained and who bore the cost, with at least one calculation. End with a one-page essay: "What makes a rule a fair referee?"

LOOK FOR	WHAT IT MEANS
Accuracy	Each case is told accurately and plainly, with correct dates, names and facts, and without exaggeration.
Analysis	Each case names the problem, the solution, its costs, and who gained and who bore the cost.
Calculations	At least one correct calculation in each case (turnover, a premium, a shortage, a profit split), with the work shown.
Judgment	The essay reaches a clear, fair conclusion about good and bad rules, supported by the cases and by Scripture or sound reasoning.

5.1 CAPITAL AND LABOR: THE HOMESTEAD STRIKE OF 1892

OBJECTIVES

- Explain what capital and labor each contribute to a business and what each risks.
- Tell the story of the Homestead strike of 1892 plainly, including what each side wanted and what went wrong.
- Explain how peaceful bargaining and later laws gave workers and owners a fair way to settle disputes.
- Bargain over a wage with real numbers and calculate the cost of a breakdown to both sides.

Warm-up. Your family runs a lemonade stand. A parent paid for the cups, lemons and sugar (\$20) and you do the selling. You took in \$50. How should the \$30 profit be divided? Write a fair split and your reasons. Then ask your parent what he or she thinks.

WATCH

Uncovering Pittsburgh Stories: Homestead, Carnegie and the 1892 Strike

Senator John Heinz History Center • 28:38

https://www.youtube.com/watch?v=V3_8btgkjew

WHEN TO WATCH

After the story, with a parent. The first 15 minutes cover Carnegie, the mill and the strike.

Note: A recorded online talk from the Heinz History Center, Pittsburgh's history museum, with old photographs and maps. It is longer than most videos in this course; stop when you have heard the story of 1892.

KEY TERMS

capital

The money, machines, buildings and tools used to produce goods, and the owners' willingness to risk them.

labor

The work of people: their time, strength, skill and care.

union

An association of workers who bargain together with an employer over wages, hours and working conditions.

collective bargaining

Talks between an employer and a union, representing many workers, to agree on a written contract.

lockout

When an employer shuts workers out of the workplace during a dispute; a strike is when workers refuse to work.

CORE IDEAS

The story. Carnegie Steel's Homestead Works, on the Monongahela River near Pittsburgh, was one of the largest steel mills in the world. Its most skilled workers belonged to a **union**, the Amalgamated Association of Iron and Steel Workers, and their contract with the company was to end on June 30, 1892. Andrew Carnegie, spending the summer in Scotland, left the company in the hands of its chairman, Henry Clay Frick. The company had installed new machines that made each worker far more productive, and it proposed to cut the rates paid per ton of steel for many skilled men. Frick also meant to end the company's dealings with the union altogether. When the two sides could not agree, Frick built a high fence around the mill and shut the workers out: a **lockout**. The workers and the townspeople surrounded the mill to keep replacement workers out.

How they figured it out. They did not figure it out, at least not that summer. On July 6, 1892, about 300 armed guards from the Pinkerton detective agency, hired by the company, came up the river on barges before dawn to take the mill. A gun battle broke out at the riverbank, and men on both sides were killed. A week later the governor of Pennsylvania sent the state militia, and the mill reopened under guard with new workers. Then an outsider, a radical who was not part of the union, tried to kill Frick in his office; Frick survived, and public sympathy for the strikers fell away. By November the strike had collapsed. The union was broken at Homestead, and most of the steel industry had no unions for the next forty years. Carnegie later wrote that he regretted how it had ended. Both sides lost: the workers their jobs and their union, the company its good name, and the town its peace.

The big idea. Capital and labor need each other. A steel mill without workers is cold iron; workers without a mill have no way to make steel. Each side brings something

and risks something: owners risk their money, workers risk their livelihood and often their safety. When they bargain fairly, both can gain from rising productivity. In a peaceful kind of **collective bargaining**, workers choose representatives, both sides look at the facts, and they sign a written contract and keep it. Samuel Gompers, a cigar maker who led the American Federation of Labor from its founding in 1886, urged unions to focus on wages, hours and conditions and to bargain and keep contracts. In 1935 Congress set up a legal process by which workers can vote on whether to have a union, and employers must bargain in good faith with one they choose. Over time, steel companies and unions learned to sign long contracts and settle disputes without bloodshed.

Think it through. Scripture speaks to both sides. To employers: “Behold, the hire of the labourers who have reaped down your fields, which is of you kept back by fraud, crieth” (James 5:4). To workers: serve “not with eyeservice, as menpleasers; but in singleness of heart” (Colossians 3:22). And to both: keep your word. In the parable of the vineyard (Matthew 20:1-15), the owner and the laborers agree on a wage before the work begins, and the owner pays exactly what he promised. A clear agreement, honestly kept, is the beginning of peace between owners and workers.

In business today. Most disputes between employers and workers today are settled by conversation, written contracts, and, where workers have chosen a union, collective bargaining under the law. Good employers listen to workers, share information honestly, and pay fairly for rising productivity. Good workers give an honest day’s work. And when talks fail, the law sets fair rules for strikes and lockouts, so that neither side may use violence or fraud.

PICTURE STUDY



Homestead, Pennsylvania, 1902, Thaddeus M. Fowler, 1902 · Bird's-eye-view map (lithograph) · Library of Congress

Image: [Wikimedia Commons](#), public domain

Thaddeus Fowler made hundreds of bird's-eye-view maps of American towns, drawing them as if seen from a balloon. Ten years after the strike, this one shows Homestead and its great steel works along the river. Thousands of families lived in the rows of houses on the hillside, and nearly all of them depended on the mill.

Look closely

- Find the mill buildings and smokestacks along the river. How much of the picture do they fill?
- Find the workers' houses on the hill. How close are they to the mill?
- Look for churches, stores or schools. What else did a mill town need besides the mill?
- Find the river. How did goods, and the goods in 1892, come and go by water?

Talk about it

1. When the mill was shut in 1892, who in this picture lost income? Think beyond the steelworkers.
2. Why would trust between a company and its workers matter even more in a town that depends on one mill?

3. What could each side have done before July 6 to keep the peace?

PROJECT

The Bargaining Table

You and a parent will bargain over a wage for a small pretend factory using real numbers. You will calculate what each side gains from a deal, what each loses if talks break down, and what a fair agreement looks like.

You will need

- A calculator and the ledger notebook
- Two index cards for secret “walk-away” numbers
- A parent or sibling to play the other side

Steps

1. The facts: A small factory sells \$10,000 of goods a month. Materials cost \$4,000 and the owner must pay \$1,500 a month on the loan for the machines. Ten workers each earn \$300 a month now. A new machine has raised output 20%, so sales will rise to \$12,000 and materials to \$4,800.
2. Calculate the owner’s profit now: sales – materials – loan payment – wages. Then calculate the profit after the new machine if wages stay the same.
3. The workers ask for a raise to \$380 each. Calculate the owner’s profit if he agrees.
4. Each side secretly writes its walk-away number on a card: the lowest wage the workers will accept, or the highest the owner will pay. Do not show it.
5. Bargain for 10 minutes. Each side must give a reason for every offer, using the numbers. Write down every offer and counteroffer in a table.
6. **If talks break down.** Calculate the cost of a one-month shutdown to each side: the owner loses that month’s profit but still pays the loan; the workers lose a month’s wages.
7. Reveal the walk-away cards. Was there a range where both could have agreed? Did you find it?
8. Write a paragraph: What makes a wage agreement fair? How do the Homestead strike and the parable of the vineyard (Matthew 20:1-15) help you answer?

Tips

- Bargain over the numbers, not the people. Treat the other side with respect even when you disagree.
- A good agreement usually shares the gains from higher productivity, so both sides have a reason to keep improving.

Check your work

- ☐ I calculated the owner's profit before and after the new machine and the raise (now \$1,500; after the machine \$2,700; with the raise \$1,900).
- ☐ I can explain what capital and labor each bring and risk.
- ☐ I can tell the Homestead story plainly and explain what it teaches about trust and bargaining.

LEDGER NOTEBOOK

1. Draw a balance scale with “capital” on one side and “labor” on the other. List what each side brings and what each side risks.
2. Make a timeline: 1883 Carnegie buys Homestead; June 30, 1892 contract ends; July 6 gunfight at the river; July 12 militia arrives; November strike ends; 1935 law on union elections and bargaining; 1937 steel union recognized at U.S. Steel.
3. Write the offers and counteroffers from your bargaining game as a ledger, and circle the final agreement.

From history. In 1937, U.S. Steel, the company formed from Carnegie Steel, signed a contract with the steelworkers' union without a strike, after quiet talks between its chairman, Myron Taylor, and the union leader John L. Lewis. It was one of the first great peaceful agreements in the industry.

COMMON MISTAKES

- Thinking one side was entirely right and the other entirely wrong. Honest history shows mistakes and wrongs on more than one side.
- Thinking workers and owners are natural enemies. They need each other, and both gain when they bargain fairly and keep their agreements.
- Thinking violence settles disputes. At Homestead it left everyone worse off; written contracts and fair rules do far better.

Make it a game • Two Chairs. Sit in the capital chair and say what the owners contribute, want and risk. Then move to the labor chair and do the same for the workers. Your parent asks each chair a hard question in turn. Find three things both chairs want. Then tell the Homestead story of 1892 plainly: what each side wanted and what went wrong.

Scripture. “Behold, the hire of the labourers who have reaped down your fields, which is of you kept back by fraud, crieth” (James 5:4, KJV)

God hears when workers are cheated of their pay. Honest owners pay what they promise; honest workers give the work they promise.

5.2 FORD'S \$5 DAY: A VOLUNTARY ANSWER

OBJECTIVES

- Explain the problem of worker turnover at Ford's Highland Park plant in 1913.
- Tell how the \$5 day of January 1914 worked, including its rules and the Sociological Department.
- Calculate turnover rates and the cost of turnover, and explain why higher pay can pay for itself.
- Weigh the \$5 day as a voluntary, private answer to a labor problem, with its strengths and faults.

Warm-up. A store hires 10 new clerks every month because the old ones keep quitting. Each new clerk takes two weeks to learn the job. Write three costs the store pays because of all this quitting, even though no one sends it a bill.

WATCH

History of the Model T | The Henry Ford's Innovation Nation

The Henry Ford • 3:16

<https://www.youtube.com/watch?v=gglrbduPbQ0>

WHEN TO WATCH

Before the story, to see the Model T and the moving line that made the work so fast and repetitive.

Note: From The Henry Ford museum. Grade 5 also uses this short film; few good films on the \$5 day exist, and this one shows the factory work behind the turnover problem.

BACKUP VIDEO

HENRY FORD | Chapter 1 | AMERICAN EXPERIENCE | PBS

American Experience | PBS • 12:40

<https://www.youtube.com/watch?v=Vcr3YQK0eEY>

After the lesson, for Ford's early life from PBS's American Experience.

KEY TERMS

turnover

The rate at which workers leave and must be replaced; often measured as the number hired in a year divided by the average number of jobs, times 100.

efficiency wage

A wage set above the usual market rate so that workers stay, work harder and are easier to choose from, which can raise the company's profit.

paternalism

When an employer acts like a strict father to workers, controlling parts of their private lives for what he thinks is their good.

absenteeism

Workers missing work without warning.

profit-sharing

A plan in which workers receive part of a company's profit in addition to their wages.

CORE IDEAS

The story. In 1913 Henry Ford's engineers at the Highland Park plant in Michigan built the first moving assembly line for whole cars, and the time to assemble a Model T chassis fell from about twelve and a half hours to about an hour and a half. But the work on the line was fast, tiring and dull, repeated thousands of times a day. Men quit in great numbers. In 1913 Ford had to hire many tens of thousands of men to keep a workforce of about 14,000: a **turnover** rate of about 370 percent. On a typical day, about one worker in ten did not show up. Every new man had to be found, hired and trained, and new men made more mistakes and worked more slowly.

How they figured it out. On January 5, 1914, Ford and his partner James Couzens announced that the company would pay a minimum of \$5 a day for an eight-hour day, about double the usual pay of \$2.34 for nine hours. Most of it was called a share of the profits: a worker received his regular wage plus a profit-sharing bonus that brought him to \$5. The next morning, thousands of men crowded outside the plant hoping for jobs. The plan came with rules. To receive the full \$5, a worker had to have been with the company six months and to meet the standards of the company's

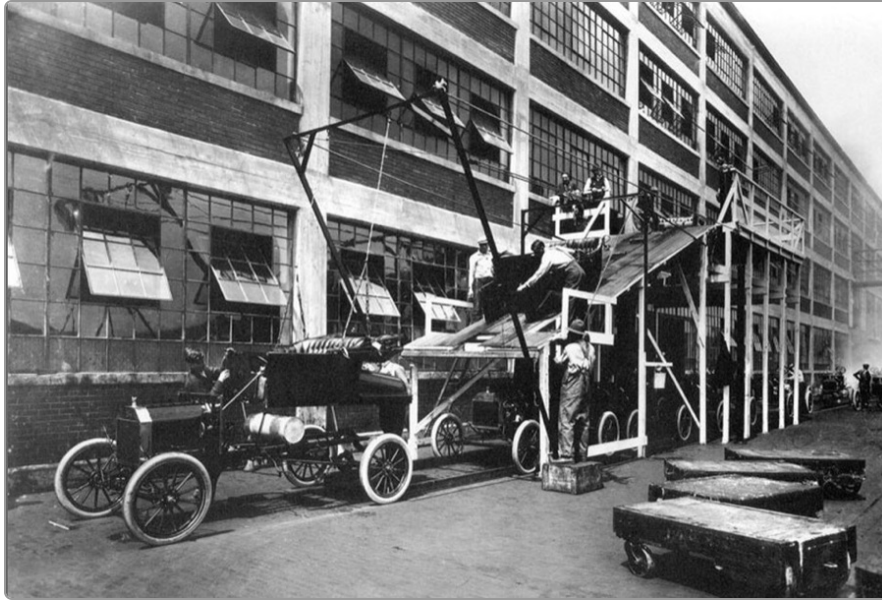
Sociological Department, whose investigators visited workers' homes to check that they were sober, thrifty and supporting their families. Turnover fell dramatically, absenteeism dropped, and productivity and profits rose. Henry Ford later called the \$5 day one of the finest cost-cutting moves he ever made.

The big idea. Higher pay can pay for itself. Economists call this an **efficiency wage**. Suppose that replacing a worker costs a factory \$100 in hiring, training and lost output, and that the factory has 1,000 jobs. At 370% turnover it hires 3,700 men a year, costing \$370,000. If higher pay cuts turnover to 20%, it hires only 200, costing \$20,000: a saving of \$350,000, before counting the extra effort of workers who want to keep a well-paid job. The \$5 day was a **voluntary** answer: no law required it. Ford chose it because it was good for workers and good for business at the same time, and other employers had to raise their pay to compete for workers.

Think it through. The \$5 day also had a darker side. The Sociological Department's home visits were a form of **paternalism**, a company judging how its workers lived, and many resented it; the department was later scaled back. Women at first were mostly not eligible for the full \$5. The pace of the line remained punishing. And in the 1930s Ford's company fought hard against workers who tried to form a union, with violence against organizers in 1937, before it finally signed a union contract in 1941. A good voluntary choice does not make every later choice good. In 1926 Ford also cut the workweek to five eight-hour days, one of the first large companies to do so, saying that workers with free time would also be customers for cars.

In business today. Many employers pay above the market rate to keep good workers, because turnover is expensive: some studies put the cost of replacing a worker at a large fraction of a year's pay. Companies also offer training, steady schedules and respect, because people stay where they are treated well. "Masters, give unto your servants that which is just and equal; knowing that ye also have a Master in heaven" (Colossians 4:1).

PICTURE STUDY



Lowering a Body onto a Chassis at Highland Park, Ford Motor Company photographer, 1913 ·
Photograph · Highland Park, Michigan
Image: [Wikimedia Commons](#), public domain

Ford's photographers recorded the new methods at Highland Park in 1913, the year the moving line began. Here car bodies were slid down a ramp and dropped onto finished chassis rolling past below. Each man did the same task again and again as the cars moved by. The new methods made cars far cheaper, and they also made the work so repetitive that men quit in great numbers, the problem the \$5 day was meant to solve.

Look closely

- Find the car body on the ramp and the chassis below. How do the workers bring them together?
- Count the workers. Is each doing the same task or a different one?
- Look at the huge windows of the factory. Why would Ford want so much daylight inside?

Talk about it

1. Why do you think so many men quit jobs like this in 1913, even though the pay was ordinary?
2. How would doubling the pay change the way a man felt about this job?

3. Which stakeholders gained most from these methods? Which paid the highest price?

PROJECT

What Does Turnover Cost? The \$5 Day Calculation

You will calculate Ford's turnover and the cost of replacing workers, decide whether doubling pay could pay for itself, and then interview a working adult about why people stay in or leave a job.

You will need

- A calculator or free spreadsheet, and the ledger notebook
- An adult who works (a parent, relative or family friend) to interview, with a parent present

Steps

1. **Turnover.** A plant has 14,000 jobs and hires 52,000 people in a year. Turnover rate = $\text{hires} \div \text{jobs} \times 100$. Calculate it.
2. **Cost of turnover.** Suppose each new hire costs \$40 to find and train and causes \$60 of lost output while learning. Calculate the yearly cost of turnover.
3. **The raise.** Raising pay from \$2.34 to \$5.00 a day for 14,000 workers for 300 working days costs how much more per year? (Increase per day $\times$ 14,000 $\times$ 300.)
4. **After the raise.** Suppose turnover falls to 16%, absenteeism falls from 10% to 2.5%, and output per worker rises 15% because men work harder to keep their jobs. Calculate the new turnover cost. Then estimate the extra output: if each worker's day used to produce \$10 of value, what is the yearly value of 15% more output (plus the days no longer missed)?
5. Make a table: Costs of the raise vs. Savings and gains. Did the \$5 day pay for itself in your model? Write your answer honestly, even if it did not quite.
6. Interview a working adult: Why do people stay at a job? Why do they leave? What matters besides pay? Record the answers.
7. Write a paragraph weighing the \$5 day: one way it was good for workers, one way it was good for Ford, and one way it fell short.

Tips

- Your model will not match Ford's real books exactly. The goal is to see why higher pay can make sense, and to test it with numbers.
- Keep the units clear: dollars per day, per worker, per year.

Check your work

- ☐ I calculated the turnover rate (about 371%) and the cost of turnover.
- ☐ I compared the cost of the raise with the savings and gains, and explained my result honestly.
- ☐ I can name a strength and a weakness of the \$5 day as a voluntary answer.

LEDGER NOTEBOOK

1. Draw a cycle diagram: dull, fast work → men quit → constant hiring and training → lost output. Then draw the new cycle after the \$5 day.
2. Make a bar graph of turnover before and after the \$5 day.
3. Write a short diary entry as a Ford worker in 1914 describing the day the investigator from the Sociological Department came to visit.

From history. Ford's \$5 day was front-page news across America and Europe. Some business leaders warned that it would ruin the company or upset other employers' workers. Instead, Ford's profits rose, and the price of the Model T kept falling for more than a decade.

COMMON MISTAKES

- Thinking the \$5 day was pure generosity. It was also a shrewd business decision that cut turnover and raised productivity.
- Thinking it was required by law. It was a voluntary choice by a private company.
- Thinking higher pay always pays for itself. It worked at Ford because turnover was very costly; in other businesses the numbers may not work out.

Make it a game • Turnover Cost Guess. At a pretend factory, each new worker costs 80 dollars to hire and train, and the plant loses 10,000 workers a year. First guess the yearly cost, then calculate. Closest wins. Repeat with half the turnover to show the \$5 day's possible payoff. Explain efficiency wage, profit-sharing and the Sociological Department.

Scripture. “Masters, give unto your servants that which is just and equal; knowing that ye also have a Master in heaven.” (Colossians 4:1, KJV)

Paul reminds employers that they answer to God for how they treat those who work for them. Ford found that a just wage was also a wise one.

5.3 THE TRIANGLE FIRE, SAFETY CODES AND WORKERS' COMPENSATION

OBJECTIVES

- Tell what happened at the Triangle Waist Company on March 25, 1911, and why so many died.
- Explain the safety and fire codes that followed, and why rules like these work.
- Explain how workers' compensation replaced lawsuits with insurance, and why it gave employers a reason to make work safer.
- Calculate a simple workers' compensation premium and see how a better safety record lowers it.

Warm-up. Walk through your home or church with a parent. Find every way out of the building, every smoke alarm and every fire extinguisher. Which exits would you use if there were a fire in the kitchen? Draw a quick map.

WATCH

Workers Compensation: A Historic Compromise

WCB Manitoba · 4:42

<https://www.youtube.com/watch?v=S0kSdG1GKu4>

WHEN TO WATCH

After the big idea, before the safety inspection.

Note: From the Workers Compensation Board of Manitoba. It tells how workers' compensation began in the early 1900s, in Canada as in the United States. It opens with a short acted scene of a worker hurt in a fall, without injury detail.

KEY TERMS

fire code

Rules for buildings that protect people from fire, such as exits, doors that open outward, sprinklers, fire escapes and fire drills.

negligence

Failing to take the care a reasonable person would take, so that someone is harmed.

workers' compensation

Insurance, required by law, that pays medical costs and part of lost wages to workers hurt on the job, without their having to sue.

premium

The price paid for insurance.

inspection

An official check that a building or workplace follows safety rules.

CORE IDEAS

The story. The Triangle Waist Company made women's blouses, called shirtwaists, on the top three floors of the ten-story Asch Building in New York City. About 500 people worked there, most of them young women and girls from immigrant families. Late in the afternoon of Saturday, March 25, 1911, just before quitting time, a fire started in a bin of cloth scraps on the eighth floor. It spread through the piles of cotton cloth and tissue paper in minutes. On the ninth floor, one of the doors to the stairs was locked, as the owners often kept it, to stop workers from leaving early or carrying out cloth. The single fire escape collapsed. The fire department's ladders reached only to the sixth or seventh floor. In less than half an hour, 146 workers died.

How they figured it out. The city was shaken. Tens of thousands of people walked in a funeral procession in the rain. The owners were tried for manslaughter and acquitted, because the jury was not sure they had known the door was locked. But New York did not stop there. In June 1911 the state set up a Factory Investigating Commission, which over four years visited thousands of factories, held public hearings and heard from workers, owners, firemen and engineers. Among those who testified and worked with it was Frances Perkins, a young social worker who had watched the fire from the street and later became U.S. Secretary of Labor. The commission's work led to dozens of new laws: doors that must open outward and stay unlocked during work hours, fire escapes and stairways built to standards, automatic sprinklers in tall factories, fire drills, limits on smoking, and regular **inspections**. Other states and cities followed.

The big idea. Before about 1910, a worker hurt on the job, or the family of a worker killed, usually had to sue the employer and prove **negligence**, which took years and

often failed, because courts let employers blame the worker or a fellow worker. In 1911 Wisconsin passed the first lasting state **workers' compensation** law, and within a decade most states had one. It was a bargain. Workers gave up the right to sue in most cases; in return, employers had to carry insurance that paid medical bills and part of lost wages promptly, no matter who was at fault. Because an employer's **premium** depends partly on its safety record, the law gave every business a money reason to make work safer. Suppose a company with 50 workers pays \$2 per \$100 of wages, and its payroll is \$1,500,000. Its premium is $\$1,500,000 \div 100 \times \$2 = \$30,000$. If a better safety record lowers the rate to \$1.50, it saves \$7,500 a year.

Who gained? Safety rules and workers' compensation cost money: sprinklers, wider stairs, inspectors and insurance premiums. Some small shops complained, and some had to move or close. But the gains were great: fewer deaths and injuries, prompt help for injured families, fewer bitter lawsuits, and workplaces where people could work without fear of being trapped. Rules like these are a fair referee: they set the same safety floor for every competitor, so that no owner can win by risking his workers' lives.

In business today. Every business you visit has signs marking exits, doors that open outward, extinguishers and smoke alarms, because of codes that trace back to fires like Triangle. Workers' compensation insurance is part of the cost of nearly every job. The Bible commanded a builder long ago: "thou shalt make a battlement for thy roof, that thou bring not blood upon thine house" (Deuteronomy 22:8). Safety is a way of loving your neighbor.

PICTURE STUDY



The Asch Building Today (now the Brown Building), Mico Filós, 2009 (building completed 1901) ·
Photograph · Washington Place and Greene Street, New York City
Image: [Wikimedia Commons](#), public domain

The Asch Building was new, built in 1901, and was considered fireproof: its walls, floors and stairs did not burn. But the cloth, paper and wooden tables inside did, and the building had too few ways out for so many workers on its top floors. The building still stands today; it is now called the Brown Building and belongs to New York University.

Look closely

- Count the floors. On which floors was the Triangle Waist Company?
- Look at the windows. How many workers do you think worked on each floor?
- Look for fire escapes or outside stairs. How many can you see?

Talk about it

1. The building itself did not burn. What does that teach about what makes a workplace safe?
2. What changes would you make to this building to protect the people inside?
3. Who should be responsible for safety in a building like this: the building owner, the company, the city or the workers? Why?

Safety first. This lesson tells about a fire in which many people died. It is told plainly and without graphic detail. Parents who look for more sources should preview them, since many photographs of the fire are distressing.

PROJECT

A Safety Inspection and a Premium Calculation

You will inspect your home, church or a family business (with a parent) as a fire inspector would, write an inspection report, and then calculate how a company's safety record changes its workers' compensation premium.

You will need

- A clipboard or the ledger notebook, a pencil and a flashlight
- A parent to go with you on the inspection
- A calculator

Steps

1. Make an inspection checklist with at least 10 items: exits marked and clear, doors open easily, smoke alarms tested, extinguisher present and charged, no blocked stairways, cords in good condition, flammable items stored safely, a meeting place outside, emergency numbers posted, a fire-escape plan.
2. With a parent, inspect one building. Mark each item Pass, Needs work or Fail, with a note.
3. Draw a floor plan with two ways out of each room marked in color.
4. Hold a family fire drill. Time how long it takes everyone to reach the meeting place. Record it.
5. **The premium.** A small factory has a payroll of \$800,000 a year. Its insurance rate is \$3.00 per \$100 of payroll. Calculate its yearly premium.
6. After the factory adds guards on machines and holds safety training, injuries fall and the insurer lowers the rate by 20%. Calculate the new rate and the yearly savings. If the guards and training cost \$3,000, how many years until they pay for themselves?
7. Write your inspection report with your findings, the drill time, and three recommendations, and give it to your parents.

Tips

- Test smoke alarms only with a parent, and do not touch electrical panels or wires.
- Be specific in your report: “The back door sticks” is more useful than “Some doors are bad.”

Check your work

- ☐ I can explain why so many died in the Triangle fire and which rules were made afterward.
- ☐ I can explain how workers’ compensation works and why it encourages safety.
- ☐ I calculated the premium (\$24,000), the new rate (\$2.40), the savings (\$4,800) and the payback time (under one year).

LEDGER NOTEBOOK

1. Draw your home’s floor plan with two ways out of each room, and the family meeting place outside.
2. Make a chart: Problem at Triangle → Rule that fixed it (locked door → doors unlocked and opening outward; one fire escape → standard stairways and escapes; no sprinklers → sprinklers; no practice → fire drills).
3. Write the workers’ compensation bargain in two columns: what workers gave up, and what they gained.

From history. Frances Perkins later said that the labor reforms of the 1930s really began on the day of the Triangle fire, March 25, 1911. As Secretary of Labor from 1933 to 1945, she helped write laws on wages, hours and Social Security. She was a devout Episcopalian who often went on quiet retreats at a convent to pray.

COMMON MISTAKES

- Thinking the building was the problem. The Asch Building was fireproof; the trouble was locked doors, too few exits, flammable materials and no sprinklers or drills.
- Thinking workers’ compensation means employers always admit fault. It pays injured workers no matter who was at fault, in exchange for fewer lawsuits.
- Thinking every safety rule is good just because it is a rule. Good safety rules address real dangers at a sensible cost; rules that do neither should be improved.

Make it a game • Safety Walk Premium. Walk your home with a checklist of safety items: clear exits, working smoke detector, secured cords, nothing blocking stairs. Look, don't touch. Each hazard found and fixed lowers a pretend insurance premium by a coin. Remember the Triangle Waist Company in 1911, and explain how workers' compensation and fire codes protect workers.

Scripture. “When thou buildest a new house, then thou shalt make a battlement for thy roof, that thou bring not blood upon thine house, if any man fall from thence.” (Deuteronomy 22:8, KJV)

In ancient Israel people used their flat roofs as living space, so God required a railing around the edge. This is one of the oldest building codes in the world: a builder is responsible for the safety of those who use what he builds.

5.4 WHEN RULES HELP AND WHEN THEY HURT: PRICE CONTROLS

OBJECTIVES

- Use a supply-and-demand graph to show why a price ceiling below the market price causes a shortage, and a price floor above it causes a surplus.
- Tell the history of Diocletian's Edict on Maximum Prices (AD 301) and the American price controls of 1971–1974.
- Explain the hidden costs of price ceilings: lines, lower quality and black markets.
- Tell rules that act as a fair referee from rules that try to command the score.

Warm-up. A popular game sells for \$60, and many stores have it. Suppose a law says no one may charge more than \$20 for it. Write what you think will happen to how many people want one, how many stores will sell it, and how you would get one.

WATCH

How Price Ceilings Create Shortages and Lower Quality

Marginal Revolution University • 6:26

<https://www.youtube.com/watch?v=RBGHmCIBr9M>

WHEN TO WATCH

After the story of Diocletian, before the big idea.

BACKUP VIDEO

Price Ceilings: The US Economy Flounders in the 1970s

Marginal Revolution University • 3:50

<https://www.youtube.com/watch?v=sq1zlj8s8R0>

With the 1970s story.

KEY TERMS

price ceiling

A legal maximum price; if it is set below the market price, it causes a shortage.

price floor

A legal minimum price; if it is set above the market price, it causes a surplus.

shortage

When buyers want more of something at the going price than sellers offer.

black market

Illegal buying and selling at prices above a legal limit, or of forbidden goods.

rationing

Dividing a scarce good by rules, such as coupons, waiting in line or a limit per person, instead of by price.

CORE IDEAS

The story. In the late 200s the Roman Empire had been paying its soldiers and bills by making coins with less and less silver in them. Prices rose and rose. In AD 301 the emperor Diocletian issued an **Edict on Maximum Prices**, carved in stone in towns across the eastern empire. It set the highest legal price for more than a thousand goods and services, from wheat, pork and shoes to a barber's shave and a teacher's lessons, and it threatened death to anyone who sold above the limit. A Christian writer of the time, Lactantius, wrote that people stopped bringing goods to market because they could not get a fair price for them, so that things became even dearer, and that blood was shed over small matters, until the law was set aside. Within a few years the edict was a dead letter, though Diocletian's officials kept issuing new coins.

How they figured it out. The lesson had to be learned again many times. On August 15, 1971, the same evening he closed the gold window, President Nixon froze nearly all wages and prices in the United States for 90 days to fight inflation. The controls were loosened and tightened in stages until April 1974. At first prices held, but then shortages appeared. In 1973, when the price of feed rose but the price of chicken and beef was held down, some farmers cut back on raising animals, and meat grew scarce in stores. Price controls on oil and gasoline lasted even longer and helped cause the long gas lines of 1973–1974 and 1979 (Lesson 3.4). When the controls on oil were finally ended in 1981, the lines disappeared, prices rose for a time, more oil was produced, and then prices fell.

The big idea. A **price ceiling** set below the market price makes the quantity demanded rise and the quantity supplied fall, so there is a **shortage**. Suppose at the market price of \$4 a gallon, buyers want 100 gallons and sellers offer 100. A law sets a ceiling of \$3. At \$3, buyers want 120 gallons, but sellers offer only 80. The 40-gallon

gap must be closed some other way: by waiting in line, by first-come-first-served, by friendship with the seller, by lower quality, or by an illegal **black market**. A **price floor** set above the market price does the opposite: sellers offer more than buyers want, and a **surplus** piles up. Prices are messages about scarcity; a law that forbids the message does not make the scarcity go away.

Think it through. Not every rule about markets hurts. Laws requiring honest weights and measures, true labels, safe food, kept contracts and fair courts make markets work better, because they protect honest dealing; they are like a referee who enforces the rules of the game. Price controls try to decide the score itself. Even then, people of good will have sometimes accepted them for short emergencies, as in World War II, when the government held prices down and **rationed** sugar, meat, gasoline and tires with coupon books so that soldiers and factories could be supplied; even then, black markets appeared. The wise question about any rule is: Does it protect honest dealing and safety, or does it try to command what people must pay, and what will people do in response?

In business today. Businesses and families still face rules of both kinds. Weights at the grocery store are checked by inspectors, food labels must tell the truth, and safety codes protect workers. When a price is held down by rule, look for lines, shortages and lower quality; when it is held up, look for surpluses. “A just weight and balance are the LORD’s” (Proverbs 16:11): God cares about honest measures, and so should every ruler and every seller.

PICTURE STUDY



"Keep the Home Front Pledge: Pay No More Than Ceiling Prices", U.S. Office of Price Administration, About 1943–1945 · Printed poster · U.S. National Archives

Image: [Wikimedia Commons](#), public domain

During World War II the U.S. government's Office of Price Administration set ceiling prices on many goods and rationed scarce items with coupon books and points. Posters like this one asked shoppers to promise not to pay more than the legal price or to buy without giving up their ration points. The very need for such posters shows how strong the temptation was to buy on the black market.

Look closely

- Read the words of the poster. What two promises does it ask shoppers to make?
- Look at the colors and lettering. How does the poster try to make shoppers feel?
- Look for any picture or symbol. What does it tell you about the war years?

Talk about it

1. Why would a shopper be tempted to pay more than the ceiling price? What does that tell you about the shortage?
2. What did "paying your points" mean, and why was rationing needed when prices could not rise?

3. Do you think wartime price controls were wise? What were their benefits and their costs?

PROJECT

The Ceiling Game: Prices, Shortages and Lines

You will run a small market for a snack at home, first at a free price and then under a price ceiling and a price floor. You will record what happens and draw the graphs.

You will need

- 12 identical small snacks or treats
- Play money: \$5 for each of four buyers
- Index cards, a timer, graph paper and the ledger notebook

Steps

1. Before playing, each buyer secretly writes the most he would pay for one snack. The seller (a parent) secretly writes the lowest price at which he would sell each of the 12 snacks (some cheap, some costly to make).
2. **Free market.** Buyers call out bids and the seller accepts offers until no more trades happen. Record the price of each trade and how many sold. Find the average price.
3. **Price ceiling.** A rule says no snack may sell for more than half the average price. The seller now sells only the snacks whose cost is below the ceiling. Buyers line up. Record how many snacks are sold, how many buyers wanted one, and how long the line took.
4. Discuss: Did anyone offer a “side payment” to get one? Did the seller make smaller snacks? Those are the black market and lower quality.
5. **Price floor.** A rule says no snack may sell for less than double the average price. Record how many sell and how many are left over.
6. Draw three supply-and-demand graphs: free market, ceiling (show the shortage), floor (show the surplus). Label each.
7. Write a paragraph comparing your game with Diocletian’s edict and the gas lines of the 1970s.
8. Finish with a list of three rules that help markets (like honest weights) and three that can hurt (like price ceilings), with a reason for each.

Tips

- The secret value cards are the key. They let you see the true demand and supply behind the bids.
- Be honest about side payments in the game. Noticing the temptation is part of the lesson.

Check your work

- ☐ I can draw a graph showing the shortage caused by a price ceiling and the surplus caused by a price floor.
- ☐ I can explain what happened after Diocletian's edict and after the price controls of the 1970s.
- ☐ I can tell a rule that acts as a fair referee from a rule that tries to command the price.

LEDGER NOTEBOOK

1. Copy the gasoline example as a graph: demand, supply, the \$4 market price, the \$3 ceiling, and the 40-gallon shortage between them.
2. Make a timeline of price controls: AD 301 Diocletian; 1942–1946 wartime controls and rationing; 1971–1974 wage and price controls; 1973 and 1979 gas lines; 1981 oil controls end.
3. Make a two-column chart: “Rules that act as a fair referee” and “Rules that try to command the price,” with three examples each.

From history. Pieces of Diocletian's edict have been found carved in stone in more than forty places, mostly in Greece, Turkey and Egypt. Because it lists prices and wages for so many goods and jobs, it is one of the best records historians have of everyday life in the Roman Empire.

COMMON MISTAKES

- Thinking a price ceiling makes goods cheaper for everyone. It makes them cheaper for those who can get them, and unavailable for many others.
- Thinking a shortage means there is less of a good. It means people want more at the legal price than sellers will supply.
- Thinking all government rules about markets are the same. Rules that protect honest dealing help markets work; rules that fix prices usually cause shortages or surpluses.

Make it a game • Emperor's Price Edict. You are Emperor Diocletian in AD 301 and announce a maximum price for bread, below what sellers will accept. Your parent plays the baker who hides bread to sell in a black market. Count what happens to supply and the line. Then try a price floor. Name the shortage or surplus and the American controls of 1971 to 1974.

Scripture. “A just weight and balance are the LORD’s: all the weights of the bag are his work.” (Proverbs 16:11, KJV)

God cares about honest measures. Good rules protect just weights and honest dealing; they do not try to change what things are really worth by decree.

UNIT 5

WORKERS, OWNERS AND FAIR RULES

Every business brings together two kinds of contribution. Owners bring **capital**: money, machines, buildings and the willingness to risk losing them. Workers bring **labor**: their time, strength, skill and care. Neither can produce much without the other, and both deserve honest dealing. Scripture is plain on both sides: “Thou shalt not oppress an hired servant that is poor and needy” (Deuteronomy 24:14), and “whatsoever ye do, do it heartily” (Colossians 3:23). When owners and workers trust each other, both prosper. When trust breaks down, both suffer, and so does the community around them.

In this unit you will study four chapters of that history, taught as settled history rather than as a present-day argument. You will see the Homestead strike of 1892, when trust between Carnegie’s company and its workers broke down. You will see Henry Ford’s \$5 day of 1914, a voluntary answer by an owner. You will see the Triangle fire of 1911 and the safety codes and workers’ compensation laws that followed, rules that worked. And you will see rules that went wrong, from Diocletian’s price edict of AD 301 to the price controls of the 1970s. The teaching point runs through all four: good rules act like a fair referee. They protect honest dealing, safety and children and keep any one side from abusing its power, while leaving people free to work, trade, build and give.

PREREQUISITES

- Knows the six stakeholders and the story of Carnegie Steel (Unit 4)
- Knows supply and demand and how to read a supply-and-demand graph (Unit 3)
- Can calculate percents, percent change and simple averages

MASTERY CHECKLIST

- ☐ I can explain why capital and labor need each other, and what each side contributes and risks.
- ☐ I can tell the story of the Homestead strike plainly and explain what it teaches about trust and bargaining.
- ☐ I can explain why Ford's \$5 day paid for itself, using turnover and productivity.
- ☐ I can explain how the Triangle fire led to safety codes and how workers' compensation works.
- ☐ I can use a supply-and-demand graph to show why a price ceiling causes a shortage, and tell rules that help from rules that hurt.

OPTIONAL BOOKS AND GAMES FOR THIS UNIT

- **Cornell University ILR School: Remembering the 1911 Triangle Factory Fire:** Free archive of documents, photographs, testimony and the new laws that followed the fire. Choose sources with a parent for Lesson 5.3; some photographs of the fire are distressing and are best skipped.
- **The Henry Ford museum: digital collections:** Free. Search "Five Dollar Day" or "Highland Park" for photographs and documents about Ford's workers in 1914, for Lesson 5.2.

Not required. Every project in this unit works without them. School Launch has no ties to these authors, publishers or companies.

LESSONS IN THIS UNIT

5.1 Capital and Labor: The Homestead Strike of 1892

2 sessions of 50 minutes

5.2 Ford's \$5 Day: A Voluntary Answer

2 sessions of 50 minutes

5.3 The Triangle Fire, Safety Codes and Workers' Compensation

2 sessions of 50 minutes

5.4 When Rules Help and When They Hurt: Price Controls

2 sessions of 50 minutes

UNIT 5 REVIEW

Answer each question. Show your work for every calculation and draw graphs where asked. Use complete sentences for explanations. The review is worth 100 points.

1. **8 pts**

What do capital and labor each bring to a business, and what does each risk?

2. **8 pts**

Tell plainly what happened at Homestead in 1892 and why it left both sides worse off.

3. **8 pts**

What is collective bargaining? Name one person or law that helped make it peaceful.

4. **10 pts**

A plant has 2,000 jobs and hires 6,000 workers in a year. What is its turnover rate? If each hire costs \$150, what does turnover cost a year? If higher pay cuts hires to 400, how much is saved?

5. **8 pts**

Explain why Ford's \$5 day was good business, and name one way it fell short.

6. **8 pts**

Name three causes of the deaths in the Triangle fire and the rule that later addressed each.

7. **8 pts**

How does workers' compensation work? Why does it give employers a reason to make work safer?

8. **10 pts**

A company's payroll is \$2,000,000 and its rate is \$2.50 per \$100 of payroll. Find its premium. If the rate falls to \$1.75, how much does it save?

9. **8 pts**

What did Diocletian's Edict on Maximum Prices try to do, and what happened?

10. **10 pts**

At \$5 a pound, buyers want 300 pounds of beef and sellers offer 300. A ceiling of \$4 is set. At \$4, buyers want 360 pounds and sellers offer 220. What is the shortage? Name two ways the beef will be divided instead of by price.

11. **6 pts**

What is a price floor, and what does it cause if set above the market price?

12. **8 pts**

Short answer: In four or five sentences, explain the difference between a rule that acts as a fair referee and a rule that tries to command the score. Give one example of each from this unit.

ANSWER KEY

1. Capital brings money, machines and buildings and risks losing them; labor brings time, strength, skill and care and risks the worker's livelihood and sometimes safety.
2. When the union contract ended, the company cut pay rates, refused to deal with the union and locked workers out. Hired Pinkerton guards came by river on July 6 and a gun battle killed men on both sides; the militia reopened the mill with new workers and the strike collapsed. Workers lost jobs and their union, the company lost its good name, and the town lost its peace.
3. Talks between an employer and a union representing many workers to agree on a written contract. Samuel Gompers and the AFL focused unions on wages, hours and keeping contracts; a 1935 law set up union elections and required good-faith bargaining.
4. $6,000 \div 2,000 \times 100 = 300\%$. Cost $6,000 \times \$150 = \$900,000$. New cost $400 \times \$150 = \$60,000$; savings \$840,000.
5. It cut turnover and absenteeism, so Ford spent less on hiring and training and workers worked harder to keep good jobs; productivity and profits rose.
Shortcomings: home inspections by the Sociological Department, most women not eligible at first, the punishing pace, later violence against union organizers.
6. Locked door → doors unlocked and opening outward during work hours; one weak fire escape → standard stairways and fire escapes; flammable scraps and no sprinklers → sprinklers and storage rules; no practice → fire drills. Any three pairs.
7. Employers carry insurance that pays injured workers' medical bills and part of lost wages promptly, no matter who was at fault; workers give up most lawsuits. Premiums depend partly on the safety record, so fewer injuries mean lower premiums.
8. $2,000,000 \div 100 \times 2.50 = \$50,000$. New: $20,000 \times 1.75 = \$35,000$. Savings \$15,000.
9. It set maximum prices for more than a thousand goods and services, with death as the penalty, to stop rising prices caused largely by debased coins. People stopped bringing goods to market, prices rose further, there was bloodshed, and the edict was soon abandoned.
10. $360 - 220 = 140$ pounds. Any two: waiting in line; first come, first served; favoritism; limits per person or coupons; lower quality; black-market sales above \$4.

11. A legal minimum price; it causes a surplus because sellers offer more than buyers want at that price.
12. A good answer explains that referee rules protect honest dealing, safety and fair bargaining while leaving people free to work and trade (fire codes, workers' compensation, honest weights, laws for peaceful bargaining), while score-commanding rules fix outcomes such as prices, causing shortages, surpluses and black markets (Diocletian's edict, 1970s price controls).

PORTFOLIO PIECE: A FAIR-RULES CASEBOOK

Make a casebook of four short case studies, one page each: one labor dispute (Homestead or another from history), one voluntary answer by an employer (Ford's \$5 day, Hershey, Cadbury or a local business you interview), one rule that worked (a safety code, workers' compensation, honest weights or child-labor laws), and one rule that backfired (a price control from history). For each, tell the problem, what was done, what it cost, who gained and who bore the cost, with at least one calculation. End with a one-page essay: "What makes a rule a fair referee?"

LOOK FOR	WHAT IT MEANS
Accuracy	Each case is told accurately and plainly, with correct dates, names and facts, and without exaggeration.
Analysis	Each case names the problem, the solution, its costs, and who gained and who bore the cost.
Calculations	At least one correct calculation in each case (turnover, a premium, a shortage, a profit split), with the work shown.
Judgment	The essay reaches a clear, fair conclusion about good and bad rules, supported by the cases and by Scripture or sound reasoning.

ENTREPRENEURSHIP AND SALES

An **entrepreneur** is a person who sees a need, imagines a way to meet it, gathers the money, people and materials to try, and takes the risk of failing. Entrepreneurs are a kind of steward: they take what God has given, ideas, time, savings and other people's trust, and try to make it bear fruit, as the faithful servants did in the parable of the talents (Matthew 25:14-30). In this unit you will study how four famous businesses did the hard, practical work of entrepreneurship.

You will visit Thomas Edison's "invention factory" at Menlo Park, where inventing itself became a business. You will compare the ways of raising money, from J. P. Morgan's investors to Bill Hewlett and Dave Packard's \$538 and a garage. You will learn the steps of an honest sale from John H. Patterson's National Cash Register Company, which trained the first modern salesmen and also crossed lines it should not have crossed. And you will see how a brand is a promise, in the story of the Coca-Cola bottle. Throughout, you will practice honest persuasion: telling the truth about what you sell, listening to what customers need, and keeping your word.

PREREQUISITES

- Knows supply and demand, competition and profit (Units 3 and 4)
- Can calculate percents, simple interest and break-even (earlier grades or Grade 5)
- Can make a table and a bar graph

MASTERY CHECKLIST

- ☐ I can explain how Edison organized invention as a business and why an invention must meet a real need at a price people will pay.
- ☐ I can compare savings, loans, partners and equity investors as ways to raise money, with the costs and risks of each.
- ☐ I can describe the steps of an honest sales process and tell honest persuasion from manipulation.
- ☐ I can explain what a brand and a trademark are and why a brand is a promise that must be kept.
- ☐ I can calculate interest on a loan, an investor's share of profits, and the value of a returning customer.

OPTIONAL BOOKS AND GAMES FOR THIS UNIT

- **Thomas Edison National Historical Park**: Free pages from the National Park Service on Edison's laboratories, his notebooks and his inventions. Good background for Lesson 6.1.
- **The Toothpaste Millionaire, by Jean Merrill**: A funny classic novel about a boy who starts a toothpaste company, figures his costs and raises money from classmates. Ages 9–13. Read alongside Lessons 6.2 and 6.4. Search the title on the publisher's site.
- **Next Gen Personal Finance (NGPF)**: Free lessons and activities on entrepreneurship, financing a business and consumer skills, written for middle and high school students.

Not required. Every project in this unit works without them. School Launch has no ties to these authors, publishers or companies.

LESSONS IN THIS UNIT

6.1 Edison's Menlo Park: The Invention Factory

2 sessions of 50 minutes

6.2 Raising Money: Savings, Loans, Partners and Investors

2 sessions of 50 minutes

6.3 Honest Persuasion: The Sales Process at National Cash Register

2 sessions of 50 minutes

6.4 Brands and Trust: The Coca-Cola Bottle

2 sessions of 50 minutes

UNIT 6 REVIEW

Answer each question. Show your work for every calculation and use complete sentences for explanations. The review is worth 100 points.

1. 8 pts

What was new about Edison's Menlo Park laboratory as a way of doing business?

2. 8 pts

What is the difference between an invention and an innovation? Use Edison's vote recorder and his electric light as examples.

3. 8 pts

Why did Edison have to invent a whole system, not just a light bulb?

4. 8 pts

Name four ways to raise money for a business and one risk of each.

5. 10 pts

You need \$8,000. A bank offers a one-year loan at 9%. An investor offers \$8,000 for 20% of your profits each year. If your business earns \$15,000 profit a year, what does each option cost in the first year? What if it earns \$2,000?

6. 8 pts

How did Hewlett and Packard finance their company, and what did they gain by doing it that way?

7. (8 pts)

List the seven steps of an honest sales process.

8. (8 pts)

Give two of John H. Patterson's good sales ideas and two of NCR's unfair practices.

9. (8 pts)

What is the difference between honest persuasion and manipulation? Give an example of each.

10. (8 pts)

Why did the Coca-Cola Company want a distinctive bottle in 1915, and how was it designed?

11. (10 pts)

A family buys 3 jars of your jam a month, and you earn \$1.50 profit per jar. If they keep buying for 4 years, what is their customer lifetime value? What would losing them cost?

12. (8 pts)

Short answer: In four or five sentences, explain why a brand is a promise and how a small business can build and protect a good name.

ANSWER KEY

1. It organized invention itself as a business: a team of specialists, tools and a budget, careful notebooks, and a steady goal of producing useful, sellable inventions, funded by investors and the sale of earlier inventions.
2. An invention is a new idea that works; an innovation is one people actually buy and use. The vote recorder worked but no one wanted it. The electric-light system met a real need at a price that could compete with gas, so it was adopted.
3. A bulb is useless without electricity reaching it, so customers needed generators, wires, switches, fuses, sockets and meters. Edison's team designed all of them so the light could be sold to paying customers.
4. Savings/profits (slow growth); loans (must be repaid with interest even if the business fails; collateral may be lost); partners (disagreements, shared debts); equity investors (give up part of profits and control for as long as they own shares).
5. Loan: $8,000 \times 0.09 = \$720$ either way (plus repaying the \$8,000). Investor: $20\% \times 15,000 = \$3,000$; $20\% \times 2,000 = \$400$. The loan is cheaper if profits are high; the investor is cheaper if profits are low, and nothing must be repaid if the business fails.
6. They started with about \$538 in a rented garage and grew from their own profits (bootstrapping), avoiding long-term debt. They kept ownership and control and never risked failure from being unable to repay a lender, though growth was slower.
7. Prepare, approach, ask about needs (needs discovery), demonstrate, answer objections, close, follow up.
8. Good (any two): the Primer, a sales school, territories and fair commissions, learning the merchant's problems, demonstrations. Unfair (any two): false claims about rivals' machines, selling imitation machines below cost to drive rivals out, pressuring customers; leaders were convicted under antitrust law in 1913.
9. Honest persuasion gives true reasons and leaves the customer free to choose (demonstrating how a product solves his problem, admitting its limits). Manipulation uses tricks, pressure or false impressions (false urgency, hidden fees, lying about a competitor).
10. Imitators sold look-alike drinks in similar bottles, confusing customers. The company asked for a bottle recognizable by touch in the dark or when broken;

Earl R. Dean at the Root Glass Company based it on a drawing of a cocoa pod, and it was patented in 1915.

11. $3 \times 1.50 \times 12 \times 4 = \$216$. Losing them costs \$216 in future profit, plus any friends they might have sent.
12. A good answer explains that customers trust a brand to give the same quality each time; keeping that promise earns repeat customers and their friends; breaking it loses trust quickly. A small business protects its name by consistent quality, honest labels and claims, making things right when something goes wrong, and never copying others. May cite Ecclesiastes 7:1 or Proverbs 22:1.

PORTFOLIO PIECE: A BUSINESS PLAN FOR MARKET DAY

Write a three- to four-page business plan for the product you will sell at the family market day. Include: the need it meets and who your customers are (with at least five short customer interviews); results of a small test of your product, recorded like a lab notebook; your start-up costs and how you will pay for them, comparing at least two ways; your brand, with a sample label; your price and break-even point; and your one-page honest sales primer. End with the risks you see and how you will handle them.

LOOK FOR	WHAT IT MEANS
Customer need	The plan shows real evidence of a need, from at least five interviews, and describes the customers clearly.
Testing	A fair test of the product is recorded with dates, results and at least one improvement.
Money	Start-up costs, financing choice, price and break-even are calculated correctly, with work shown.
Brand and sales	The brand and label are honest and clear, and the sales primer follows the seven steps without manipulation.
Risks	The plan names real risks and sensible ways to handle them, counting the cost as in Luke 14:28.

6.1 EDISON'S MENLO PARK: THE INVENTION FACTORY

OBJECTIVES

- Tell how Thomas Edison built a laboratory at Menlo Park in 1876 to produce inventions as a business.
- Explain why Edison invented a whole electric-light system, not just a bulb, and how he tested thousands of materials.
- Explain the difference between an invention and an innovation that customers will buy.
- Run a test series, keep a lab notebook, and judge an idea by cost and usefulness.

Warm-up. Think of an everyday problem in your home: a door that sticks, a drawer that is always messy, a pet that spills its water. Write three different ways to fix it. For each, guess what it would cost and whether others would pay for it.

WATCH

Thomas Edison's Menlo Park Laboratory | The Henry Ford's Innovation Nation

The Henry Ford • 4:01

<https://www.youtube.com/watch?v=jU3lj4jTUWw>

WHEN TO WATCH

After the story, before the big idea.

Note: From The Henry Ford museum, which keeps Edison's Menlo Park laboratory, moved and rebuilt in Dearborn, Michigan.

BACKUP VIDEO

Menlo Park | The Henry Ford's Innovation Nation

The Henry Ford • 3:48

https://www.youtube.com/watch?v=pJwAL_6KNLE

After the lesson.

KEY TERMS

entrepreneur

A person who starts and runs a new business, taking on its risk in hope of profit.

research and development (R&D)

Organized work to discover new knowledge and turn it into new products.

innovation

A new product or method that people actually adopt and use, not just an invention on paper.

patent

A government grant giving an inventor the sole right to make and sell an invention for a number of years, in return for publishing how it works.

prototype

An early working model built to test an idea.

CORE IDEAS

The story. Thomas Edison was born in 1847 in Milan, Ohio, had only a few months of school, and went to work as a boy selling newspapers and candy on trains. He became a skilled telegraph operator and began inventing improvements to the telegraph. His first patent, an electric vote recorder for lawmakers, worked perfectly, but no one wanted it; lawmakers liked their slow roll calls. Edison is said to have resolved never again to invent something people did not want to buy. In 1876, with money from selling his telegraph inventions, he built a long wooden laboratory in the farm village of Menlo Park, New Jersey, filled it with tools, chemicals and books, and hired a team of machinists, glassblowers and scientists. He promised a minor invention every ten days and a big thing every six months or so.

How they figured it out. In 1877 the team built the phonograph, the first machine that could record and play back sound. Then Edison set out to make electric light practical for homes, to compete with gas lamps. In 1878 a group of investors, including the banker J. P. Morgan, formed the Edison Electric Light Company to pay for the work. The problem was the filament, the thin thread inside the bulb that glows. Edison's team tested materials one after another, recording every trial in notebooks: platinum, many metals, carbonized paper, cotton thread. In October 1879 a carbonized cotton thread glowed for more than half a day. Later they tested

thousands of plant fibers and found that carbonized bamboo lasted far longer. But Edison knew a bulb was useless without a **system**: generators, underground wires, switches, fuses, sockets and meters to measure what each customer used. His team invented all of them. In 1882 the Pearl Street Station in New York began selling electricity to paying customers.

The big idea. Edison's greatest invention may have been the invention factory itself: organized **research and development**, with a team, a budget, careful records and a clear goal. He also understood the difference between an invention and an **innovation**. An invention is a new idea that works. An innovation is a new idea that people will actually buy and use, at a price that covers its costs. Edison asked of every idea: Does it meet a real need? Can it be made cheaply enough? Will customers choose it over what they use now? His electric light had to beat gas lighting on price, safety and convenience, not just glow in a laboratory.

Think it through. Edison is often said to have described genius as one percent inspiration and ninety-nine percent perspiration. Whether or not he put it exactly that way, his notebooks show it: thousands of pages of sketches, trials and failures. A failure, carefully recorded, told the team what not to try again. Edison also made mistakes as a businessman: years later he held on too long to direct current when alternating current proved better for sending power over long distances, and others took the lead.

In business today. Companies large and small still run on R&D: drug makers, carmakers, seed companies and software firms spend large sums testing ideas, most of which fail. The habits of Menlo Park still work for a small entrepreneur: keep a notebook, test one change at a time, measure the cost, and ask honestly whether a customer would pay for the result. "Seest thou a man diligent in his business? he shall stand before kings" (Proverbs 22:29).

PICTURE STUDY



Workers Outside the Main Laboratory at Menlo Park, Unknown photographer, About 1880 · Photograph · Thomas Edison National Historical Park, West Orange, New Jersey

Image: [Wikimedia Commons](#), public domain

This plain wooden building was the most productive laboratory in the world in its day. Edison's team worked here at all hours, and the men often ate midnight meals together while they waited for the results of a test. Henry Ford, who admired Edison, later had the laboratory moved to Greenfield Village in Michigan and rebuilt, and it can still be visited there.

Look closely

- Count the workers in front of the laboratory. How large was Edison's team?
- Look at their clothes. Can you tell the machinists from the scientists or the managers?
- Look at the building. What kinds of work do you think happened on each floor?
- Look at the land around it. Why might Edison have chosen a quiet country village?

Talk about it

1. Why would a team of many specialists invent faster than one brilliant person working alone?

2. Who paid for all this work before any light bulb was sold? What were they hoping for?
3. If you built your own small “invention factory,” what would you need first?

PROJECT

My Invention Factory: A Test Series and a Lab Notebook

You will be an Edison-style inventor. You will choose a simple household problem, test at least six materials or designs one change at a time, keep an honest lab notebook, and then decide whether your best design is an invention or a true innovation that someone would buy.

You will need

- A testing problem, such as: Which material keeps an ice cube from melting longest? Which paper towel absorbs the most water per cent of cost? Which homemade bookmark design lasts longest?
- At least six materials to test (cloth, foil, newspaper, wool, paper towels of different brands, cardboard)
- A timer, a kitchen scale or measuring cup, and a ruler
- Ledger notebook used as a lab notebook, a calculator, and the prices of the materials (from receipts or the package)

Steps

1. Write your problem as a question, and your prediction, at the top of a new notebook page with the date.
2. Plan a fair test: decide what you will change (the material) and what you will keep the same (size, amount, time, temperature). Write it down.
3. Run the test for each material. Record the result in a table: Trial, Material, Result (minutes, grams or days), Notes.
4. Repeat each test at least twice and find the average for each material.
5. Find the cost of each material per use. Calculate a “value score”: $\text{result} \div \text{cost}$ (for example, grams of water absorbed per cent).
6. Make a bar graph of the results and another of the value scores. Which material worked best? Which gave the best value?
7. Write an “innovation check”: Who would buy your best design? What do they use now? Would yours be better, cheaper or more convenient? Would it cover its cost?

8. Sign and date the bottom of your notebook page, as Edison's team did, so that the record is honest and complete.

Tips

- Change only one thing at a time, or you will not know which change made the difference.
- Record failures as carefully as successes. Edison's notebooks are full of them.

Check your work

- ☐ I can explain how Edison organized invention as a business.
- ☐ My notebook shows a fair test, repeated trials, averages, costs and a value score.
- ☐ I can explain the difference between an invention and an innovation, using my own project.

LEDGER NOTEBOOK

1. Draw Edison's electric-light system as a diagram: generator → underground wires → meter → switch → socket → bulb. Label what each part does.
2. Copy one page of your lab notebook neatly, with the date, the table and your signature.
3. Make a timeline: 1847 born; 1869 vote recorder; 1876 Menlo Park; 1877 phonograph; 1878 Edison Electric Light Company; 1879 carbon filament; 1882 Pearl Street Station; 1887 move to West Orange.

From history. Newspapers gave Edison fanciful nicknames, but he disliked the idea that his work was some kind of trick. He insisted that it came from hard work, careful records and a skilled team. Edison and his companies received more than a thousand U.S. patents.

COMMON MISTAKES

- Thinking Edison invented the first electric light. Others had made electric lights before; Edison's team made a long-lasting, affordable bulb and the whole system to power it.
- Thinking a working invention will sell itself. It must meet a real need at a price customers will pay.
- Changing more than one thing at a time in a test. Then no one knows which change caused the result.

Make it a game • Ice Cube Lab. Like Edison testing materials, choose five wrappers, such as foil, a sock, newspaper, a paper towel and a plastic bag. Wrap five ice cubes, one in each, and set a timer. Predict the winner first, then record melted amounts in a lab notebook. Explain why Edison needed a whole system, not just a bulb.

6.2 RAISING MONEY: SAVINGS, LOANS, PARTNERS AND INVESTORS

OBJECTIVES

- Name four ways to finance a business: savings and profits (bootstrapping), loans, partners and equity investors.
- Tell how Edison raised money from investors such as J. P. Morgan, and how Hewlett and Packard started with \$538 in a garage.
- Calculate the cost of a loan and the cost of giving an investor a share, and compare them.
- Explain the risks of each kind of financing and how to choose wisely.

Warm-up. You want to start a dog-walking business and need \$200 for leashes, bags and flyers. List every way you could get the \$200. For each, write what you would owe or give up in return.

WATCH

City Beat History Corner: The Hewlett Packard Garage

Palo Alto Historical Association · 2:41

https://www.youtube.com/watch?v=4V_edFofjsY

WHEN TO WATCH

After the story of Hewlett and Packard.

Note: A short film from the Palo Alto Historical Association about the garage, now a historic landmark.

BACKUP VIDEO

Introduction to Debt and Equity Financing

Alanis Business Academy · 4:52

https://www.youtube.com/watch?v=fH_gQmiVZgU

With the big idea, to see debt and equity compared on a whiteboard.

KEY TERMS

bootstrapping

Starting and growing a business with the owner's own savings and the business's own profits, without outside loans or investors.

equity

Ownership. An equity investor gives money in exchange for a share of the business and its future profits.

partnership

A business owned by two or more people who share the work, the profits and the debts.

debt (loan)

Borrowed money that must be repaid, with interest, whether the business succeeds or not.

collateral

Property a borrower promises to give up if he cannot repay a loan.

CORE IDEAS

The story. Every business needs money before it earns any. Thomas Edison found his in the great banks of New York: in 1878, investors including J. P. Morgan and members of the Vanderbilt family put money into the Edison Electric Light Company in return for shares. They took the risk that Edison would fail, and they owned much of the reward when he succeeded. Sixty years later, two young engineers chose a very different path. In 1938 Bill Hewlett and Dave Packard, who had been friends and classmates at Stanford University, began working in a small rented garage behind a house at 367 Addison Avenue in Palo Alto, California, encouraged by their professor Frederick Terman. They had about \$538 and a used drill press. On January 1, 1939, they formed a partnership; they tossed a coin to decide whose name would come first.

How they figured it out. Their first good product was an audio oscillator, an instrument that makes precise sound tones for testing equipment. Hewlett had designed it in school, and it worked as well as costly rivals while selling for far less. One early customer was Walt Disney Studios, which bought eight of an improved model to test the sound systems for the film *Fantasia* (1940). Hewlett and Packard grew their company from its own profits, a method called **bootstrapping**, and for

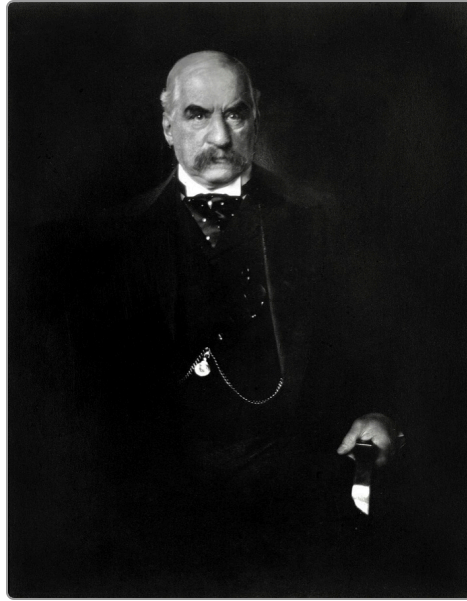
many years made a rule of avoiding long-term debt: they would expand only as fast as profits allowed. It was slower than borrowing, but it meant the business never belonged to a lender and never risked failing because it could not pay. Edison's path brought money faster but meant sharing ownership and answering to investors.

The big idea. A business can raise money in four main ways. **Savings and profits** cost nothing in interest and keep the owner in control, but they grow slowly. A **loan** must be repaid with interest whether the business succeeds or not, and the lender may ask for **collateral**, but the owner keeps all the profits. A **partner** brings money, skill or both, and shares the work, the profits and the debts. An **equity investor** gives money for a share of ownership: nothing need be repaid if the business fails, but the investor shares in the profits for as long as he owns the share. Compare: you need \$10,000. A one-year loan at 8% costs $\$10,000 \times 0.08 = \$800$ in interest. Or an investor gives \$10,000 for 25% of your business. If the business earns \$12,000 a year in profit, the investor's share is \$3,000 every year. Equity is cheaper if the business does poorly and costlier if it does well.

Think it through. Scripture warns that “the borrower is servant to the lender” (Proverbs 22:7). Borrowing is not forbidden, but debt is a promise that binds the future, and a business that borrows too much can be ruined by one bad year. Jesus also told of a man who began to build a tower without counting the cost, and could not finish (Luke 14:28-30). Before raising money, a wise entrepreneur writes down exactly how much is needed, what it will buy, how it will be repaid or shared, and what will happen if sales are slow.

In business today. Small businesses are still financed mostly by their owners' savings, by family and friends, by bank loans and by partners. Fast-growing companies often sell shares to investors. The Hewlett-Packard garage is now a California historical landmark called the “Birthplace of Silicon Valley.” Its lesson for a young entrepreneur: start small, spend carefully, keep honest books, and let your profits pay for your growth whenever you can.

PICTURE STUDY



J. Pierpont Morgan, Edward Steichen, 1903 · Photograph (platinum print) · Metropolitan Museum of Art, New York

Image: [Wikimedia Commons](#), public domain

J. P. Morgan was the most powerful banker in America. His bank raised money for railroads, steel companies and Edison's electric light, and in 1901 bought Carnegie Steel to form U.S. Steel. The young photographer Edward Steichen was given just a few minutes to photograph him in 1903. Many viewers say the gleaming arm of the chair looks like a dagger in Morgan's hand, a trick of the light that seemed to fit the fierce banker.

Look closely

- Look at Morgan's face and eyes. What kind of person does the photograph suggest?
- Find the arm of the chair. What does it look like to you?
- Look at the light and shadow. Where does the photographer want you to look first?

Talk about it

1. Why would an entrepreneur like Edison want a banker like Morgan on his side? What might he give up?
2. Hewlett and Packard chose not to depend on bankers or investors at first. What did they gain, and what did they give up?

3. If you needed money to start a business, would you rather owe a lender or share ownership with an investor? Why?

Safety first. This is a planning project. A student never borrows or lends real money, or takes money from an investor, without a parent's approval and supervision.

PROJECT

Four Ways to Fund a Business

You will plan a small real or pretend business that needs start-up money, then calculate and compare four ways of paying for it. You will finish with a funding plan you could show a parent.

You will need

- A calculator or free spreadsheet, and the ledger notebook
- Price lists or flyers to estimate start-up costs
- A parent to act as the banker or investor

Steps

1. Choose a business (for example, baking bread for neighbors you know, a lawn-care service, or hand-made cards). List every start-up cost with a price. Add them to find how much money you need. Call it S.
2. Estimate your profit per month after start-up: $(\text{price} - \text{cost per item}) \times \text{items sold per month}$. Call it P.
3. **Option 1, savings.** How many months would you need to save to raise S yourself, if you can save a set amount a month? Write the number.
4. **Option 2, a loan.** A parent lends you S at 10% simple interest for one year. Calculate the interest and the total to repay. How many months of profit will it take?
5. **Option 3, a partner.** A sibling or friend puts in half of S and does half the work for half the profit. Calculate each partner's monthly profit.
6. **Option 4, an investor.** A parent gives you S for 30% of your profits for two years. Calculate how much the investor receives over the two years.
7. Make a comparison table: Option, Money you get, What you owe or give up, Total cost over two years, Risk if sales are slow, Who controls the business.
8. Write a one-page funding plan: which option you would choose and why, and what you would do if sales were half what you expect. Present it to a parent as a banker would hear it.

Tips

- Be honest and modest about your sales estimate. Investors and lenders trust a careful plan more than a grand one.
- This is a planning exercise. Do not borrow or lend real money without your parents' approval.

Check your work

- ☐ I can name and explain four ways to raise money for a business.
- ☐ I calculated the cost of a loan and the cost of an investor's share for my business.
- ☐ I can explain the risks of debt and how counting the cost (Luke 14:28) helps an entrepreneur.

LEDGER NOTEBOOK

1. Draw a four-box chart: savings, loan, partner, investor. In each box write what you get, what you give up, and the biggest risk.
2. Write out the \$10,000 example from the lesson and add a line: What if the business earns only \$2,000 a year? Which choice is cheaper then?
3. Sketch the Hewlett-Packard garage as you imagine it in 1939, with the drill press, a workbench and the first oscillator.

From history. Hewlett and Packard priced their first oscillator, the Model 200A, at \$54.40. Packard later said that he and Hewlett were proudest not of their products but of the way they treated their employees, which they called “the HP Way,” including sharing profits with every worker.

COMMON MISTAKES

- Thinking a loan is free money. It must be repaid with interest, even if the business fails.
- Thinking an investor is always cheaper because you do not have to pay him back. If the business does well, the investor's share of profits may cost far more than interest would.
- Forgetting to count all the costs before starting. A plan that runs out of money halfway is like the unfinished tower in Luke 14.

Make it a game • Funding Four Ways. Set out four cups: savings, loans, partners and investors. Your parent gives a business need, such as a garage workshop with 538 dollars. Choose the best way to fund it, defend your choice, and name the risk of debt against equity. Collateral comes up once. Tell how Edison raised money from investors.

Scripture. “For which of you, intending to build a tower, sitteth not down first, and counteth the cost, whether he have sufficient to finish it?” (Luke 14:28, KJV)

Jesus used a builder’s planning to teach about following Him wholeheartedly. The same wisdom applies to a business: count the whole cost and know where the money will come from before you begin.

6.3 HONEST PERSUASION: THE SALES PROCESS AT NATIONAL CASH REGISTER

OBJECTIVES

- Tell how John H. Patterson built National Cash Register and trained the first modern sales force.
- Describe the steps of a sales process: prepare, approach, ask about needs, demonstrate, answer objections, close and follow up.
- Tell honest persuasion from manipulation, using NCR's strengths and its antitrust conviction of 1913.
- Prepare, practice and improve an honest sales presentation.

Warm-up. Think of the last time someone tried to sell you something, or persuade you to do something. Did he ask what you needed, or just talk? Did you trust him? Write two things that made you trust him more, and two that would make you trust him less.

WATCH

C-SPAN Cities Tour - Dayton: John H. Patterson

C-SPAN • 8:32

<https://www.youtube.com/watch?v=3SCNrXqB17E>

WHEN TO WATCH

After the story, before the steps of the sales process.

Note: A segment from C-SPAN's Cities Tour, filmed at Dayton History's Carillon Historical Park, which keeps NCR's history.

BACKUP VIDEO

John Henry Patterson: The Founder of NCR Corporation, Boss of IBM Founder

Business Chronicles • 9:35

https://www.youtube.com/watch?v=DSWaAg4q_3A

After the lesson, for more of Patterson's story.

KEY TERMS

prospect

A person or business that might need what you sell.

needs discovery

Asking questions and listening to learn what a customer truly needs before offering a product.

demonstration

Showing how a product works and solves the customer's problem.

objection

A customer's reason for not buying yet, such as price, doubt or timing.

manipulation

Trying to get someone to act by trickery, pressure or false impressions instead of honest reasons.

CORE IDEAS

The story. In 1879 James Ritty, a Dayton, Ohio, businessman whose clerks were pocketing some of his cash, invented a machine that recorded every sale on a dial and a paper roll: the cash register. Few people bought one. In 1884 John H. Patterson, a Dayton merchant who had seen how a register stopped losses in his own store, bought control of the small company and renamed it the National Cash Register Company. He faced a hard problem: shopkeepers had never seen a cash register, did not think they needed one, and did not like the idea that their clerks might be stealing. Patterson decided that the machine would have to be *sold*, by people trained to explain it, and he built the first modern sales organization to do it.

How they figured it out. Patterson studied his best salesman and wrote down how he did it. In 1887 NCR printed a sales manual, nicknamed “the Primer,” which taught salesmen to begin by learning about the merchant’s business, to ask about his troubles with errors, theft and arguments over change, to demonstrate the register on the merchant’s own counter, and to answer every objection honestly and clearly. In 1894 Patterson opened a sales training school in Dayton. He gave each salesman a territory, a goal and a fair commission, and held conventions to share what worked. He also built a bright, clean “daylight factory” with lunches, classes and gardens for his workers. NCR came to sell most of the cash registers in America. But Patterson also fought rivals harshly. His company spread false claims about competitors’

machines, sold imitation machines below cost to drive rivals out, and pressured customers. In 1913 Patterson and other NCR leaders were convicted of breaking the antitrust law; the convictions were later overturned on a technical ground, and the company agreed to end the practices. That same spring, when a great flood struck Dayton, Patterson turned the factory into a relief center, built boats, and fed and sheltered thousands of people.

The big idea. An honest sales process has steps, and each step serves the customer. **Prepare:** know your product and your prospect. **Approach:** be courteous and clear about who you are. **Ask about needs:** listen more than you talk. **Demonstrate:** show how the product solves this customer's problem. **Answer objections** honestly, including admitting when the product is not right for him. **Close:** ask plainly whether he would like to buy. **Follow up:** make sure he is satisfied. Honest persuasion gives true reasons and leaves the customer free to decide. **Manipulation** uses tricks: false urgency, hidden costs, flattery, pressure, or lies about competitors. Manipulation may win one sale; honesty wins a customer for years.

Think it through. Patterson's story has both lessons in it. His training taught salesmen to understand customers' real problems, and his machine really did save merchants money. But when he used lies and pressure against rivals, he broke the law and stained his company's name. Many of NCR's salesmen and managers went on to lead other companies, among them Thomas J. Watson, who had also been convicted with Patterson in 1913 and who later built IBM. "The getting of treasures by a lying tongue is a vanity tossed to and fro of them that seek death" (Proverbs 21:6).

In business today. Nearly every business sells, whether in a store, on the phone or online. Good salespeople are trusted advisers: they ask good questions, explain honestly, and sometimes tell a customer that a cheaper product will do. Laws against false advertising and high-pressure tricks protect customers, but the best protection is a seller's own honesty. A customer who trusts you will come back and bring friends.

PICTURE STUDY



The Tool Department, National Cash Register Company, Dayton, Detroit Publishing Company, About 1900–1910 · Photograph · Dayton, Ohio; Library of Congress

Image: [Wikimedia Commons](#), public domain

John H. Patterson built his factory buildings with walls made mostly of glass, so that workers would have daylight and fresh air, which was unusual at the time. This photograph shows the tool department, where skilled machinists made the precise tools used to build cash registers. Visitors came from many countries to see the NCR factory.

Look closely

- Look at the windows. How much of the wall is glass? Why would that matter in a time before good electric lighting?
- Find the belts running from the ceiling to the machines. What do you think powered them?
- Look at the workers. How are they dressed? Does the room look crowded or orderly?

Talk about it

1. How might a bright, clean factory help NCR sell its cash registers to merchants who visited?
2. Patterson treated his workers well in many ways but dealt unfairly with his competitors. Can a business be honest with one stakeholder and dishonest

with another? Should it?

3. Which stakeholders can you see in this picture, and which are missing?

PROJECT

Write, Practice and Improve an Honest Sales Presentation

You will choose something useful you could really sell, such as a household item, a service you could offer, or a product you will make for market day. You will write a short sales primer, practice it with family members acting as customers, score it honestly, and improve it.

You will need

- The product (or a picture or sample of it)
- Index cards for your presentation notes
- A scoring sheet (below) and the ledger notebook
- Two or more family members to play customers

Steps

1. Write a one-page “primer” for your product with the seven steps: prepare (three facts about the product, including one thing it is not good for), approach, three needs-discovery questions, a demonstration, answers to three likely objections, a plain closing question, and how you will follow up.
2. Ask each family member to play a different customer, each with a secret card describing his real need (for example, “I need something cheap,” “I need it by Friday,” or “I really need something else”).
3. Give your presentation to each customer. Use your questions to find his real need. If your product is not right for him, say so.
4. After each presentation, the customer scores you from 1 to 5 on: listening, honesty, clear demonstration, answering objections, and respect. Record the scores.
5. Calculate your average score for each skill. Which was strongest? Which was weakest?
6. Revise your primer to improve your weakest skill, then give the presentation once more and record the new scores.
7. Make a list of five sales tricks that would be manipulation, and write why you will not use them.

8. Write a paragraph comparing your honest primer with Patterson's Primer and with NCR's unfair practices against its rivals.

Tips

- Ask more than you tell. A good salesperson learns the customer's need before talking about the product.
- Telling a customer that your product is not right for him is not losing a sale. It is earning his trust.

Check your work

- ☐ I can name the seven steps of an honest sales process.
- ☐ I recorded my scores, calculated averages and improved my weakest skill.
- ☐ I can explain the difference between honest persuasion and manipulation, using NCR as an example.

LEDGER NOTEBOOK

1. Draw the seven steps of the sales process as a staircase, with a one-line tip on each step.
2. Make a two-column chart: "Honest persuasion" and "Manipulation," with five examples of each.
3. Copy your before-and-after scores as a bar graph.

From history. Patterson was a famous believer in exercise and fresh air. He started early-morning horseback rides for his managers, put playgrounds and gardens around the factory, and gave the city of Dayton land for parks.

COMMON MISTAKES

- Thinking selling means talking a lot. The best salespeople listen more than they talk.
- Thinking any sale is a good sale. A sale that leaves a customer with something he does not need costs you his trust.
- Thinking success excuses wrongdoing. NCR's fine product did not make its lies about competitors right.

Make it a game • Seven-Step Sale. Write seven cards: prepare, approach, ask about needs, demonstrate, answer objections, close and follow up. Shuffle and put them in order from memory. Then sell a household item to your parent, who raises one objection. If you pressure instead of serve, your parent calls manipulation and you lose a point.

Scripture. “The getting of treasures by a lying tongue is a vanity tossed to and fro of them that seek death.” (Proverbs 21:6, KJV)

Wealth gained by lies does not last; it blows away like vapor. An honest sale may be slower, but it builds something that stays.

6.4 BRANDS AND TRUST: THE COCA-COLA BOTTLE

OBJECTIVES

- Explain what a brand and a trademark are, and why a brand is a promise of consistent quality.
- Tell how the Coca-Cola Company fought imitators and how the contour bottle of 1915 was designed to be recognized even in the dark.
- Calculate the value of a returning customer and explain why trust is worth money.
- Design an honest brand for a product you will sell.

Warm-up. Name three brands your family trusts and buys again and again. For each, write what you expect to get every time. Then name one brand your family stopped buying, and why.

WATCH

Coca-Cola Bottle Patented - Decades TV Network

Decades TV Network • 4:18

<https://www.youtube.com/watch?v=2CwwfzlawyM>

WHEN TO WATCH

After the story, before the big idea.

BACKUP VIDEO

Birth of the Coca-Cola Contour Bottle - Earl R. Dean Tells His Story

ContourBottle • 12:04

<https://www.youtube.com/watch?v=hejoGPRq8EU>

After the lesson.

KEY TERMS

brand

The name, look and reputation that customers connect with a product or company, and the promise of what they will get.

trademark

A word, symbol, design or shape legally protected so that only its owner may use it to mark goods.

counterfeit

A fake copy made to look like a trusted brand in order to deceive buyers.

design patent

A patent that protects the new ornamental shape of a product for a period of years.

customer lifetime value

The total profit a business can expect from one customer over all the years he keeps buying.

CORE IDEAS

The story. In 1886 an Atlanta pharmacist, John Pemberton, created a syrup that, mixed with soda water, became a soft drink. His bookkeeper, Frank Robinson, named it Coca-Cola and wrote the name in the flowing script still used today. A businessman named Asa Candler bought the company by 1891 and spread the drink across the country with signs, calendars and coupons. In 1899 two lawyers from Chattanooga bought the right to bottle it, for a famous price of one dollar, and built a network of local bottlers. By the early 1900s Coca-Cola was sold everywhere, in plain straight-sided bottles much like every other drink's. That was a problem: dozens of imitators sold drinks with names like Koke and Koca-Nola, in bottles that looked nearly the same, and customers could not easily tell the real drink from a copy.

How they figured it out. The company fought in two ways. In the courts, it sued imitators for copying its name and confusing customers, and won many cases. In design, it set its bottlers a challenge in 1915: create a bottle so distinctive that a person could recognize it by touch in the dark, or even when it lay broken on the ground. Several glass companies competed. At the Root Glass Company in Terre Haute, Indiana, a young designer named Earl R. Dean, looking in an encyclopedia for ideas, found a drawing of a cocoa pod, with its ridges and bulging middle, and sketched a bottle shaped like it. The design was slimmed so that it would stand steady on the bottling machines, patented in November 1915, and chosen by the bottlers. The “contour bottle” appeared in 1916, and its shape itself later became a registered **trademark**.

The big idea. A **brand** is a promise: every time you buy this, you will get the same thing, made the same way, by the same company. Customers pay for that trust, and they come back. A business that keeps the promise builds great value; one that

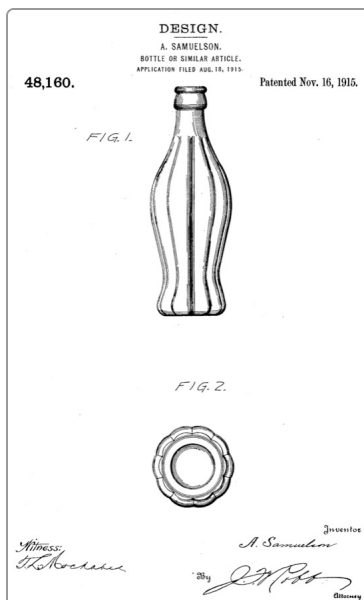
breaks it can lose its name in a season. Trust is worth money, and you can calculate it. Suppose a bakery earns \$2 profit on each loaf, and a loyal family buys 2 loaves a week for 5 years. That family's **customer lifetime value** is $\$2 \times 2 \times 52 \times 5 = \$2,080$. Losing that family by selling one stale loaf would be a very costly mistake.

Counterfeits harm both sides: they cheat the buyer and steal the good name the honest maker earned. That is why trademark law protects brands.

Think it through. A strong brand can be used for good or ill. A trusted name makes it easier to sell good products, and also tempting to sell poorer ones under the same label, trusting that customers will not notice. Honest companies guard their brands by guarding their quality. Scripture says, "A good name is better than precious ointment" (Ecclesiastes 7:1). A brand is a business's name, and like a person's, it is built slowly by faithfulness and lost quickly by deceit.

In business today. Brands are among the most valuable things many companies own, worth more than their buildings and machines. Shapes, colors, sounds and names can all be trademarks. For a small seller at a farmers' market, the brand is simpler: a clear name, a neat label, the same good quality every week, and a smile. People choose sellers they trust, and they tell their friends.

PICTURE STUDY



Design Patent for the Contour Bottle, Alexander Samuelson, for the Root Glass Company (U.S. Patent Office drawing), Filed 1915; patented November 16, 1915 · Patent drawing, ink on paper · U.S. Patent and Trademark Office

Image: [Wikimedia Commons](#), public domain

The design patent for the contour bottle was filed in the name of Alexander Samuelson, the superintendent of the Root Glass Company, though the drawing came from the work of his designer Earl R. Dean. The first design was fatter in the middle, like the cocoa pod that inspired it, and was slimmed before production so that it would not tip over on the bottling line.

Look closely

- Look at the ridges running down the bottle. How would they feel in your hand in the dark?
- Find the narrowest and widest parts of the bottle. How does the shape compare with an ordinary straight bottle?
- Read any writing on the drawing. Who signed it, and why would signatures matter on a patent?

Talk about it

1. Why would a company want a bottle that could be recognized by touch or when broken?
2. How does a distinctive shape protect customers as well as the company?

3. If you were designing a package for something you sell, what would make it easy to recognize and hard to copy?

Safety first. If your product is food, follow safe food-handling rules, list ingredients that could cause allergies, and check your town's rules for selling homemade food. A parent supervises all selling.

PROJECT

Build an Honest Brand

You will create a brand for a product you will really make and sell at the family market day: a name, a logo, a label with true information, and a quality promise. Then you will test whether customers recognize it and calculate what a loyal customer is worth.

You will need

- Paper, markers, colored pencils and stickers or tape for labels
- Your product or a sample (cookies, bookmarks, cards, seedlings)
- A calculator and the ledger notebook
- Three or more family members or friends to test your design

Steps

1. Write a one-sentence promise: what every customer can count on, every time (for example, “Fresh-baked the same morning, with real butter”).
2. Brainstorm ten possible names. Cross out any that copy another brand or might mislead. Choose the best.
3. Design a simple logo and a label. The label must tell the truth: what it is, what is in it (list any ingredients that could cause allergies), the date made, and your name and price.
4. **The recognition test.** Place your product among three similar plain items. Ask testers to find yours from across the room, then with their eyes closed by touch, if your package has a shape or texture. Record how many succeed.
5. Improve your design based on the test, and test again. Record both results.
6. **Customer lifetime value.** Estimate your profit per item, how many items a loyal customer would buy each month, and for how many months. Calculate the lifetime value of one loyal customer.
7. Write what you would do if one batch did not meet your promise (for example, the cookies burned). How would you protect your brand?
8. Write a paragraph comparing your brand with Coca-Cola’s: how each one tries to earn and protect trust.

Tips

- A short, easy name is easier to remember. Say it out loud before you choose it.
- Never promise more on the label than the product delivers. The promise is the brand.

Check your work

- ☐ I can explain what a brand and a trademark are and why a brand is a promise.
- ☐ My label is honest and complete, and I recorded the results of two recognition tests.
- ☐ I calculated the lifetime value of a loyal customer and explained why trust is worth money.

LEDGER NOTEBOOK

1. Draw your logo three ways and circle the one you chose. Write why.
2. Copy the lifetime-value calculation for your own product.
3. Make a timeline: 1886 drink created; 1891 Candler; 1899 bottling rights for \$1; 1915 contour bottle patented; 1916 bottle introduced; 1946 U.S. trademark law updated.

From history. In 1946 Congress passed the Lanham Act, the main U.S. trademark law still in use today. It lets a business register its trademarks and sue anyone who uses a confusingly similar mark. The contour bottle's shape was registered as a trademark in 1960, one of the first packages to be protected that way.

COMMON MISTAKES

- Thinking a brand is just a logo. A brand is the promise and the reputation behind the logo.
- Thinking a strong brand lets a company cut quality safely. Customers notice, and trust once lost is hard to regain.
- Copying another brand's name or look. It deceives customers and breaks the law.

Make it a game • Recognize It in the Dark. Your parent places five household containers on a table. With your eyes closed, identify each by touch, as the 1915 contour bottle was designed to be recognized in the dark. Then shape a mystery brand from modeling clay or foil. Can your parent identify it by feel? Explain brand, trademark and counterfeit.

ENTREPRENEURSHIP AND SALES

An **entrepreneur** is a person who sees a need, imagines a way to meet it, gathers the money, people and materials to try, and takes the risk of failing. Entrepreneurs are a kind of steward: they take what God has given, ideas, time, savings and other people's trust, and try to make it bear fruit, as the faithful servants did in the parable of the talents (Matthew 25:14-30). In this unit you will study how four famous businesses did the hard, practical work of entrepreneurship.

You will visit Thomas Edison's "invention factory" at Menlo Park, where inventing itself became a business. You will compare the ways of raising money, from J. P. Morgan's investors to Bill Hewlett and Dave Packard's \$538 and a garage. You will learn the steps of an honest sale from John H. Patterson's National Cash Register Company, which trained the first modern salesmen and also crossed lines it should not have crossed. And you will see how a brand is a promise, in the story of the Coca-Cola bottle. Throughout, you will practice honest persuasion: telling the truth about what you sell, listening to what customers need, and keeping your word.

PREREQUISITES

- Knows supply and demand, competition and profit (Units 3 and 4)
- Can calculate percents, simple interest and break-even (earlier grades or Grade 5)
- Can make a table and a bar graph

MASTERY CHECKLIST

- ☐ I can explain how Edison organized invention as a business and why an invention must meet a real need at a price people will pay.
- ☐ I can compare savings, loans, partners and equity investors as ways to raise money, with the costs and risks of each.
- ☐ I can describe the steps of an honest sales process and tell honest persuasion from manipulation.
- ☐ I can explain what a brand and a trademark are and why a brand is a promise that must be kept.
- ☐ I can calculate interest on a loan, an investor's share of profits, and the value of a returning customer.

OPTIONAL BOOKS AND GAMES FOR THIS UNIT

- **Thomas Edison National Historical Park**: Free pages from the National Park Service on Edison's laboratories, his notebooks and his inventions. Good background for Lesson 6.1.
- **The Toothpaste Millionaire, by Jean Merrill**: A funny classic novel about a boy who starts a toothpaste company, figures his costs and raises money from classmates. Ages 9–13. Read alongside Lessons 6.2 and 6.4. Search the title on the publisher's site.
- **Next Gen Personal Finance (NGPF)**: Free lessons and activities on entrepreneurship, financing a business and consumer skills, written for middle and high school students.

Not required. Every project in this unit works without them. School Launch has no ties to these authors, publishers or companies.

LESSONS IN THIS UNIT

6.1 Edison's Menlo Park: The Invention Factory

2 sessions of 50 minutes

6.2 Raising Money: Savings, Loans, Partners and Investors

2 sessions of 50 minutes

6.3 Honest Persuasion: The Sales Process at National Cash Register

2 sessions of 50 minutes

6.4 Brands and Trust: The Coca-Cola Bottle

2 sessions of 50 minutes

UNIT 6 REVIEW

Answer each question. Show your work for every calculation and use complete sentences for explanations. The review is worth 100 points.

1. **8 pts**

What was new about Edison's Menlo Park laboratory as a way of doing business?

2. **8 pts**

What is the difference between an invention and an innovation? Use Edison's vote recorder and his electric light as examples.

3. **8 pts**

Why did Edison have to invent a whole system, not just a light bulb?

4. **8 pts**

Name four ways to raise money for a business and one risk of each.

5. **10 pts**

You need \$8,000. A bank offers a one-year loan at 9%. An investor offers \$8,000 for 20% of your profits each year. If your business earns \$15,000 profit a year, what does each option cost in the first year? What if it earns \$2,000?

6. **8 pts**

How did Hewlett and Packard finance their company, and what did they gain by doing it that way?

7. (8 pts)

List the seven steps of an honest sales process.

8. (8 pts)

Give two of John H. Patterson's good sales ideas and two of NCR's unfair practices.

9. (8 pts)

What is the difference between honest persuasion and manipulation? Give an example of each.

10. (8 pts)

Why did the Coca-Cola Company want a distinctive bottle in 1915, and how was it designed?

11. (10 pts)

A family buys 3 jars of your jam a month, and you earn \$1.50 profit per jar. If they keep buying for 4 years, what is their customer lifetime value? What would losing them cost?

12. (8 pts)

Short answer: In four or five sentences, explain why a brand is a promise and how a small business can build and protect a good name.

ANSWER KEY

1. It organized invention itself as a business: a team of specialists, tools and a budget, careful notebooks, and a steady goal of producing useful, sellable inventions, funded by investors and the sale of earlier inventions.
2. An invention is a new idea that works; an innovation is one people actually buy and use. The vote recorder worked but no one wanted it. The electric-light system met a real need at a price that could compete with gas, so it was adopted.
3. A bulb is useless without electricity reaching it, so customers needed generators, wires, switches, fuses, sockets and meters. Edison's team designed all of them so the light could be sold to paying customers.
4. Savings/profits (slow growth); loans (must be repaid with interest even if the business fails; collateral may be lost); partners (disagreements, shared debts); equity investors (give up part of profits and control for as long as they own shares).
5. Loan: $8,000 \times 0.09 = \$720$ either way (plus repaying the \$8,000). Investor: $20\% \times 15,000 = \$3,000$; $20\% \times 2,000 = \$400$. The loan is cheaper if profits are high; the investor is cheaper if profits are low, and nothing must be repaid if the business fails.
6. They started with about \$538 in a rented garage and grew from their own profits (bootstrapping), avoiding long-term debt. They kept ownership and control and never risked failure from being unable to repay a lender, though growth was slower.
7. Prepare, approach, ask about needs (needs discovery), demonstrate, answer objections, close, follow up.
8. Good (any two): the Primer, a sales school, territories and fair commissions, learning the merchant's problems, demonstrations. Unfair (any two): false claims about rivals' machines, selling imitation machines below cost to drive rivals out, pressuring customers; leaders were convicted under antitrust law in 1913.
9. Honest persuasion gives true reasons and leaves the customer free to choose (demonstrating how a product solves his problem, admitting its limits). Manipulation uses tricks, pressure or false impressions (false urgency, hidden fees, lying about a competitor).
10. Imitators sold look-alike drinks in similar bottles, confusing customers. The company asked for a bottle recognizable by touch in the dark or when broken;

Earl R. Dean at the Root Glass Company based it on a drawing of a cocoa pod, and it was patented in 1915.

11. $3 \times 1.50 \times 12 \times 4 = \$216$. Losing them costs \$216 in future profit, plus any friends they might have sent.
12. A good answer explains that customers trust a brand to give the same quality each time; keeping that promise earns repeat customers and their friends; breaking it loses trust quickly. A small business protects its name by consistent quality, honest labels and claims, making things right when something goes wrong, and never copying others. May cite Ecclesiastes 7:1 or Proverbs 22:1.

PORTFOLIO PIECE: A BUSINESS PLAN FOR MARKET DAY

Write a three- to four-page business plan for the product you will sell at the family market day. Include: the need it meets and who your customers are (with at least five short customer interviews); results of a small test of your product, recorded like a lab notebook; your start-up costs and how you will pay for them, comparing at least two ways; your brand, with a sample label; your price and break-even point; and your one-page honest sales primer. End with the risks you see and how you will handle them.

LOOK FOR	WHAT IT MEANS
Customer need	The plan shows real evidence of a need, from at least five interviews, and describes the customers clearly.
Testing	A fair test of the product is recorded with dates, results and at least one improvement.
Money	Start-up costs, financing choice, price and break-even are calculated correctly, with work shown.
Brand and sales	The brand and label are honest and clear, and the sales primer follows the seven steps without manipulation.
Risks	The plan names real risks and sensible ways to handle them, counting the cost as in Luke 14:28.

ACCOUNTING

Accounting is the language of business. It records what a business owns, what it owes, what it earns and what it spends, so that owners, lenders, workers and tax collectors can all see the truth. In earlier years you learned to keep a ledger, to write an income statement and to balance a balance sheet with the equation **assets = liabilities + owner's equity**. In this unit you will learn the tools real bookkeepers use: **T-accounts, debits and credits**, the difference between **cash and accrual** accounting, **depreciation, financial ratios**, and **cost accounting**.

You will meet a merchant of Prato who headed his account books “in the name of God and of profit,” the railroads that had to learn how to count the cost of a locomotive that lasts twenty years, the Christian merchant who founded America’s first credit-reporting agency, and Andrew Carnegie, who studied his cost sheets as closely as any general studies a map. Honest books are a form of stewardship: “give an account of thy stewardship” (Luke 16:2).

PREREQUISITES

- Knows the income statement and the balance sheet at a simple level (earlier grades or Grade 5)
- Knows Carnegie Steel and the railroads (Units 3 and 4)
- Can add and subtract decimals in columns and calculate percents and ratios

MASTERY CHECKLIST

- ☐ I can record transactions in T-accounts with equal debits and credits and prepare a trial balance.
- ☐ I can explain the difference between cash and accrual accounting and calculate straight-line depreciation.
- ☐ I can prepare a simple balance sheet and calculate the current ratio and the debt-to-equity ratio.
- ☐ I can separate fixed and variable costs, calculate cost per unit and find a break-even point.
- ☐ I can explain why honest books matter to every stakeholder.

OPTIONAL BOOKS AND GAMES FOR THIS UNIT

- **Accounting Stuff (video channel)**: Short, clear, free videos on debits and credits, T-accounts, accruals, depreciation and financial statements. Several are used in this unit; others are good extra practice. Ages 12 and up.
- **LibreOffice Calc**: A free spreadsheet program for building ledgers, trial balances and cost sheets. Google Sheets works just as well.

Not required. Every project in this unit works without them. School Launch has no ties to these authors, publishers or companies.

LESSONS IN THIS UNIT

7.1 T-Accounts, Debits and Credits: “In the Name of God and of Profit”

2 sessions of 50 minutes

7.2 Cash versus Accrual: The Railroads Learn to Count Wear 2 sessions of 50 minutes

7.3 The Balance Sheet and Simple Ratios: Lewis Tappan’s Credit Reports

2 sessions of 50 minutes

7.4 Cost Accounting at Carnegie Steel

2 sessions of 50 minutes

UNIT 7 REVIEW

Answer each question. Show your work for every calculation and use complete sentences for explanations. The review is worth 100 points.

1. **8 pts**

Name the five kinds of accounts. Which side (debit or credit) increases each?

2. **10 pts**

Write the debit and credit for each: (a) The owner invests \$2,000 cash. (b) The business buys a \$700 machine on credit (to pay later). (c) It sells goods for \$450 cash. (d) It pays \$200 toward the machine.

3. **6 pts**

What does a trial balance check, and what kind of error can it miss?

4. **8 pts**

What is the difference between cash-basis and accrual-basis accounting? What is the matching principle?

5. **8 pts**

A bakery buys an oven for \$9,000. It will last 6 years and then sell for \$1,200. Find the yearly straight-line depreciation and the book value after 2 years.

6. **8 pts**

Why did the railroads need depreciation accounting? What could go wrong without it?

7. **8 pts**

Why did Lewis Tappan found the Mercantile Agency in 1841, and what did its early reports describe?

8. **10 pts**

A shop has current assets of \$45,000, long-term assets of \$55,000, current liabilities of \$18,000 and long-term liabilities of \$22,000. Find its owner's equity, current ratio and debt-to-equity ratio.

9. **6 pts**

The same shop earned \$7,500 profit on \$150,000 of sales. Find its profit margin and return on equity.

10. **10 pts**

A workshop has fixed costs of \$6,000 a month and a variable cost of \$15 a unit. It sells each unit for \$40. Find the contribution margin, the break-even point, and the cost per unit at 300 units.

11. **8 pts**

What does it mean to "run full," and why did it help Carnegie? What did it cost his workers?

12. **10 pts**

Short answer: In four or five sentences, explain why honest books matter to at least four of a business's six stakeholders.

ANSWER KEY

1. Assets (debit), expenses (debit), liabilities (credit), owner's equity (credit), revenue (credit).
2. (a) Debit Cash \$2,000; credit Owner's Equity \$2,000. (b) Debit Equipment \$700; credit Accounts Payable \$700. (c) Debit Cash \$450; credit Sales Revenue \$450. (d) Debit Accounts Payable \$200; credit Cash \$200.
3. It checks that total debits equal total credits. It can miss an entry put in the wrong account, a transaction left out entirely, or the same error made on both sides.
4. Cash basis records revenue and expenses when cash moves; accrual records revenue when earned and expenses when used up. The matching principle records expenses in the same period as the revenue they helped earn.
5. $(9,000 - 1,200) \div 6 = \$1,300$ a year. After 2 years: $9,000 - 2,600 = \$6,400$.
6. Their locomotives, cars and track lasted many years, so charging the whole cost in one year distorted profits, while ignoring wear overstated profits. Without depreciation they might pay out too much in dividends and have no money to replace worn-out equipment.
7. After the Panic of 1837, when his customers could not pay and his business failed, he saw that wholesalers needed reliable information about distant merchants before selling on credit. Early reports described character: honesty, habits, property and whether the merchant paid on time.
8. Equity = $100,000 - 40,000 = \$60,000$. Current ratio = $45,000 \div 18,000 = 2.5$. Debt-to-equity = $40,000 \div 60,000 \approx 0.67$.
9. Profit margin = $7,500 \div 150,000 = 5\%$. Return on equity = $7,500 \div 60,000 = 12.5\%$.
10. Contribution margin = $40 - 15 = \$25$. Break-even = $6,000 \div 25 = 240$ units. Cost per unit at 300 = $6,000 \div 300 + 15 = \$35$.
11. Keeping the mills working at full capacity, even at lower prices, so fixed costs were spread over more tons and each ton cost less. It let him underbid rivals. But the drive for low costs meant twelve-hour shifts, seven days a week, for many workers.
12. A good answer explains, for example, that financiers and lenders rely on true statements to decide whether to invest or lend; owners need true costs to set prices and find waste; workers depend on the business staying healthy and paying wages; customers and the community rely on honest dealing and on

taxes being paid; and that dishonest books eventually destroy trust, as in the Bank of Amsterdam.

PORTFOLIO PIECE: A FULL SET OF BOOKS FOR ONE MONTH

Keep a full set of books for one month for a real small business or project: your market-day product, a family garden stand, or the bonus business in Unit 9 (with a parent). Record every transaction with a date in a journal and post it to T-accounts. At the end of the month, prepare a trial balance, an accrual-basis income statement (with depreciation of any equipment), a balance sheet, a cost sheet with your cost per unit and break-even point, and the current ratio and debt-to-equity ratio. End with a one-page letter to a pretend lender explaining your business's health in plain words.

LOOK FOR	WHAT IT MEANS
Records	Every transaction is dated, recorded with equal debits and credits, and posted to the right accounts.
Statements	The trial balance balances, and the income statement and balance sheet are correct and consistent with each other.
Costs and ratios	Fixed and variable costs, cost per unit, break-even and two ratios are correctly calculated with work shown.
Honesty and explanation	The records are honest and complete, mistakes are corrected openly, and the letter explains the numbers clearly and truthfully.

7.1 T-ACCOUNTS, DEBITS AND CREDITS: “IN THE NAME OF GOD AND OF PROFIT”

OBJECTIVES

- Tell how the merchant Francesco Datini of Prato kept his books, and why his records still matter.
- Explain the five kinds of accounts: assets, liabilities, owner’s equity, revenue and expenses.
- Record transactions in T-accounts using the rules of debit and credit.
- Prepare a trial balance and check that total debits equal total credits.

Warm-up. Every trade has two sides. Write down three things you or your family bought this week. For each, write what came in (for example, groceries) and what went out (for example, \$40 from the wallet). Can you think of any trade that has only one side?

WATCH

T Accounts Explained SIMPLY (With 5 Examples)

Accounting Stuff • 11:08

<https://www.youtube.com/watch?v=kA9snSvCgW8>

WHEN TO WATCH

After the big idea, before the T-account project. Pause after each example and try it yourself first.

BACKUP VIDEO

ACCOUNTING BASICS: Debits and Credits Explained

Accounting Stuff • 5:44

<https://www.youtube.com/watch?v=VhwZ9t2b3Zk>

Before the video above, if debits and credits are new to you.

KEY TERMS

account

A record of the increases and decreases in one item, such as Cash, Supplies, Loans or Sales.

T-account

A simple form of an account shaped like the letter T, with debits on the left and credits on the right.

debit

An entry on the left side of an account. Debits increase assets and expenses and decrease liabilities, equity and revenue.

credit

An entry on the right side of an account. Credits increase liabilities, equity and revenue and decrease assets and expenses.

trial balance

A list of every account's balance, used to check that total debits equal total credits.

CORE IDEAS

The story. Francesco di Marco Datini was born about 1335 in Prato, near Florence, and lost both parents to the Black Death as a boy. As a young man he went to Avignon, in France, where the popes then lived, and grew rich trading in armor, cloth, art and goods of every kind. Later he ran a web of trading companies and branches in Florence, Pisa, Genoa, Barcelona, Valencia and Majorca. He was a careful, anxious man who wanted to know where every florin was. He headed his account books with the words *“In the name of God and of profit.”* When he died in 1410, he left his fortune to a charity for the poor of Prato, and he left something else: his whole archive, hundreds of account books and about 150,000 letters, which still survive in Prato.

How they figured it out. Datini's managers faced a problem every growing business faces: with goods, money, debts and partners spread across many cities, how can an owner know whether he is making money or losing it? Merchants in Italy had been developing a method for more than a century: **double entry**. Every transaction was written twice, once as a **debit** in one account and once as a **credit** in another, for the same amount. Datini's branches in Pisa, Barcelona and elsewhere kept their books this way by the late 1300s, a century before Luca Pacioli described the method in print in 1494. Because every entry had two equal sides, the books could be checked: if total debits did not equal total credits, there was a mistake to find. Historians studying Datini's ledgers today can still follow his trades, almost to the day, six hundred years later.

The big idea. Every business has five kinds of accounts: **assets** (what it owns: cash, supplies, equipment), **liabilities** (what it owes: loans, unpaid bills), **owner's equity**

(the owner's stake), **revenue** (what it earns from sales) and **expenses** (what it spends to earn revenue). A **T-account** has a left side, the debit side, and a right side, the credit side. The rule: **debits increase assets and expenses; credits increase liabilities, equity and revenue.** Example: Maria starts a bakery. She puts in \$500 of her own savings: debit Cash \$500, credit Owner's Equity \$500. She buys \$120 of flour and sugar with cash: debit Supplies \$120, credit Cash \$120. She borrows \$200 from her uncle: debit Cash \$200, credit Loan Payable \$200. She sells bread for \$300 cash: debit Cash \$300, credit Sales Revenue \$300. She pays a helper \$80: debit Wages Expense \$80, credit Cash \$80. Cash is now $500 - 120 + 200 + 300 - 80 = \$800$, and total debits (\$1,200) equal total credits (\$1,200).

Think it through. Why go to the trouble of writing everything twice? Because it catches errors and makes cheating harder. A clerk who takes \$20 from the cash box cannot simply erase it; the cash account will no longer match the other side. A **trial balance**, listing every account's balance, checks the whole set of books at once. Double entry does not make books honest by itself, as you will see in Unit 8, but it makes honesty easier to check.

In business today. Every accounting program, from the simplest small-business app to the systems of the largest banks, still keeps debits and credits exactly as Datini's clerks did. Bookkeepers still close each month with a trial balance. And the motto at the top of Datini's books is a fair summary of the Christian view of business: profit is good, but it is to be sought in the name of God, honestly and for the good of others.

PICTURE STUDY



Two Tax Gatherers, Workshop of Marinus van Reymerswaele, About 1540 · Oil on panel · Various versions; one is in the National Gallery, London

Image: [Wikimedia Commons](#), public domain

Marinus van Reymerswaele and his workshop painted this scene several times. A tax collector writes in his account book while his companion leans in close. The painter shows every coin, letter and page in fine detail, and he paints the men's faces almost like a caricature. Many viewers think he meant it as a warning against greed: careful books are good, but the love of money is not.

Look closely

- Find the account book. What is the man writing in it? Can you see columns or numbers?
- Look at the coins on the desk. How might the book and the coins be checked against each other?
- Look at the faces and hands of the two men. What feeling does the painter give them?
- Find the papers and letters on the shelf behind them. Why would an office keep so many records?

Talk about it

1. Datini wrote "In the name of God and of profit." What do you think these men would write at the top of their book?

2. Why does keeping accounts in two places, a debit and a credit, make it harder for someone to cheat?
3. Can careful bookkeeping be used for good and for evil? What makes the difference?

PROJECT

Keep the Books in T-Accounts

You will keep a month of books for a small real or pretend business using T-accounts, then prepare a trial balance and check that your debits equal your credits.

You will need

- Ledger notebook or large sheets of graph paper
- Index cards (one per account) or a free spreadsheet
- A calculator
- The list of transactions below

Steps

1. Draw T-accounts for: Cash, Supplies, Equipment, Loan Payable, Owner's Equity, Sales Revenue, Wages Expense, Advertising Expense.
2. Record these transactions for Ben's Bike Repair, writing the date beside each entry: (1) Ben invests \$1,000 of savings. (2) He buys tools (equipment) for \$400 cash. (3) He buys \$150 of parts and supplies with cash. (4) He borrows \$300 from a parent, to repay in six months. (5) He repairs bikes for \$520 cash. (6) He pays a helper \$90. (7) He prints flyers for \$35. (8) He repairs more bikes for \$260 cash. (9) He repays \$100 of the loan.
3. For each transaction, write the debit and the credit. Check that they are equal before you move on.
4. Find the balance of each T-account: total the debit side and the credit side, and subtract the smaller from the larger.
5. Prepare a trial balance: list each account and its balance in a debit or credit column. Add each column. Do they match?
6. If they do not match, hunt for the error: a missing entry, an entry on the wrong side, or an addition mistake. Write down what you found.
7. Now keep real T-accounts for one week of your own money, or a family project, with at least six transactions.

8. Write a paragraph explaining how double entry helps catch mistakes and makes cheating harder.

Tips

- Remember the rule: debits on the left increase assets and expenses; credits on the right increase liabilities, equity and revenue.
- Cash is involved in most transactions in a small business. Start by asking: Did cash go up (debit) or down (credit)?

Check your work

- ☐ I can name the five kinds of accounts and the rule of debit and credit for each.
- ☐ My trial balance for Ben's Bike Repair balances (total debits and total credits are both \$1,980; Cash ends at \$1,305).
- ☐ I can explain why every transaction has equal debits and credits.

LEDGER NOTEBOOK

1. Draw a large chart of the five kinds of accounts with an arrow showing which side increases each.
2. Copy Maria's bakery example as T-accounts, with every entry labeled.
3. Write Datini's motto at the top of a ledger page, and under it write one sentence on what it would mean to keep your own books "in the name of God."

From history. Datini's house in Prato, the Palazzo Datini, still stands, and his archive is kept there. Its letters include notes from his wife, Margherita, who ran the household and many of his affairs when he was away, and who learned to read and write as an adult so that she could write to him herself.

COMMON MISTAKES

- Thinking "debit" means bad and "credit" means good. They simply mean left and right.
- Recording only one side of a transaction. Every transaction needs a debit and a credit of the same amount.
- Thinking a balanced trial balance proves the books are right. It shows debits equal credits, but an entry in the wrong account, or a missing transaction, can still hide in balanced books.

Make it a game • Five Account Cups. Label five cups: assets, liabilities, owner's equity, revenue, expenses. Your parent calls items, such as cash in the till or a loan from a neighbor. Drop a bean into the correct cup and say whether it normally has a debit or credit balance. Reach twelve correct in a row. Tell how Datini began his books.

Scripture. “give an account of thy stewardship” (Luke 16:2, KJV)

In Jesus’ parable, a rich man calls his steward to give an account. Everything we manage belongs to God, and honest records are one way we are ready to give an account of it.

7.2 CASH VERSUS ACCRUAL: THE RAILROADS LEARN TO COUNT WEAR

OBJECTIVES

- Explain the difference between cash-basis and accrual-basis accounting.
- Explain the matching principle, accounts receivable and payable, and unearned revenue.
- Tell how the railroads of the 1800s had to learn to account for the wear of locomotives and track.
- Calculate straight-line depreciation and show its effect on profit.

Warm-up. In December you mow a neighbor's lawn for a whole month, but he pays you \$60 in January. In which month did you earn the money: December, when you did the work, or January, when you were paid? Write your answer and your reason.

WATCH

A Simple Guide to Cash vs Accrual Accounting

Accounting Stuff • 9:55

<https://www.youtube.com/watch?v=kINTtyXPGwM>

WHEN TO WATCH

After the big idea, before the project.

BACKUP VIDEO

Accrual Accounting: How it Works & Why it's #1!

Accounting Stuff • 7:06

<https://www.youtube.com/watch?v=C8UuX75ZarU>

After the lesson, to review accruals.

KEY TERMS

cash basis

Recording revenue when cash comes in and expenses when cash goes out.

accrual basis

Recording revenue when it is earned and expenses when they are used up to earn it, whenever the cash moves.

matching principle

The rule that expenses should be recorded in the same period as the revenue they helped to earn.

accounts receivable

Money customers owe a business for goods or services already delivered.

depreciation

Spreading the cost of a long-lasting asset, such as a machine or a truck, over the years it is used.

CORE IDEAS

The story. The railroads were the first giant businesses in America. By the 1850s a single railroad might own hundreds of miles of track, dozens of locomotives costing thousands of dollars each, stations, bridges and repair shops, and might employ thousands of people. A blacksmith or a storekeeper could count his profit by looking at his cash, but a railroad could not. A locomotive bought this year would pull trains for twenty years or more. Track and bridges wore out slowly. Freight customers paid at the end of the month; coal suppliers were paid later. If the railroad counted the whole cost of a locomotive in the year it bought it, that year would look like a terrible loss and the next nineteen like great profits. If it never counted the cost of wear at all, its profits would look too high, it might pay out too much in dividends, and one day it would have no money to replace its worn-out engines.

How they figured it out. Railroad managers and accountants struggled with this for decades. Some railroads simply charged the cost of repairs and replacements as they happened, which made profits jump up and down from year to year and let managers make a bad year look good by putting off repairs. Some paid dividends that their true earnings could not support, and later failed. Gradually railroad accountants worked out better methods: estimate how long each kind of equipment would last, and charge a fair share of its cost against the revenue of each year, a method called **depreciation**. Beginning in 1907, the federal Interstate Commerce Commission required railroads to charge depreciation on their locomotives and cars in the reports they filed with it. Other industries learned from the railroads, and depreciation became a regular part of business accounting.

The big idea. On the **cash basis**, you record revenue when the money comes in and expenses when the money goes out. It is simple and works for a lemonade stand. On

the **accrual basis**, you record revenue when you *earn* it and expenses when you *use them up* to earn it, which gives a truer picture of profit. That is the **matching principle**. Money customers owe you is an asset called **accounts receivable**; bills you owe are a liability called **accounts payable**; money paid to you in advance for work you have not yet done is a liability called **unearned revenue**. For long-lasting assets, use **straight-line depreciation**: $(\text{cost} - \text{salvage value}) \div \text{years of use}$. A \$12,000 delivery truck that will last 5 years and then sell for \$2,000 depreciates $(12,000 - 2,000) \div 5 = \$2,000$ a year. Each year, \$2,000 is counted as an expense, matched against the revenue the truck helps earn.

Try it. In March, a lawn-care business mows lawns worth \$900, but customers have paid only \$600 by March 31. It buys a \$1,200 mower that will last 4 years with no salvage value, and pays \$150 for gasoline. On the cash basis, March profit is $\$600 - \$1,200 - \$150 = -\$750$, a loss. On the accrual basis, revenue is \$900, depreciation for one month is $\$1,200 \div 48 \text{ months} = \$25$, and gasoline is \$150, so profit is $\$900 - \$25 - \$150 = \$725$. The business did not suddenly fail in March; it bought a mower that will serve for four years. The accrual books tell the truer story, while the cash records show the owner whether he can pay his bills. A wise owner watches both.

In business today. Most large businesses must use accrual accounting, and most small ones keep cash records too. Lenders and investors read accrual statements to judge true profit; owners watch cash to make sure they can pay wages and bills on time, since a profitable business can still fail if it runs out of cash. “The thoughts of the diligent tend only to plenteousness; but of every one that is hasty only to want” (Proverbs 21:5). Planning for the slow wear of things is part of diligence.

PICTURE STUDY



American Railroad Scene: Lightning Express Trains Leaving the Junction, Currier & Ives (lithographers), after a drawing by Frances F. Palmer, 1874 · Hand-colored lithograph · Library of Congress

Image: [Wikimedia Commons](#), public domain

Currier & Ives of New York sold inexpensive colored prints of American life to millions of families. This one shows two express trains steaming away from a junction. Frances Palmer was one of the firm's best artists and one of the few women making a living as a professional artist at the time. Prints like this celebrated the railroads, the largest and costliest businesses the country had ever seen.

Look closely

- Count the locomotives, cars and buildings you can see. Which of these things would a railroad own?
- Find the water tower, the station and the telegraph poles. Why would a railroad need each one?
- Look at the track and the bridge. How long do you think they would last before they wore out?

Talk about it

1. A locomotive may run for twenty years. In which year should its cost count as an expense? Why?

2. What would happen to a railroad that paid out all its cash as dividends and never saved for new engines?
3. Which things in this picture would a railroad record as assets? Which would wear out the fastest?

PROJECT

Two Sets of Books: Cash and Accrual

You will keep two months of books for a small pretend business, first on the cash basis and then on the accrual basis, including depreciation of equipment. You will compare the profit each method shows and explain which tells the truer story.

You will need

- Ledger notebook or a free spreadsheet
- A calculator
- The transactions below

Steps

1. The business: Grace's Garden Service. **Month 1:** she buys a tiller for \$600 (it will last 3 years, no salvage value); she does \$500 of work, of which customers pay \$350 this month and \$150 next month; she buys \$80 of seeds and uses all of them; a customer pays \$120 in advance for work next month.
2. **Month 2:** she does \$400 of work, including the \$120 paid in advance last month; customers pay the \$150 they owed plus \$200 of this month's work; she owes \$40 to the garden store for fertilizer used this month, to be paid next month.
3. Calculate each month's profit on the **cash basis**: cash received – cash paid.
4. Calculate the tiller's monthly depreciation: $\$600 \div 36$ months.
5. Calculate each month's profit on the **accrual basis**: revenue earned – expenses used (including depreciation and the fertilizer).
6. Make a table comparing the two methods for both months, with the total for two months.
7. At the end of Month 2, list Grace's accounts receivable, accounts payable and the book value of the tiller (cost – depreciation so far).
8. Write a paragraph: Which method shows Grace's true profit better? Which tells her whether she can pay her bills? Why does she need both?

Tips

- Ask two questions for every item: When did the cash move? When was the work done or the thing used up?
- Money paid in advance is not yet revenue. It becomes revenue when the work is done.

Check your work

- ☐ I can explain the difference between cash and accrual accounting and the matching principle.
- ☐ I calculated depreciation ($\$600 \div 36 \approx \$16.67$ a month) and the accrual profit for each month.
- ☐ I can explain why the railroads needed depreciation accounting.

LEDGER NOTEBOOK

1. Draw a timeline of a \$12,000 truck over 5 years, showing the \$2,000 depreciation each year and the book value at the end of each year.
2. Make a two-column chart: “Cash basis” and “Accrual basis,” and write when each records revenue and expenses.
3. Sketch a locomotive and label three parts that wear out at different rates.

From history. Railroads also gave America standard time. Before 1883 each town kept its own local time by the sun, which made train schedules confusing. On November 18, 1883, the railroads adopted four standard time zones across the country, and most towns soon followed.

COMMON MISTAKES

- Thinking depreciation is money spent each year. The cash was spent when the asset was bought; depreciation spreads that cost over the years it is used.
- Counting money received in advance as revenue right away. It is a liability until the work is done.
- Thinking a profitable business always has enough cash. A business with large receivables or new equipment can be profitable and still short of cash.

Make it a game • Two Books Race. Keep two small ledgers side by side, one cash basis and one accrual basis. Your parent calls five events, such as sold on credit, paid a year of rent ahead, or received a deposit. Record each in both books. Compare profit. Explain the matching principle, and how railroads learned to count depreciation.

Scripture. “The thoughts of the diligent tend only to plenteousness; but of every one that is hasty only to want.” (Proverbs 21:5, KJV)

A diligent owner plans for the slow wear of his tools and the bills still to come. A hasty one spends today what tomorrow will need.

7.3 THE BALANCE SHEET AND SIMPLE RATIOS: LEWIS TAPPAN'S CREDIT REPORTS

OBJECTIVES

- Tell how Lewis Tappan founded the Mercantile Agency in 1841 to help merchants judge whom to trust with credit.
- Prepare a balance sheet with current and long-term assets and liabilities.
- Calculate and interpret the current ratio, the debt-to-equity ratio, profit margin and return on equity.
- Write a short credit report on a pretend business using its statements.

Warm-up. A friend asks to borrow \$10 and promises to pay you back next week. What would you want to know before you said yes? List at least four questions. Which are about money, and which are about character?

WATCH

3 Liquidity Ratios You Should Know

Accounting Stuff • 5:37

https://www.youtube.com/watch?v=4_GoWaMLGHI

WHEN TO WATCH

After the big idea, before the credit-report project. Watch the current ratio closely.

BACKUP VIDEO

FINANCIAL STATEMENTS: all the basics in 8 MINS!

Accounting Stuff • 9:05

<https://www.youtube.com/watch?v=Fi1wkUczuyk>

Before the lesson, to review the three financial statements.

KEY TERMS

credit

In this lesson, trust that lets a buyer receive goods now and pay later.

current assets

Cash and other assets that will be turned into cash within a year, such as receivables and inventory.

current liabilities

Debts that must be paid within a year, such as accounts payable and short-term loans.

current ratio

Current assets ÷ current liabilities; a measure of whether a business can pay its bills soon.

debt-to-equity ratio

Total liabilities ÷ owner's equity; a measure of how much of the business is paid for with borrowed money.

CORE IDEAS

The story. In the early 1800s, a storekeeper in a small town in Ohio or Tennessee bought his goods from wholesalers in New York, often on credit, paying months later after he sold them. But how could a New York wholesaler know whether a storekeeper a thousand miles away was honest and able to pay? Lewis Tappan, a New York silk merchant and a devout evangelical Christian who also worked to end slavery, learned the cost of that question the hard way. In the Panic of 1837, many of his customers could not pay, and his business failed. In 1841 he founded the Mercantile Agency, the first credit-reporting agency in America. He recruited local correspondents, often lawyers, in towns across the country, who sent reports on the merchants near them. Wholesalers paid a yearly fee to see the reports before deciding whom to trust.

How they figured it out. At first the reports were mostly about character: whether a merchant was honest, sober, hardworking and careful, whether he owned property, and whether he paid his debts on time. Few small merchants kept proper financial statements. Over the following decades, as businesses grew and accounting improved, lenders and credit agencies began to ask for **balance sheets** and income statements, and they learned to read them with simple ratios. The agency passed to new owners, became R. G. Dun & Company, and in 1933 merged with its rival, founded by John Bradstreet, to form Dun & Bradstreet, which still sells business credit reports today.

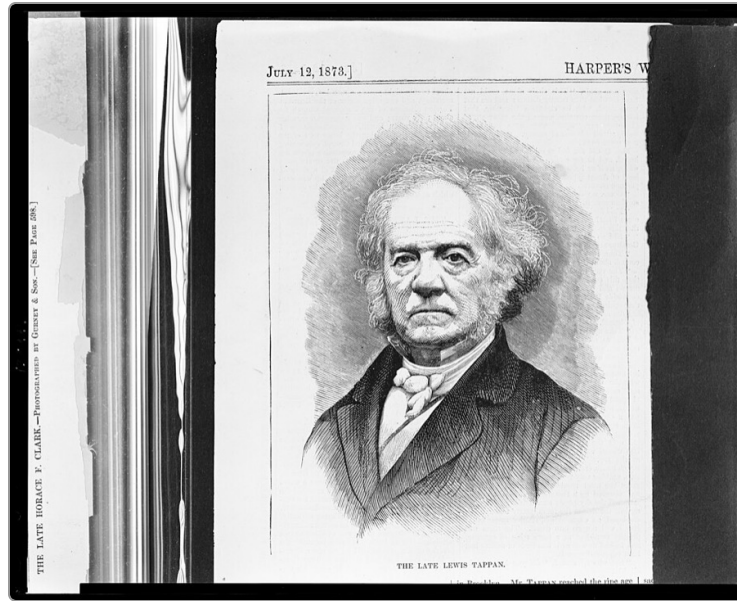
The big idea. A balance sheet shows **assets = liabilities + owner's equity** on one date, and it divides each side into **current** items (cash or debts within a year) and **long-term** items. Lenders read it with ratios. The **current ratio** = current assets ÷ current liabilities. A store with \$30,000 of current assets and \$15,000 of current liabilities has

a current ratio of 2.0: it has \$2 of near-cash for every \$1 it must pay soon. The **debt-to-equity ratio** = total liabilities ÷ owner's equity. If the store owes \$40,000 in all and the owner's equity is \$60,000, the ratio is 0.67: the owner has more of his own money in the business than borrowed money. From the income statement, **profit margin** = profit ÷ revenue, and **return on equity** = profit ÷ owner's equity. If the store earns \$9,000 on \$120,000 of sales, its profit margin is 7.5% and its return on equity is $9,000 \div 60,000 = 15\%$.

Think it through. Ratios are useful, but Tappan's first reports were right to ask about character too. A balance sheet can be wrong, or even dishonest, and a merchant with fine numbers who does not keep his word is a poor risk. The best lenders still ask both kinds of questions: What do the numbers show? And can this person be trusted? "The wicked borroweth, and payeth not again: but the righteous sheweth mercy, and giveth" (Psalm 37:21).

In business today. Banks and suppliers still check a business's statements and credit history before lending to it or selling to it on credit. A family's credit score works in a similar way: it is a summary of whether a person has paid what he owes, on time. Keeping honest books and paying bills on time build the trust that makes credit possible, and a good name is worth far more than any loan.

PICTURE STUDY



Lewis Tappan, Unknown engraver, after a photograph by Gurney & Son, July 12, 1873 · Wood engraving in *Harper's Weekly* · Library of Congress
Image: [Wikimedia Commons](#), public domain

Lewis Tappan and his brother Arthur were New York merchants who gave large sums to Christian missions, Bible societies, schools and the cause of ending slavery. After his business failed in 1837, Lewis turned his experience into a new kind of business: gathering trustworthy information about other businesses. *Harper's Weekly* printed this portrait after his death in June 1873.

Look closely

- Look at Tappan's face. What qualities does the engraver show?
- Look at his clothes. Do they look rich or plain?
- Notice the fine lines of the engraving. How was a picture like this printed and shared in the 1800s?

Talk about it

1. Tappan's business failed because customers could not pay him. How did that failure give him the idea for his next business?
2. Why would a merchant's character matter as much as his balance sheet to a lender?
3. What would you want a credit report about you to say in twenty years?

PROJECT

Write a Credit Report

You will act as a correspondent for Tappan's Mercantile Agency. You will prepare balance sheets for two pretend shops, calculate their ratios, and write a credit report recommending whether a wholesaler should sell to each of them on credit.

You will need

- Ledger notebook or a free spreadsheet
- A calculator
- The facts below

Steps

1. **Miller's Hardware:** cash \$6,000; accounts receivable \$4,000; inventory \$20,000; building and fixtures \$50,000; accounts payable \$8,000; short-term loan \$4,000; mortgage (long-term) \$30,000. Sales last year \$100,000; profit \$8,000. Notes: pays suppliers on time; owner known for honest dealing.
2. **Fancy Goods Emporium:** cash \$1,000; accounts receivable \$9,000; inventory \$25,000; fixtures \$15,000; accounts payable \$22,000; short-term loan \$8,000; long-term loan \$15,000. Sales last year \$90,000; profit \$3,000. Notes: often pays suppliers late; has recently bought a fine carriage.
3. Prepare a balance sheet for each shop with current assets, long-term assets, current liabilities and long-term liabilities. Calculate owner's equity as assets – liabilities. Check that assets = liabilities + equity.
4. Calculate for each: current ratio, debt-to-equity ratio, profit margin and return on equity.
5. Make a comparison table of the four ratios side by side.
6. Write a one-paragraph credit report on each shop, in the style of the 1800s: numbers, character, and your recommendation ("good for credit," "sell for cash only," or "sell small amounts with care").
7. Then make a simple balance sheet for your own family project or savings: list what you own and what you owe, and find your equity.

Tips

- Current means within one year. A mortgage paid over many years is long-term, even though some of it is paid each month.
- A ratio means little alone. Compare it with the other shop, and with what the numbers were last year if you have them.

Check your work

- ☐ I prepared two balanced balance sheets (Miller's equity \$38,000; Fancy Goods equity \$5,000).
- ☐ I calculated the current ratio (Miller's 2.5; Fancy Goods about 1.17) and debt-to-equity (Miller's about 1.11; Fancy Goods 9.0).
- ☐ I can explain why a lender looks at both the numbers and the character of a borrower.

LEDGER NOTEBOOK

1. Draw a balance sheet as a balance scale: assets on one side, liabilities and equity on the other. Divide each into current and long-term.
2. Write the four ratios from the lesson with their formulas and one sentence each on what they tell a lender.
3. Make a timeline: 1837 panic; 1841 Mercantile Agency; 1849 Bradstreet's agency; 1859 R. G. Dun & Co.; 1933 Dun & Bradstreet.

From history. The early credit ledgers of R. G. Dun & Company, written by hand in huge volumes, are now kept at Harvard Business School. Historians use them to study nineteenth-century businesses, and they include reports on many people who later became famous.

COMMON MISTAKES

- Thinking a higher debt-to-equity ratio is better. A high ratio means more borrowed money and more risk if sales fall.
- Confusing profit with cash. A shop can show a profit while its cash is too low to pay its bills.
- Trusting numbers alone. Ratios can be thrown off by a mistake or a lie; character and a record of keeping promises matter too.

Make it a game • Should We Lend. Your parent writes a small merchant's balance sheet. You are Lewis Tappan's agency. Compute the current ratio and debt-to-equity ratio, mark current and long-term items, and write a three-line credit report advising lend or not. Your parent challenges your advice. Defend it with the numbers.

7.4 COST ACCOUNTING AT CARNEGIE STEEL

OBJECTIVES

- Tell how Andrew Carnegie and his managers built a cost-accounting system that tracked the cost of every ton of steel.
- Separate fixed and variable costs and calculate cost per unit at different volumes.
- Calculate contribution margin and the break-even point.
- Explain why Carnegie “ran full,” and weigh what cost-cutting meant for workers.

Warm-up. Making one batch of cookies takes an oven that must be heated for 15 minutes whether you bake one tray or four. Write which costs stay the same no matter how many trays you bake, and which go up with each tray. Which costs less per cookie, one tray or four?

WATCH

Fixed Costs vs Variable Costs

365 Financial Analyst · 4:59

<https://www.youtube.com/watch?v=m3a3tvJ7ryc>

WHEN TO WATCH

After the big idea, before the cost-sheet project.

BACKUP VIDEO

MA22 - Breakeven Point and CVP Analysis - Explained

Tony Bell · 11:00

<https://www.youtube.com/watch?v=tuKLU6aQnJg>

After the project, for a fuller lesson on break-even from a college accounting teacher.

KEY TERMS

cost accounting

Keeping detailed records of the cost of each product, department and process, so managers can find waste and set prices.

fixed cost

A cost that stays the same whatever the output, such as rent, loan payments and a furnace that must be kept hot.

variable cost

A cost that rises with each unit made, such as ore, fuel and materials.

contribution margin

Price – variable cost per unit; the amount each unit contributes toward fixed costs and profit.

break-even point

The number of units at which total revenue equals total cost: $\text{fixed costs} \div \text{contribution margin}$.

CORE IDEAS

The story. When Andrew Carnegie entered the steel business in the 1870s, most ironmasters knew their costs only roughly. They added up what they had spent at the end of the year and hoped they had made money. Carnegie had learned something better at the Pennsylvania Railroad, where managers measured the cost of carrying a ton of freight one mile. For his Edgar Thomson Works he hired William P. Shinn, an experienced railroad accountant, who set up a system that recorded the materials and labor used in each department every day. Carnegie's managers received cost sheets showing what every ton of steel had cost in ore, fuel, labor and repairs, department by department and furnace by furnace.

How they figured it out. Carnegie read the cost sheets constantly and asked hard questions about every number. If one furnace used more coke per ton than another, managers had to find out why. If a department's costs rose, its superintendent had to explain. The cost sheets showed where new machines would pay for themselves, which ores gave the best value, and what price the company could bid for a big order of rails and still make money. They also showed something important about fixed costs: a blast furnace, a mill and its managers cost nearly as much to run half-full as full. So Carnegie's rule was to **run full**: keep the mills working at full capacity, even if that meant cutting prices to win orders in hard times, because every extra ton spread the fixed costs thinner and lowered the cost of each ton. Rivals who did not know their costs so exactly could not match his bids.

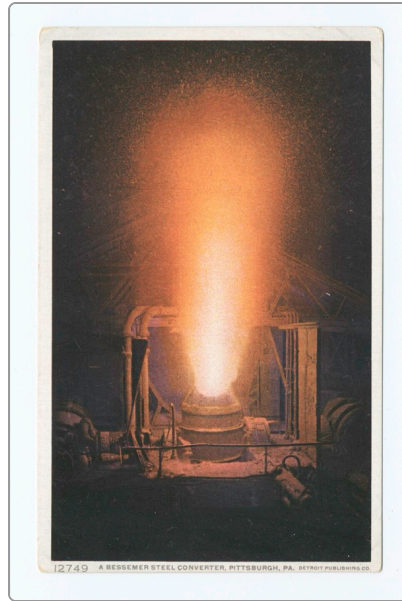
The big idea. Cost accounting separates **fixed costs**, which stay the same whatever the output, from **variable costs**, which rise with each unit. $\text{Cost per unit} = (\text{fixed costs} \div \text{units}) + \text{variable cost per unit}$. Suppose a mill has fixed costs of \$300,000 a month and variable costs of \$20 a ton. At 10,000 tons, the cost per ton is $\$30 + \$20 =$

\$50. At 20,000 tons, it is $\$15 + \$20 = \$35$. The **contribution margin** is price – variable cost: at a price of \$40 a ton, each ton contributes \$20 toward fixed costs. The **break-even point** = fixed costs $\div$ contribution margin = $\$300,000 \div \$20 = 15,000$ tons a month. Every ton beyond that is profit. This is why running full mattered so much.

Think it through. Carnegie's cost sheets made steel cheaper for every customer in America, and helped build the railroads, bridges and skyscrapers of a growing nation. But the same drive for low costs fell hard on the men in the mills. In 1888 the Edgar Thomson Works went back to two twelve-hour shifts, and workers in many departments labored twelve hours a day, seven days a week. Labor was one more line on the cost sheet, and some managers forgot that the line stood for men with families. A wise manager counts costs carefully and still remembers that workers are not tools. "Masters, give unto your servants that which is just and equal" (Colossians 4:1).

In business today. Every well-run business uses cost accounting: restaurants track the cost of each plate, hospitals the cost of each treatment, and farmers the cost of each bushel. Break-even analysis tells a new business how much it must sell to survive. And managers still face Carnegie's temptation: to cut costs in ways that harm the workers, customers or neighbors who do not appear on the cost sheet. "Be thou diligent to know the state of thy flocks" (Proverbs 27:23), but know your people too.

PICTURE STUDY



A Bessemer Steel Converter, Pittsburgh, Detroit Publishing Company, About 1900–1910 · Color postcard from a photograph · New York Public Library
Image: [Wikimedia Commons](#), public domain

A Bessemer converter turned melted iron into steel by blasting air through it, burning out impurities in a roaring shower of sparks that lasted about twenty minutes. This one stood in a Pittsburgh steel works. Each blow made several tons of steel, and Carnegie's cost sheets tracked the iron, fuel, labor and repairs that went into every one.

Look closely

- Find the converter and the shower of sparks. How hot do you think it was near it?
- Find the workers. How close do they stand? What would protect them?
- Look at the size of the converter compared with the men. How many tons might it hold?

Talk about it

1. Which costs of this converter were fixed, and which were variable?
2. Why would a manager want to know exactly how much each blow of the converter cost?
3. What costs do you see in this picture that would never appear on a cost sheet?

Safety first. Use ovens, knives and paper cutters only with a parent. If you make food, follow safe food-handling rules.

PROJECT

Run a Cost Sheet: Fixed Costs, Variable Costs and Break-Even

You will make a real small batch of a product, such as bookmarks, greeting cards or cookies with a parent, keep a cost sheet like Carnegie's, separate fixed and variable costs, and calculate your cost per unit at different volumes and your break-even point.

You will need

- Materials for a small product and their receipts or prices
- Any tools you will use (a cookie sheet, a paper cutter used with a parent, markers)
- A timer, a calculator or free spreadsheet, and the ledger notebook

Steps

1. List every cost of making your product. Sort each into fixed (stays the same however many you make, such as a stamp or cookie cutter you buy, or a batch of oven heat) and variable (each unit uses more, such as paper, flour or ribbon).
2. Calculate the variable cost per unit, and the total fixed costs for one production run.
3. Make a cost table for 5, 10, 20 and 40 units: total fixed costs, total variable costs, total cost, and cost per unit.
4. Graph cost per unit against the number of units. Describe the shape of the curve.
5. Choose a fair price. Calculate the contribution margin (price – variable cost per unit).
6. Calculate the break-even point: $\text{fixed costs} \div \text{contribution margin}$. Round up to the next whole unit.
7. Make a real batch, timing your work. Add a line for your own time at a fair hourly wage. How does including your labor change the cost per unit?
8. Write a paragraph: How would Carnegie's rule of "running full" apply to your product? What cost should never be cut, even to lower the price?

Tips

- If you already own a tool, its cost is not part of this run, but if you bought it for this project, count it as a fixed cost.
- Including your own time is honest accounting. A business that forgets its owner's labor may think it is profitable when it is not.

Check your work

- ☐ I separated fixed and variable costs and calculated cost per unit at four volumes.
- ☐ I calculated my contribution margin and break-even point correctly.
- ☐ I can explain why cost per unit falls as output rises, and why Carnegie ran full.

LEDGER NOTEBOOK

1. Copy the mill example as a break-even graph: a flat fixed-cost line, a rising total-cost line, and a rising revenue line. Mark where revenue crosses total cost.
2. Make a one-page cost sheet for your product in the style of Carnegie's, with a line for every material, labor and fixed cost.
3. Write two lists: "Costs on the cost sheet" and "Costs that do not appear on the cost sheet" (for example, a worker's exhaustion or smoke over the town).

From history. Carnegie liked to say that he knew little about how steel was made, but that he knew what it cost. He hired the best engineers and chemists he could find, including Captain Bill Jones, the Edgar Thomson superintendent, who invented many improvements to steelmaking and was famous for caring about his men.

COMMON MISTAKES

- Thinking all costs rise with output. Fixed costs stay the same, which is why cost per unit falls as output rises.
- Setting a price below variable cost. Each sale then loses money, and selling more makes it worse.
- Forgetting the owner's own time. Unpaid labor is still a real cost.

Make it a game • Cut the Cost. Carnegie's managers posted costs on every ton. Your parent gives fixed costs, variable cost per unit and a price. Compute cost per unit at 100, 200 and 400 units, then the contribution margin and break-even point. Each round your parent changes one number, and you recompute. Reach five right answers in five minutes.

Scripture. “For riches are not for ever: and doth the crown endure to every generation?” (Proverbs 27:24, KJV)

Solomon told the herdsman to know the state of his flocks because riches do not last by themselves. Careful cost records are part of that diligence; so is remembering that the business, and its workers, are a trust from God.

ACCOUNTING

Accounting is the language of business. It records what a business owns, what it owes, what it earns and what it spends, so that owners, lenders, workers and tax collectors can all see the truth. In earlier years you learned to keep a ledger, to write an income statement and to balance a balance sheet with the equation **assets = liabilities + owner's equity**. In this unit you will learn the tools real bookkeepers use: **T-accounts, debits and credits**, the difference between **cash and accrual** accounting, **depreciation, financial ratios**, and **cost accounting**.

You will meet a merchant of Prato who headed his account books “in the name of God and of profit,” the railroads that had to learn how to count the cost of a locomotive that lasts twenty years, the Christian merchant who founded America’s first credit-reporting agency, and Andrew Carnegie, who studied his cost sheets as closely as any general studies a map. Honest books are a form of stewardship: “give an account of thy stewardship” (Luke 16:2).

PREREQUISITES

- Knows the income statement and the balance sheet at a simple level (earlier grades or Grade 5)
- Knows Carnegie Steel and the railroads (Units 3 and 4)
- Can add and subtract decimals in columns and calculate percents and ratios

MASTERY CHECKLIST

- ☐ I can record transactions in T-accounts with equal debits and credits and prepare a trial balance.
- ☐ I can explain the difference between cash and accrual accounting and calculate straight-line depreciation.
- ☐ I can prepare a simple balance sheet and calculate the current ratio and the debt-to-equity ratio.
- ☐ I can separate fixed and variable costs, calculate cost per unit and find a break-even point.
- ☐ I can explain why honest books matter to every stakeholder.

OPTIONAL BOOKS AND GAMES FOR THIS UNIT

- **Accounting Stuff (video channel)**: Short, clear, free videos on debits and credits, T-accounts, accruals, depreciation and financial statements. Several are used in this unit; others are good extra practice. Ages 12 and up.
- **LibreOffice Calc**: A free spreadsheet program for building ledgers, trial balances and cost sheets. Google Sheets works just as well.

Not required. Every project in this unit works without them. School Launch has no ties to these authors, publishers or companies.

LESSONS IN THIS UNIT

7.1 T-Accounts, Debits and Credits: “In the Name of God and of Profit”

2 sessions of 50 minutes

7.2 Cash versus Accrual: The Railroads Learn to Count Wear 2 sessions of 50 minutes

7.3 The Balance Sheet and Simple Ratios: Lewis Tappan’s Credit Reports

2 sessions of 50 minutes

7.4 Cost Accounting at Carnegie Steel

2 sessions of 50 minutes

UNIT 7 REVIEW

Answer each question. Show your work for every calculation and use complete sentences for explanations. The review is worth 100 points.

1. **8 pts**

Name the five kinds of accounts. Which side (debit or credit) increases each?

2. **10 pts**

Write the debit and credit for each: (a) The owner invests \$2,000 cash. (b) The business buys a \$700 machine on credit (to pay later). (c) It sells goods for \$450 cash. (d) It pays \$200 toward the machine.

3. **6 pts**

What does a trial balance check, and what kind of error can it miss?

4. **8 pts**

What is the difference between cash-basis and accrual-basis accounting? What is the matching principle?

5. **8 pts**

A bakery buys an oven for \$9,000. It will last 6 years and then sell for \$1,200. Find the yearly straight-line depreciation and the book value after 2 years.

6. **8 pts**

Why did the railroads need depreciation accounting? What could go wrong without it?

7. **8 pts**

Why did Lewis Tappan found the Mercantile Agency in 1841, and what did its early reports describe?

8. **10 pts**

A shop has current assets of \$45,000, long-term assets of \$55,000, current liabilities of \$18,000 and long-term liabilities of \$22,000. Find its owner's equity, current ratio and debt-to-equity ratio.

9. **6 pts**

The same shop earned \$7,500 profit on \$150,000 of sales. Find its profit margin and return on equity.

10. **10 pts**

A workshop has fixed costs of \$6,000 a month and a variable cost of \$15 a unit. It sells each unit for \$40. Find the contribution margin, the break-even point, and the cost per unit at 300 units.

11. **8 pts**

What does it mean to "run full," and why did it help Carnegie? What did it cost his workers?

12. **10 pts**

Short answer: In four or five sentences, explain why honest books matter to at least four of a business's six stakeholders.

ANSWER KEY

1. Assets (debit), expenses (debit), liabilities (credit), owner's equity (credit), revenue (credit).
2. (a) Debit Cash \$2,000; credit Owner's Equity \$2,000. (b) Debit Equipment \$700; credit Accounts Payable \$700. (c) Debit Cash \$450; credit Sales Revenue \$450. (d) Debit Accounts Payable \$200; credit Cash \$200.
3. It checks that total debits equal total credits. It can miss an entry put in the wrong account, a transaction left out entirely, or the same error made on both sides.
4. Cash basis records revenue and expenses when cash moves; accrual records revenue when earned and expenses when used up. The matching principle records expenses in the same period as the revenue they helped earn.
5. $(9,000 - 1,200) \div 6 = \$1,300$ a year. After 2 years: $9,000 - 2,600 = \$6,400$.
6. Their locomotives, cars and track lasted many years, so charging the whole cost in one year distorted profits, while ignoring wear overstated profits. Without depreciation they might pay out too much in dividends and have no money to replace worn-out equipment.
7. After the Panic of 1837, when his customers could not pay and his business failed, he saw that wholesalers needed reliable information about distant merchants before selling on credit. Early reports described character: honesty, habits, property and whether the merchant paid on time.
8. Equity = $100,000 - 40,000 = \$60,000$. Current ratio = $45,000 \div 18,000 = 2.5$. Debt-to-equity = $40,000 \div 60,000 \approx 0.67$.
9. Profit margin = $7,500 \div 150,000 = 5\%$. Return on equity = $7,500 \div 60,000 = 12.5\%$.
10. Contribution margin = $40 - 15 = \$25$. Break-even = $6,000 \div 25 = 240$ units. Cost per unit at 300 = $6,000 \div 300 + 15 = \$35$.
11. Keeping the mills working at full capacity, even at lower prices, so fixed costs were spread over more tons and each ton cost less. It let him underbid rivals. But the drive for low costs meant twelve-hour shifts, seven days a week, for many workers.
12. A good answer explains, for example, that financiers and lenders rely on true statements to decide whether to invest or lend; owners need true costs to set prices and find waste; workers depend on the business staying healthy and paying wages; customers and the community rely on honest dealing and on

taxes being paid; and that dishonest books eventually destroy trust, as in the Bank of Amsterdam.

PORTFOLIO PIECE: A FULL SET OF BOOKS FOR ONE MONTH

Keep a full set of books for one month for a real small business or project: your market-day product, a family garden stand, or the bonus business in Unit 9 (with a parent). Record every transaction with a date in a journal and post it to T-accounts. At the end of the month, prepare a trial balance, an accrual-basis income statement (with depreciation of any equipment), a balance sheet, a cost sheet with your cost per unit and break-even point, and the current ratio and debt-to-equity ratio. End with a one-page letter to a pretend lender explaining your business's health in plain words.

LOOK FOR	WHAT IT MEANS
Records	Every transaction is dated, recorded with equal debits and credits, and posted to the right accounts.
Statements	The trial balance balances, and the income statement and balance sheet are correct and consistent with each other.
Costs and ratios	Fixed and variable costs, cost per unit, break-even and two ratios are correctly calculated with work shown.
Honesty and explanation	The records are honest and complete, mistakes are corrected openly, and the letter explains the numbers clearly and truthfully.

SAVING, INVESTING AND GIVING

Money is a tool for stewardship. Scripture teaches that we work not only to meet our own needs but to save wisely, to provide for our families, and to have something to give (Ephesians 4:28). John Wesley put the rule in three parts in his sermon “The Use of Money”: gain all you can, save all you can, give all you can. In this unit you will learn how saving and investing work, what risks they carry, how they can go badly wrong, and how a wise family budgets, uses credit carefully and gives generously.

You will study **stocks, bonds and mutual funds**, from a Dutch broker’s fund of 1774 to the index funds of today. You will see the danger of putting everything in one place, and the madness of a bubble, in the South Sea Company of 1720. You will learn how the crash of 1929 and the bank runs that followed led to deposit insurance in 1933. And you will plan a real family budget, learn how credit and interest work, and finish the year with a family market day. All investing in this unit is practice with pretend money; a student never invests real money without a parent.

PREREQUISITES

- Knows shares, dividends and stock exchanges (Unit 4)
- Knows how banks keep reserves and lend (Unit 2)
- Can calculate percents, simple interest and compound growth

MASTERY CHECKLIST

- ☐ I can explain stocks, bonds and mutual funds and calculate a stock’s return and a bond’s interest.
- ☐ I can explain risk, return and diversification, and why bubbles burst.
- ☐ I can explain how a bank run happens and how deposit insurance stopped most of them after 1933.
- ☐ I can build a monthly budget with giving, saving and spending, and calculate the cost of credit-card interest.
- ☐ I can present my year’s work at a family market day.

OPTIONAL BOOKS AND GAMES FOR THIS UNIT

- **The Way to Wealth, by Benjamin Franklin (1758)**: Free at Project Gutenberg. Franklin's short collection of sayings on work, thrift and debt, such as "a small leak will sink a great ship." Read it aloud in Lesson 8.4. Ages 10 and up.
- **"The Use of Money," a sermon by John Wesley**: Wesley's famous sermon: gain all you can, save all you can, give all you can. Many church and university sites publish the full text free; search for the title with a parent. Read it with Lesson 8.4.
- **Federal Reserve Bank of St. Louis: Econ Lowdown**: Free online lessons on saving, investing, credit and budgeting for middle and high school students, made by the St. Louis Fed.

Not required. Every project in this unit works without them. School Launch has no ties to these authors, publishers or companies.

LESSONS IN THIS UNIT

8.1	Stocks, Bonds and Mutual Funds	2 sessions of 50 minutes
8.2	Risk, Diversification and the South Sea Bubble	2 sessions of 50 minutes
8.3	The 1929 Crash, Bank Runs and the FDIC	2 sessions of 50 minutes
8.4	Budgeting, Credit and the Family Market Day	2 sessions of 50 minutes

UNIT 8 REVIEW

Answer each question. Show your work for every calculation and use complete sentences for explanations. The review is worth 100 points.

1. **8 pts**

What is the difference between a stock and a bond? How does each pay its owner?

2. **8 pts**

You buy a share for \$40, receive \$1.20 in dividends, and sell it a year later for \$43. What is your total return? What if you sold for \$37?

3. **6 pts**

A fund holds \$5,000,000 of stocks and has 250,000 shares. What is the value of one share? Why is a fund less risky than one stock?

4. **8 pts**

Tell what happened in the South Sea Bubble of 1720.

5. **8 pts**

Name four warning signs of a bubble or get-rich-quick scheme.

6. **8 pts**

What is diversification, and what does Ecclesiastes 11:2 teach about it? What risk does it not remove?

7. **10 pts**

You buy \$2,000 of stock with \$400 of your own money and \$1,600 borrowed. Find your gain or loss as a percent of your \$400 if the stock rises 15% or falls 15%.

8. **8 pts**

Explain how a bank run can make even a sound bank fail.

9. **8 pts**

How did the FDIC, created in 1933, stop most bank runs? What keeps insured banks from taking foolish risks?

10. **10 pts**

A family earns \$4,000 a month after taxes. Make a budget that gives 10% and saves 15%. How much is left to live on? If their emergency fund goal is 3 months of living costs, how long will it take to reach it by saving the 15%?

11. **10 pts**

A credit card has a \$1,500 balance at 18% APR. What is the interest for one month? If the holder pays \$45 that month, how much of the payment reduces the debt?

12. **8 pts**

Short answer: In four or five sentences, explain John Wesley's three rules for the use of money and how they could guide a young person's first job.

ANSWER KEY

1. A stock is ownership in a company; it pays dividends and gains or loses as its price changes. A bond is a loan; it pays fixed interest and returns the principal at maturity, unless the borrower fails.
2. $(\$1.20 + \$3) \div \$40 = 10.5\%$. $(\$1.20 - \$3) \div \$40 = -4.5\%$.
3. $\$5,000,000 \div 250,000 = \$20$. It owns many companies, so one company's failure costs only a small part of its value (diversification).
4. The South Sea Company offered to take over Britain's national debt and spread stories of great riches; its share price rose from about £128 in January to about £1,000 in summer, as people of every rank bought. It then collapsed below £200 by December, ruining thousands. Parliament found bribery and false reports, and punished officials and directors.
5. Any four: prices rising far faster than earnings; buying because prices are rising; promises of quick, sure riches; borrowing to buy; many new buyers who do not understand the investment; pressure to act fast; secrecy about how it works.
6. Spreading money across many investments so one failure does not ruin you; "give a portion to seven, and also to eight; for thou knowest not what evil shall be upon the earth." It does not remove the risk of a whole market falling at once.
7. Rise: $\$2,300 - \$1,600 = \$700$, gain $\$300 = 75\%$. Fall: $\$1,700 - \$1,600 = \$100$, loss $\$300 = -75\%$.
8. A bank keeps only part of its deposits as cash and lends the rest. If many depositors demand their money at once, the bank cannot pay them all because its loans cannot be collected instantly, so it fails even if its loans are good.
9. It guaranteed deposits up to a limit (first \$2,500 from 1934), so depositors had no reason to rush to withdraw. Banks pay premiums and are inspected regularly.
10. Give \$400, save \$600, live on \$3,000. Goal: $3 \times \$3,000 = \$9,000$; $\$9,000 \div \$600 = 15$ months.
11. $18\% \div 12 = 1.5\%$ a month; $\$1,500 \times 0.015 = \$22.50$ interest. $\$45 - \$22.50 = \$22.50$ reduces the debt, leaving \$1,477.50.
12. A good answer explains gain all you can (work hard and honestly without harming others or yourself), save all you can (avoid waste and debt, build an emergency fund), and give all you can (the purpose of gaining and saving), with

specific examples such as giving first from each paycheck, saving a set percent and avoiding credit-card debt.

PORTFOLIO PIECE: MY STEWARDSHIP PLAN AND MARKET-DAY REPORT

Write a stewardship plan for the next year of your own money: what you expect to earn, a budget that gives, saves and spends with real numbers, an emergency fund goal, and a practice investment plan (with pretend money) that shows diversification. Then add your market-day report: your sales ledger, a closing income statement, what you gave and saved, and a one-page reflection on what this year taught you about work, honesty, risk, saving and giving.

LOOK FOR	WHAT IT MEANS
Budget	A realistic budget with real numbers that gives first, saves next and stays within its income.
Investing	A practice plan that explains stocks, bonds and funds and shows sensible diversification and patience.
Market-day books	A complete, honest sales ledger and income statement that match the cash counted.
Reflection	A thoughtful reflection that connects the year's lessons to Scripture and to the student's own choices.

8.1 STOCKS, BONDS AND MUTUAL FUNDS

OBJECTIVES

- Explain the difference between a stock and a bond, and how each earns money for an investor.
- Tell how the first investment funds began in Amsterdam in 1774 and in Boston in 1924.
- Explain what a mutual fund and an index fund are, and why they spread risk.
- Calculate a stock's total return, a bond's yearly interest, and a fund's value per share.

Warm-up. Your aunt starts a bakery and needs \$1,000. She offers you two choices: lend her \$100 and she will pay you \$8 a year and return your \$100 in five years, or buy one-tenth of the bakery for \$100 and share in its profits, whatever they are. Which would you choose, and why?

WATCH

What the Heck Is a Mutual Fund?

Two Cents • 4:56

<https://www.youtube.com/watch?v=jxZa90pSYzc>

WHEN TO WATCH

After the big idea, before the practice portfolio.

Note: From Two Cents, a PBS personal-finance series. It briefly names some fund companies and brokerages; this course does not recommend any of them.

BACKUP VIDEO

Get Into Stocks - No-Frills Money Skills

Federal Reserve Bank of St. Louis • 9:14

https://www.youtube.com/watch?v=Yq_FoufpKsl

After the lesson, for more on owning stocks.

KEY TERMS

stock

A share of ownership in a company; it may pay dividends and may rise or fall in price.

bond

A loan to a government or company that pays a fixed amount of interest (the coupon) and repays the original amount (the principal) on a set date (maturity).

mutual fund

A company that pools money from many investors to buy many different stocks or bonds, managed for them.

index fund

A mutual fund that simply buys all the stocks in a market index, such as the 500 largest U.S. companies, instead of picking some.

total return

The dividends or interest received plus the change in price, as a percent of what was paid.

CORE IDEAS

The story. In 1774, after a financial crisis had ruined many investors who had put all their money into a few risky loans, an Amsterdam broker named Abraham van Ketwich had an idea. He invited ordinary people to buy shares in a trust he called *Eendragt Maakt Magt*, “Unity Creates Strength.” The trust used their pooled money to buy bonds from many different governments and borrowers, so that if one borrower failed, the others would still pay. Ordinary savers could thus own a small piece of many loans instead of a large piece of one. Similar trusts followed in Britain and America in the 1800s. Then, in March 1924, a group of Boston investors opened the Massachusetts Investors Trust, the first modern **mutual fund**: anyone could buy shares at any time at a price based on the fund’s current value, and the fund published its holdings so investors could see what they owned.

How they figured it out. Funds solved two problems for ordinary savers. First, buying a single share of many companies was costly and hard; a fund let a family with a small sum own pieces of dozens of companies at once. Second, picking good companies took knowledge and time; a fund hired managers to do it. But the

managers charged fees, and many of them did not do better than the market as a whole. In 1976 John Bogle, the founder of a fund company in Pennsylvania, started a fund that simply bought every stock in the S&P 500 index of large American companies and charged a very low fee. Critics laughed at it. Over time, **index funds** became one of the most popular ways for families to invest for the long term.

The big idea. A **stock** is ownership; a **bond** is a loan. A stockholder earns dividends and gains (or loses) as the price changes. Suppose you buy a share for \$50, receive \$2 in dividends over a year, and the price rises to \$54. Your **total return** is $(\$2 + \$4) \div \$50 = 12\%$. If the price instead falls to \$44, your return is $(\$2 - \$6) \div \$50 = -8\%$. A bondholder receives fixed interest and gets the principal back at **maturity**, unless the borrower fails. A \$1,000 bond with a 5% coupon pays \$50 a year. Stocks usually pay more over long periods but rise and fall much more; bonds are usually steadier but pay less. A **mutual fund's** value per share is its total assets $\div$ number of shares: a fund holding \$2,000,000 of stocks with 100,000 shares is worth \$20 a share.

Think it through. Owning stock means owning part of real businesses: their factories, their workers' skills and their customers' trust. When you invest, you become a financier, one of the six stakeholders, and you share responsibility for how the company behaves. Jesus' parable of the talents praises the servants who put their master's money to work, and the master scolds the one who buried it: "Thou oughtest therefore to have put my money to the exchangers" (Matthew 25:27). Wise investing is patient stewardship, not a game of chance or a scheme for quick riches.

In business today. Many American families own stocks and bonds, most often through mutual funds and index funds in retirement accounts. Companies raise money by selling stock and bonds; governments borrow by selling bonds. A wise young person starts with an emergency fund in a bank, learns how investments work, and, with a parent's help when he is older, invests a part of his savings for the long term, never money he will need soon.

PICTURE STUDY



The Bulls and Bears in the Market, William Holbrook Beard, 1879 · Oil on canvas · New-York Historical Society

Image: [Wikimedia Commons](#), public domain

William Holbrook Beard was famous for painting animals acting like people. In this picture he turned the traders of Wall Street into a wild crowd of bulls and bears. On the stock market, a “bull” is someone who expects prices to rise and a “bear” someone who expects them to fall, and a rising market is called a bull market. Beard painted it a few years after a financial panic in 1873.

Look closely

- Find the bulls and the bears. Which side seems to be winning?
- Look at the buildings. Which one do you think is the Stock Exchange?
- Look at the animals’ faces and movements. What feelings is Beard showing?

Talk about it

1. Why might a bull stand for rising prices and a bear for falling prices? (Think of how each animal attacks.)
2. Beard shows the market as a stampede. What does that suggest about how people sometimes buy and sell?
3. How is a patient investor in a mutual fund different from the animals in this picture?

Safety first. This project uses pretend money only. Do not open any investment account, sign up for any website or app, or give any personal information online. A parent helps look up prices.

PROJECT

A Practice Portfolio: Stocks, Bonds and a Fund

You will invest \$10,000 of pretend money in three ways: three single stocks you choose, a bond, and a pretend index fund. You will follow them in the newspaper or online with a parent for four weeks, record their prices, and calculate your total return.

You will need

- A parent to help you look up prices in a newspaper's business pages or a reliable financial website (no accounts or sign-ups)
- Ledger notebook or a free spreadsheet
- A calculator

Steps

1. Choose three well-known companies whose products you know. With a parent, find each one's share price today. Write down why you chose each.
2. Pretend to invest: \$2,000 in each of the three stocks (number of shares = $\$2,000 \div \text{price}$, rounded down), \$2,000 in a bond paying 4% a year, and \$2,000 in a pretend fund that follows a broad stock index (record the index's level today).
3. Each week for four weeks, record each stock's price and the index level in a table. Calculate the value of each holding.
4. For the bond, calculate four weeks of interest: $\$2,000 \times 4\% \times 4/52$.
5. For the fund, calculate its value: $\$2,000 \times (\text{new index level} \div \text{starting level})$.
6. At the end, calculate the total return of each holding and of the whole portfolio, as a percent.
7. Graph the value of your three single stocks and your index fund over the four weeks. Which moved most? Which moved least?
8. Write a paragraph: Which kind of investment was steadiest? Which was riskiest? What did you learn about owning one company versus many?

Tips

- Four weeks is far too short to judge an investment. Real investors think in years and decades.
- Use only pretend money. Do not open any account or enter any information online.

Check your work

- ☐ I can explain the difference between a stock and a bond and how a mutual fund works.
- ☐ My table shows prices each week and the total return of each investment.
- ☐ I can explain why an index fund is less risky than a single stock.

LEDGER NOTEBOOK

1. Draw a two-column chart, “Stock” and “Bond”: what you own, how you earn, what can go wrong, and how risky each is.
2. Copy your portfolio’s value graph and label the best and worst week.
3. Make a timeline: 1602 first VOC shares; 1774 Eendragt Maakt Magt; 1792 Buttonwood Agreement; 1924 Massachusetts Investors Trust; 1940 law regulating funds; 1976 first index fund for individual investors.

From history. In 1940 Congress passed the Investment Company Act, which requires mutual funds to tell investors what they own, how much they charge and how they are run, and to keep investors’ money with a separate custodian. Rules like these, a fair referee, helped families trust funds with their savings.

COMMON MISTAKES

- Thinking a stock is a loan. A stock is ownership; a bond is a loan.
- Thinking bonds can never lose money. If the borrower fails, a bondholder can lose some or all of the principal.
- Thinking a few weeks of rising prices prove an investment is good. Prices rise and fall; patience and diversification matter more.

Make it a game • Explain It With Pizza. Teach your parent the difference between stock, bond, mutual fund and index fund, using a pizza, an IOU and a basket as pictures. Your parent sneaks in one wrong fact. Catch it. Add how each earns money, and tell how the first investment funds began in Amsterdam in 1774.

Scripture. “Thou oughtest therefore to have put my money to the exchangers, and then at my coming I should have received mine own with usury.” (Matthew 25:27, KJV)

In the parable of the talents, the master expected his servant to put his money to work, even safely with the bankers, rather than bury it. Patient, careful investing is one form of faithful stewardship.

8.2 RISK, DIVERSIFICATION AND THE SOUTH SEA BUBBLE

OBJECTIVES

- Explain risk and return, and why higher possible returns usually come with higher risk.
- Tell the story of the South Sea Company and the bubble of 1720.
- Explain diversification and show with a dice experiment how it reduces risk.
- Name the warning signs of a bubble or a get-rich-quick scheme.

Warm-up. Suppose all your savings were in one basket of eggs, and you had to carry it across an icy yard. Then suppose you could carry the same eggs in five small baskets on five trips. Write what could happen each way. Which way would you sleep better?

WATCH

Mutual Benefit - No-Frills Money Skills

Federal Reserve Bank of St. Louis • 9:16

https://www.youtube.com/watch?v=jPXy02_ZTNg

WHEN TO WATCH

After the big idea, before the dice portfolio.

Note: From the St. Louis Fed. It shows how pooling money in a fund spreads risk.

BACKUP VIDEO

The First Stock Market Crash The South Sea Company

Today I Found Out • 12:32

<https://www.youtube.com/watch?v=5HbZFYUXS7c>

After the story of 1720.

KEY TERMS

risk

The chance that an investment will lose value or earn less than expected.

return

What an investment earns, as a percent of what was put in.

diversification

Spreading money across many different investments, so that one failure does not ruin the whole.

speculation

Buying something mainly in hope of selling it soon to someone else at a higher price, rather than for what it produces.

bubble

A time when prices rise far above the true value of what is being bought, driven by excitement, until they collapse.

CORE IDEAS

The story. In 1711 the British government created the South Sea Company. It took over part of the government's debt, and in return it received the right to trade with Spain's colonies in South America. In 1713 that trade came to include a contract to carry enslaved Africans to the Spanish colonies, a great evil. In fact the company's trade was small and earned little. But in 1720 it offered to take over almost all of Britain's national debt in exchange for new shares, and its directors spread stories of vast riches to come. The share price rose from about £128 in January 1720 to about £1,000 by the summer. Everyone, it seemed, was buying: lords, servants, clergymen and merchants. Dozens of other new companies sprang up to sell shares, some for schemes that made no sense at all. Then, in the late summer, the price began to fall, and by December it was below £200. Thousands of families were ruined.

How they figured it out. Parliament investigated and found that the company's directors had bribed government ministers with gifts of shares and had spread false reports to push up the price. The Chancellor of the Exchequer, John Aislabie, was expelled from Parliament and sent to the Tower of London, and the directors' estates were seized to repay some of the losses. Robert Walpole, who became the leading minister, worked out a plan to restore the government's finances. Even the great scientist Sir Isaac Newton is said to have lost a large sum, after selling his shares early at a profit and then buying back in near the top. The episode gave the English language a word for prices driven far beyond real value by excitement: a **bubble**.

The big idea. Every investment has **risk**: it may earn less than hoped or lose value. Usually, investments that can earn a higher **return** carry higher risk. The best

protection is **diversification**: spreading money among many different investments, so that the failure of one cannot ruin you. “Give a portion to seven, and also to eight; for thou knowest not what evil shall be upon the earth” (Ecclesiastes 11:2). Here is why it works. If you own one company and it fails, you lose everything. If you own a fund of 500 companies and one fails, you lose one five-hundredth. In 1952 the economist Harry Markowitz showed with mathematics that a mix of investments that do not all rise and fall together can have less risk than any one of them alone. Diversification does not remove all risk: when a whole market falls, most investments fall with it.

Think it through. A bubble has warning signs that recur through history: prices rising much faster than the earnings of the business; people buying because prices are rising, not because of what the business produces; promises of quick, sure riches; borrowing to buy; and a crowd of new buyers who do not understand what they are buying. The South Sea Bubble had them all, and so have many bubbles since. “He that maketh haste to be rich shall not be innocent” (Proverbs 28:20). Patient saving and diversified investing are slow, and that is their safety.

In business today. Wise investors diversify across many companies, industries and kinds of investments, and keep money they will need soon in safe places. They are wary of anyone who promises high returns with no risk, of investments they do not understand, and of the excitement of a crowd. Laws now require companies to publish honest reports before selling shares, a lesson learned from 1720 and later crashes, but no law can protect a person from his own greed.

PICTURE STUDY



The South Sea Bubble, a Scene in 'Change Alley in 1720, Edward Matthew Ward, 1847 · Oil on canvas · Tate Britain, London

Image: [Wikimedia Commons](#), public domain

Exchange Alley, called 'Change Alley, was a narrow lane in the City of London where share dealers met in coffee houses. More than a century after the bubble, the Victorian painter Edward Matthew Ward imagined the scene at its height in 1720, filling the alley with people of every rank caught up in the frenzy to buy.

Look closely

- Find the people waving papers. What do you think the papers are?
- Look at the faces. Can you find someone excited, someone worried and someone tricked?
- Look at the clothes. Are the buyers all rich? What does that tell you about who joined the bubble?
- Find anyone who seems calm or apart from the crowd. What might that person be thinking?

Talk about it

1. Why do crowds make it harder for people to think clearly about money?
2. Which warning signs of a bubble can you find in this picture?
3. If you had lived in 1720, what would have helped you stay out of the bubble?

Safety first. All investing in this unit is practice with pretend money. Be wary of any offer, online or in person, that promises quick riches; talk to a parent before responding to any such offer.

PROJECT

The Dice Portfolio: Proving Diversification

You will use dice to model risky investments, comparing a portfolio of one “company” with portfolios of five and twenty. You will record results over many years and see how diversification narrows the range of outcomes. Then you will run a small “bubble market” at home.

You will need

- Five or more dice
- A calculator or free spreadsheet
- Graph paper and the ledger notebook

Steps

1. The rule for each “company” each year, by rolling one die: 1 = loses 50%; 2 = loses 10%; 3 = stays the same; 4 = gains 10%; 5 = gains 20%; 6 = gains 40%.
2. **One company.** Start with \$100 in one company. Roll for 10 years, applying each result to the current value. Record the value each year. Repeat for 5 runs. Record the highest and lowest final values.
3. **Five companies.** Put \$20 in each of five companies. Each year, roll five dice, one per company. Record the total value each year for 10 years. Repeat 5 runs and record the highest and lowest final values.
4. **Twenty companies** (with a spreadsheet, or roll in batches): put \$5 in each of 20 companies and repeat.
5. Make a table: Portfolio, Lowest final value, Highest final value, Average final value. Graph the ranges as bars.
6. Write what you notice: How did diversification change the best and worst outcomes? Did it change the average much?
7. **Bubble market.** With family members, trade a “share” card in rounds, where each buyer must pay more than the last. When one buyer refuses, the price collapses to \$1. Record the prices and who was left holding the card. Discuss what the last buyer believed.

8. Write a paragraph comparing your bubble market with the South Sea Bubble, and list five warning signs of a bubble.

Tips

- A spreadsheet with a random-number formula can roll hundreds of dice in a second; a parent can help you set it up.
- Notice that diversification mostly protects you from disaster. It does not promise the highest result.

Check your work

- ☐ I can explain risk, return and diversification.
- ☐ My table shows that the twenty-company portfolio had a narrower range of outcomes than the one-company portfolio.
- ☐ I can tell the story of the South Sea Bubble and name the warning signs of a bubble.

LEDGER NOTEBOOK

1. Draw the South Sea share price in 1720 as a simple line graph: about £128 in January, about £1,000 in summer, under £200 in December.
2. Draw five baskets of eggs and write one kind of investment in each basket to show a diversified family.
3. List five warning signs of a bubble or get-rich-quick scheme, with one example from history for each.

From history. The same year, 1720, a similar bubble burst in France, where the Scottish financier John Law had built the Mississippi Company and a bank that printed paper money. When it collapsed, many French families lost their savings, and France distrusted paper money and banks for decades.

COMMON MISTAKES

- Thinking diversification removes all risk. When a whole market falls, most investments fall too.
- Thinking a rising price proves something is valuable. In a bubble, prices rise because people expect them to rise, until they stop.
- Thinking smart people never get caught. Even Isaac Newton is said to have lost money in 1720; greed and crowds fool the clever too.

Make it a game • Bubble Pop. Start paper South Sea shares at one bean. Each round, bid the price up by one bean if you want to hold. Roll a die and if a 1 appears, the bubble pops and the price drops to zero. Sell before it does. Play five rounds. Say how speculation differs from investing in real value.

Scripture. “A faithful man shall abound with blessings: but he that maketh haste to be rich shall not be innocent.” (Proverbs 28:20, KJV)

Faithful, patient work and saving are blessed; the rush to get rich quickly leads people into foolishness and sin, as it did in 1720.

8.3 THE 1929 CRASH, BANK RUNS AND THE FDIC

OBJECTIVES

- Tell the story of the stock market crash of 1929 and the bank failures of 1930–1933.
- Explain buying on margin and why borrowing to invest magnifies both gains and losses.
- Explain how fractional-reserve banking makes a bank run possible, and how deposit insurance stopped most runs after 1933.
- Calculate margin gains and losses and model a bank run.

Warm-up. Your class keeps its field-trip money in a teacher’s drawer. The teacher has lent most of it to the school store, which will repay next month. One morning a rumor spreads that the money is gone, and everyone asks for their money back at once. What happens? What would stop the panic?

WATCH

The Federal Reserve and the Great Depression

Atlanta Fed • 5:36

<https://www.youtube.com/watch?v=FOwHFf4pg7U>

WHEN TO WATCH

After the story, before the bank-run model.

Note: From the Federal Reserve Bank of Atlanta.

KEY TERMS

margin buying

Buying stock partly with borrowed money, paying only part of the price yourself.

fractional-reserve banking

A system in which banks keep only part of their deposits as cash reserves and lend the rest.

bank run

When many depositors rush to take their money out of a bank at once, fearing it will fail.

deposit insurance

A guarantee that depositors will be repaid up to a limit even if their bank fails.

FDIC

The Federal Deposit Insurance Corporation, created in 1933, which insures deposits at member banks.

CORE IDEAS

The story. Through the 1920s, American stock prices rose year after year. Many people bought stock **on margin**: paying perhaps a tenth or a quarter of the price themselves and borrowing the rest from their broker. As long as prices rose, it seemed like easy money. The Dow Jones Industrial Average, a measure of leading stocks, peaked at about 381 in September 1929. Then, in late October, the market broke. On Thursday, October 24, and again on Monday and Tuesday, October 28 and 29, prices fell so fast that the ticker machines that printed prices ran hours behind. Margin buyers who could not repay their loans were sold out, which pushed prices down further. By July 1932 the Dow had fallen to about 41, nearly 90 percent below its peak.

How they figured it out. The crash was followed by something worse: a wave of **bank runs**. A bank keeps only part of its depositors' money as cash and lends the rest, which is called **fractional-reserve banking**. That works as long as depositors trust the bank. But in 1930 rumors and real losses set off runs, and crowds lined up to withdraw their savings. Even a sound bank could not repay everyone at once, so it failed, and the panic spread to the next town. In December 1930 the Bank of United States in New York, with about 400,000 depositors, collapsed. Between 1930 and 1933 about 9,000 American banks failed, and millions of families lost savings. In March 1933 the new president closed every bank in the country for several days, a "bank holiday," and inspectors reopened only those found sound. In June 1933 Congress passed a banking law creating the **Federal Deposit Insurance Corporation**. From January 1, 1934, deposits at member banks were insured, at first up to \$2,500 per depositor. The bank runs almost stopped. Congress also passed laws in 1933 and 1934 requiring companies that sell stock to publish honest, audited reports, and created the Securities and Exchange Commission to enforce them.

The big idea. Borrowing magnifies results. Suppose you buy \$1,000 of stock with \$100 of your own and \$900 borrowed. If the price rises 10% to \$1,100, you repay \$900 and keep \$200: you doubled your money. If it falls 10% to \$900, you repay \$900 and

have nothing left: you lost everything. A bank run shows the power of fear. If a bank holds \$10 in cash for every \$100 of deposits, it can repay 10 depositors out of 100 on a single day, but not all of them. **Deposit insurance** works by removing the reason to run: if your deposit is guaranteed, you have no need to rush to the bank. Banks pay premiums for the insurance and are inspected regularly, so that the guarantee does not tempt them to take foolish risks.

Who gained? Deposit insurance was a rule that worked: since the FDIC began, no depositor has lost a cent of insured deposits at an insured bank. Ordinary savers gained security; honest banks gained trust; communities were spared the panics that had closed their banks for a hundred years. It also had costs: premiums paid by banks, and the need for careful inspection so that insured banks do not take advantage of the guarantee. Today the insurance limit is \$250,000 per depositor, per insured bank, for each type of account.

In business today. When you open a savings account with a parent, look for the sign that says “Member FDIC.” Families still lose money in stock-market falls, so wise investors avoid borrowing to buy stocks, keep an emergency fund in an insured bank, and diversify. “Riches certainly make themselves wings; they fly away as an eagle toward heaven” (Proverbs 23:5). The crash of 1929 taught a nation how quickly paper riches can fly.

PICTURE STUDY



A Crowd at the American Union Bank, Unknown photographer, 1931 · Photograph · New York City
Image: [Wikimedia Commons](#), public domain

Early in the Great Depression, crowds like this one gathered in front of banks across America whenever a rumor spread that a bank was in trouble. Everyone hoped to withdraw his savings before the cash ran out. Photographs like this one helped persuade Congress that depositors needed a guarantee.

Look closely

- Look at the faces in the crowd. What feelings can you see?
- Find the bank's doors. How many people could the tellers serve in an hour?
- Look at the people's clothes. Are they rich, poor or ordinary? What does that tell you about who kept money in banks?

Talk about it

1. If you were in this crowd, why would you stay in line even if you thought the bank was sound?
2. How would the sign "Member FDIC" on the door have changed this scene?
3. What did the people in this crowd need most: money, information or trust?

PROJECT

Model a Bank Run, Then Insure It

You will run a small bank with family members as depositors, lend out most of the deposits, and see what happens when a rumor starts. Then you will add deposit insurance and play again. You will also calculate the effect of margin buying.

You will need

- Play money (\$100 in \$10 slips) and a “vault” box
- Index cards for depositors’ account slips and loan papers
- A die and the ledger notebook

Steps

1. **The bank.** Five depositors each deposit \$20 (\$100 total). The bank keeps \$20 in the vault and lends \$80 to a pretend business, to be repaid in three rounds. Record the bank’s balance sheet: assets (cash \$20, loans \$80) and liabilities (deposits \$100).
2. **Normal days.** Each round, each depositor rolls a die: on a 1, he withdraws \$10. Record withdrawals and the cash left. Most days, the vault has enough.
3. **The rumor.** Now announce a rumor that the bank’s loan is bad. Each depositor decides: stay or withdraw everything. Record what happens when more than \$20 is asked for at once. Who got paid? Who did not?
4. **Deposit insurance.** Play again from the beginning, but now a parent, acting as the insurer, promises to repay every depositor in full if the bank fails, and the bank pays the insurer a \$1 premium each round. Announce the same rumor. Record what depositors choose now.
5. **Margin math.** You buy \$500 of pretend stock with \$100 of your own and \$400 borrowed. Calculate your gain or loss, as a percent of your \$100, if the stock rises 20%, falls 10%, or falls 20%. Compare with buying \$100 of stock with no loan.
6. Make a table of both experiments and your margin results.

7. Write a paragraph explaining why bank runs happened in 1930–1933 and why deposit insurance stopped most of them.

Tips

- In a real bank, loans cannot be called back instantly. That is what makes a run so dangerous even for a sound bank.
- Notice that in the second game, nobody needed the insurance money. The promise alone stopped the run.

Check your work

- ☐ I can explain fractional-reserve banking and how a bank run happens.
- ☐ I can explain how deposit insurance works and why it stopped most bank runs.
- ☐ I calculated margin results correctly (for example, a 20% rise gives a 100% gain on \$100; a 20% fall wipes out the whole \$100).

LEDGER NOTEBOOK

1. Draw the Dow Jones average from 1929 to 1932 as a simple line graph: about 381 in September 1929, about 41 in July 1932. Write the percent fall.
2. Draw a bank's balance sheet before and during a run, showing cash, loans and deposits.
3. Make a timeline: October 1929 crash; December 1930 Bank of United States fails; March 1933 bank holiday; June 1933 FDIC created; January 1, 1934 insurance begins; 1934 SEC created.

From history. Before the FDIC, some states had tried to insure their banks' deposits, starting with New York in 1829, but most of these state funds were too small and failed when many banks failed at once. A national fund, backed by the whole country, proved strong enough.

COMMON MISTAKES

- Thinking banks keep all deposits in a vault. They lend most of them; that is how they pay interest and serve borrowers.
- Thinking deposit insurance covers stocks and mutual funds. It covers deposits at insured banks, not investments that can rise and fall.
- Thinking the 1929 crash alone caused the Great Depression. Bank failures, shrinking money and credit, falling trade and other causes all played a part.

Make it a game • Borrowed Beans. Start with ten beans. Round one: invest your own beans. Round two: borrow ten more on margin and invest twenty. Roll a die each turn; high gains two, low loses two on every bean. After six rolls compare results. Explain margin buying, the 1929 crash, bank runs and why the FDIC insures deposits.

Scripture. “for riches certainly make themselves wings; they fly away as an eagle toward heaven.” (Proverbs 23:5, KJV)

Paper riches can disappear in days, as they did in October 1929. Solomon teaches us not to set our hearts on them, but to work, save and trust in God.

8.4 BUDGETING, CREDIT AND THE FAMILY MARKET DAY

OBJECTIVES

- Build a monthly budget that gives first, saves next and lives on the rest.
- Explain how credit cards and loans charge interest, and calculate the monthly interest on a balance.
- Explain what a credit history is and why paying on time matters.
- Plan, run and close the books on a family market day.

Warm-up. Write down what you think your family spends in a month on food, and then ask a parent. How close were you? Now list three small purchases you make often. If each costs \$3 and you buy it twice a week, what does it cost in a year?

WATCH

How a FICO Credit Score Is Determined (2020 update) | Continuing Education

Federal Reserve Bank of St. Louis • 7:01

<https://www.youtube.com/watch?v=GrDxH0hMUmg>

WHEN TO WATCH

After the big idea, before the budget project.

Note: From the St. Louis Fed.

BACKUP VIDEO

How Credit Card Interest Works (Credit Cards Part 2/3)

Honest Finance • 3:22

https://www.youtube.com/watch?v=_HfXfKLYV68

With the credit-card calculation.

KEY TERMS

budget

A plan for how money coming in will be given, saved and spent.

emergency fund

Savings set aside for unexpected needs, such as a car repair or a lost job.

annual percentage rate (APR)

The yearly interest rate charged on borrowed money, such as a credit-card balance.

minimum payment

The smallest amount a credit-card holder may pay in a month; paying only this keeps most of the debt and its interest.

credit history

A record of a person's borrowing and whether he repaid on time, used by lenders to decide whether to lend.

CORE IDEAS

The story. In 1758 Benjamin Franklin published *The Way to Wealth*, a speech by an imaginary old man, Father Abraham, who answers a crowd's complaints about hard times with a string of sayings about work and thrift. "Beware of little expenses; a small leak will sink a great ship." "He that goes a borrowing goes a sorrowing." Two years later John Wesley, the English preacher, published his sermon "The Use of Money," with its three rules: gain all you can, by honest work that harms no one; save all you can, by cutting waste; and give all you can, for that is the purpose of the first two. Both men had seen families ruined by debt and waste, and both saw that small daily choices add up to a life.

How they figured it out. Borrowing changed shape over the next two centuries. Stores had long let trusted customers buy on account. In 1950 a New York businessman, Frank McNamara, founded the Diners Club card, which let members pay at many restaurants and pay the bill once a month. In 1958 the Bank of America mailed tens of thousands of its new BankAmericard credit cards to families in Fresno, California, without their asking, and soon credit cards spread across the country. A credit card lends money every time it is used. If the whole bill is paid each month, it can be a convenience. If not, interest is charged on the unpaid balance, often at a high **annual percentage rate**. Lenders keep a **credit history** for each borrower, a record of whether he paid on time, and use it to decide whether to lend to him again and at what rate.

The big idea. A good **budget** follows Wesley's order in reverse: give first, save next, and live on the rest. Suppose a young worker earns \$2,000 a month after taxes. He gives \$200 (10%), saves \$300 (15%), and plans the other \$1,500 for rent, food,

transportation, clothing and other needs, keeping an **emergency fund** of several months' expenses in savings. Now the cost of credit: a credit-card balance of \$1,000 at a 24% APR is charged about $24\% \div 12 = 2\%$ a month, or \$20. If he pays only a **minimum payment** of \$30, just \$10 goes to the debt itself; the rest is interest. At that pace it would take years to pay off, and he would pay hundreds of dollars in interest. Paying the whole balance every month costs no interest at all.

Think it through. "Owe no man any thing, but to love one another" (Romans 13:8). Scripture does not forbid every loan, but it warns that debt makes the borrower a servant (Proverbs 22:7) and commands that debts be paid. A family that lives within its means, saves for emergencies and borrows rarely and carefully is free to give and to help others. The goal of a budget is not to hoard but to be faithful: "labour, working with his hands the thing which is good, that he may have to give to him that needeth" (Ephesians 4:28).

In business today. Businesses budget too, planning revenue, costs and savings for new equipment, and they borrow carefully. Families use budgets, spreadsheets and envelopes to plan their spending. And at the end of this course, you will run a small business of your own for a day: the family market day, where you price, sell, keep the books and give, using everything you have learned this year.

PICTURE STUDY



John Wesley, Nathaniel Hone, About 1766 · Oil on canvas · National Portrait Gallery, London

Image: [Wikimedia Commons](#), public domain

John Wesley traveled about 250,000 miles on horseback, mostly through Britain, preaching to crowds of working people in fields and market squares. He lived simply all his life and gave away nearly everything he earned from his books. Nathaniel Hone, an Irish-born painter in London, painted this portrait when Wesley was in his sixties.

Look closely

- Look at Wesley's clothes. Are they rich or plain? What does that say about how he spent money?
- Look at his raised hand. What is he doing?
- Notice the outdoor background. Why might the painter show a preacher who often preached in fields?

Talk about it

1. Wesley said to gain all you can, save all you can and give all you can. Which of the three is hardest for most people? Why?
2. How could Wesley's rules guide a family budget?
3. How would Wesley answer someone who said, "I'll give when I'm rich"?

Safety first. A parent supervises all selling and handles the cash box. Sell only to family and guests you know, at home or another safe place. Check your town's rules before selling food, and follow safe food-handling rules.

PROJECT

A Real Family Budget and the Market Day

In the first session, you will help plan a real budget for one family purchase or event, and calculate the true cost of buying it on credit. In the second session, you will hold the family market day: a table with your best work from the year, something you made to sell, and the books to show for it.

You will need

- A real family purchase or event to plan with a parent (a holiday meal, a bicycle, a birthday party, a garden)
- Store flyers, prices from receipts or price tags
- A calculator or free spreadsheet, and the ledger notebook
- For market day: a table, your portfolio folder, your product, price tags, a cash box with change (kept by a parent) and a sales ledger

Steps

1. **The budget.** With a parent, choose the purchase and set a total budget. List every item with its price. Add them up. Is it within the budget? If not, decide what to change.
2. Plan how the family could save for it: how much a month, for how many months?
3. **The cost of credit.** Calculate what it would cost if put on a credit card at 24% APR and paid off at \$50 a month. (Each month: $\text{interest} = \text{balance} \times 0.02$; $\text{new balance} = \text{balance} + \text{interest} - \$50$. Continue until paid.) Record the months and total interest.
4. Write a one-paragraph recommendation: save first, or borrow? Why?
5. **Market day.** Set up your table with your portfolio projects from each unit. Price your product using your cost sheet from Unit 7. Make an honest label and sign from Unit 6.
6. Sell to family and invited guests you know, with a parent keeping the cash box. Record every sale in a sales ledger: Time, Item, Price, Cash received, Change given.

7. Explain one project from the year to each visitor: the story, the big idea and what you learned.
8. Close the books: total sales, minus costs, equals profit. Give a portion, save a portion, and write a final paragraph on what you learned this year about work, honesty, saving and giving.

Tips

- For the credit calculation, a spreadsheet with one row per month makes it quick: interest, payment and new balance.
- At market day, count the cash box with a parent at the start and the end. The difference should equal your recorded sales.

Check your work

- ☐ I built a budget for a real purchase that gives, saves and stays within its limit.
- ☐ I calculated the months and total interest of paying with a credit card.
- ☐ I ran the market day, recorded every sale, closed the books and chose what to give and save.

LEDGER NOTEBOOK

1. Draw a pie chart of the sample budget: give 10%, save 15%, live on 75%. Then draw one for your own allowance or earnings.
2. Copy your credit-card table for the first six months and circle the total interest.
3. Write three of Franklin's sayings from *The Way to Wealth* and an example from your own life for each.

From history. Benjamin Franklin left £1,000 each to Boston and Philadelphia in his will of 1790, to be lent to young tradesmen and to grow for 200 years. By 1990 the Boston fund had grown to several million dollars, a lasting lesson in patient saving and compound growth.

COMMON MISTAKES

- Making a budget and never checking it. A budget works only when you compare what you planned with what you actually spent.
- Thinking the minimum payment is enough. Paying only the minimum keeps most of the debt and adds interest every month.

- Leaving giving for last. When giving comes last, there is usually nothing left; Wesley and Scripture put it first.

Make it a game • Give, Save, Live. Receive thirty beans as one month's income. Set aside the first tenth to give, then save, and live on the rest. Draw surprise cards from your parent, such as a broken bike, and pay from your emergency fund. Then compute monthly interest on a balance at an APR. How did you do?

Scripture. “Owe no man any thing, but to love one another” (Romans 13:8, KJV)

Paul tells Christians to pay every debt and to carry only one debt that can never be fully paid: the debt of love. A family budget that avoids unnecessary debt leaves more room for love and giving.

SAVING, INVESTING AND GIVING

Money is a tool for stewardship. Scripture teaches that we work not only to meet our own needs but to save wisely, to provide for our families, and to have something to give (Ephesians 4:28). John Wesley put the rule in three parts in his sermon “The Use of Money”: gain all you can, save all you can, give all you can. In this unit you will learn how saving and investing work, what risks they carry, how they can go badly wrong, and how a wise family budgets, uses credit carefully and gives generously.

You will study **stocks, bonds and mutual funds**, from a Dutch broker’s fund of 1774 to the index funds of today. You will see the danger of putting everything in one place, and the madness of a bubble, in the South Sea Company of 1720. You will learn how the crash of 1929 and the bank runs that followed led to deposit insurance in 1933. And you will plan a real family budget, learn how credit and interest work, and finish the year with a family market day. All investing in this unit is practice with pretend money; a student never invests real money without a parent.

PREREQUISITES

- Knows shares, dividends and stock exchanges (Unit 4)
- Knows how banks keep reserves and lend (Unit 2)
- Can calculate percents, simple interest and compound growth

MASTERY CHECKLIST

- ☐ I can explain stocks, bonds and mutual funds and calculate a stock’s return and a bond’s interest.
- ☐ I can explain risk, return and diversification, and why bubbles burst.
- ☐ I can explain how a bank run happens and how deposit insurance stopped most of them after 1933.
- ☐ I can build a monthly budget with giving, saving and spending, and calculate the cost of credit-card interest.
- ☐ I can present my year’s work at a family market day.

OPTIONAL BOOKS AND GAMES FOR THIS UNIT

- **The Way to Wealth, by Benjamin Franklin (1758)**: Free at Project Gutenberg. Franklin's short collection of sayings on work, thrift and debt, such as "a small leak will sink a great ship." Read it aloud in Lesson 8.4. Ages 10 and up.
- **"The Use of Money," a sermon by John Wesley**: Wesley's famous sermon: gain all you can, save all you can, give all you can. Many church and university sites publish the full text free; search for the title with a parent. Read it with Lesson 8.4.
- **Federal Reserve Bank of St. Louis: Econ Lowdown**: Free online lessons on saving, investing, credit and budgeting for middle and high school students, made by the St. Louis Fed.

Not required. Every project in this unit works without them. School Launch has no ties to these authors, publishers or companies.

LESSONS IN THIS UNIT

8.1	Stocks, Bonds and Mutual Funds	2 sessions of 50 minutes
8.2	Risk, Diversification and the South Sea Bubble	2 sessions of 50 minutes
8.3	The 1929 Crash, Bank Runs and the FDIC	2 sessions of 50 minutes
8.4	Budgeting, Credit and the Family Market Day	2 sessions of 50 minutes

UNIT 8 REVIEW

Answer each question. Show your work for every calculation and use complete sentences for explanations. The review is worth 100 points.

1. **8 pts**

What is the difference between a stock and a bond? How does each pay its owner?

2. **8 pts**

You buy a share for \$40, receive \$1.20 in dividends, and sell it a year later for \$43. What is your total return? What if you sold for \$37?

3. **6 pts**

A fund holds \$5,000,000 of stocks and has 250,000 shares. What is the value of one share? Why is a fund less risky than one stock?

4. **8 pts**

Tell what happened in the South Sea Bubble of 1720.

5. **8 pts**

Name four warning signs of a bubble or get-rich-quick scheme.

6. **8 pts**

What is diversification, and what does Ecclesiastes 11:2 teach about it? What risk does it not remove?

7. **10 pts**

You buy \$2,000 of stock with \$400 of your own money and \$1,600 borrowed. Find your gain or loss as a percent of your \$400 if the stock rises 15% or falls 15%.

8. **8 pts**

Explain how a bank run can make even a sound bank fail.

9. **8 pts**

How did the FDIC, created in 1933, stop most bank runs? What keeps insured banks from taking foolish risks?

10. **10 pts**

A family earns \$4,000 a month after taxes. Make a budget that gives 10% and saves 15%. How much is left to live on? If their emergency fund goal is 3 months of living costs, how long will it take to reach it by saving the 15%?

11. **10 pts**

A credit card has a \$1,500 balance at 18% APR. What is the interest for one month? If the holder pays \$45 that month, how much of the payment reduces the debt?

12. **8 pts**

Short answer: In four or five sentences, explain John Wesley's three rules for the use of money and how they could guide a young person's first job.

ANSWER KEY

1. A stock is ownership in a company; it pays dividends and gains or loses as its price changes. A bond is a loan; it pays fixed interest and returns the principal at maturity, unless the borrower fails.
2. $(\$1.20 + \$3) \div \$40 = 10.5\%$. $(\$1.20 - \$3) \div \$40 = -4.5\%$.
3. $\$5,000,000 \div 250,000 = \$20$. It owns many companies, so one company's failure costs only a small part of its value (diversification).
4. The South Sea Company offered to take over Britain's national debt and spread stories of great riches; its share price rose from about £128 in January to about £1,000 in summer, as people of every rank bought. It then collapsed below £200 by December, ruining thousands. Parliament found bribery and false reports, and punished officials and directors.
5. Any four: prices rising far faster than earnings; buying because prices are rising; promises of quick, sure riches; borrowing to buy; many new buyers who do not understand the investment; pressure to act fast; secrecy about how it works.
6. Spreading money across many investments so one failure does not ruin you; "give a portion to seven, and also to eight; for thou knowest not what evil shall be upon the earth." It does not remove the risk of a whole market falling at once.
7. Rise: $\$2,300 - \$1,600 = \$700$, gain $\$300 = 75\%$. Fall: $\$1,700 - \$1,600 = \$100$, loss $\$300 = -75\%$.
8. A bank keeps only part of its deposits as cash and lends the rest. If many depositors demand their money at once, the bank cannot pay them all because its loans cannot be collected instantly, so it fails even if its loans are good.
9. It guaranteed deposits up to a limit (first \$2,500 from 1934), so depositors had no reason to rush to withdraw. Banks pay premiums and are inspected regularly.
10. Give \$400, save \$600, live on \$3,000. Goal: $3 \times \$3,000 = \$9,000$; $\$9,000 \div \$600 = 15$ months.
11. $18\% \div 12 = 1.5\%$ a month; $\$1,500 \times 0.015 = \$22.50$ interest. $\$45 - \$22.50 = \$22.50$ reduces the debt, leaving \$1,477.50.
12. A good answer explains gain all you can (work hard and honestly without harming others or yourself), save all you can (avoid waste and debt, build an emergency fund), and give all you can (the purpose of gaining and saving), with

specific examples such as giving first from each paycheck, saving a set percent and avoiding credit-card debt.

PORTFOLIO PIECE: MY STEWARDSHIP PLAN AND MARKET-DAY REPORT

Write a stewardship plan for the next year of your own money: what you expect to earn, a budget that gives, saves and spends with real numbers, an emergency fund goal, and a practice investment plan (with pretend money) that shows diversification. Then add your market-day report: your sales ledger, a closing income statement, what you gave and saved, and a one-page reflection on what this year taught you about work, honesty, risk, saving and giving.

LOOK FOR	WHAT IT MEANS
Budget	A realistic budget with real numbers that gives first, saves next and stays within its income.
Investing	A practice plan that explains stocks, bonds and funds and shows sensible diversification and patience.
Market-day books	A complete, honest sales ledger and income statement that match the cash counted.
Reflection	A thoughtful reflection that connects the year's lessons to Scripture and to the student's own choices.

BONUS: A BUSINESS WITH A PARTNER

This optional bonus unit is your chance to run a real small business, not alone this time, but with a **partner**: a brother or sister, a cousin or a friend, with both families' permission and a parent supervising. Partnership is one of the oldest ways of doing business. Paul worked as a tentmaker beside Aquila and Priscilla (Acts 18:3), and Solomon wrote, "Two are better than one; because they have a good reward for their labour" (Ecclesiastes 4:9). But partnerships also fail, usually not because of money but because the partners never agreed clearly on who would do what and how the money would be shared.

Over four lessons you will choose a partner and a business, write a short partnership contract, run the business together with shared books, and close the books with a fair profit split and a gift. Along the way you will learn from famous partners: Levi Strauss and Jacob Davis, William Procter and James Gamble, the twenty-four brokers of the Buttonwood Agreement, Michael Marks and Tom Spencer, and, long before them all, Abraham and Lot, who parted in peace. Every lesson asks you to keep careful records and to keep your word.

PREREQUISITES

- Has finished or nearly finished Units 1–8, especially the business plan (Unit 6) and the books (Unit 7)
- A partner of similar age, with both families' permission
- A parent or other adult who agrees to supervise all selling and money handling

MASTERY CHECKLIST

- ☐ I can explain what makes a good business partner and a good partnership.
- ☐ I can write a simple partnership contract that covers contributions, duties, decisions, books, profit split and ending.
- ☐ I can keep joint books with my partner, with two-person cash counts and receipts.
- ☐ I can calculate a fair profit split by capital and by work, and close a partnership's books.
- ☐ I can settle a disagreement with my partner peacefully and honestly.

OPTIONAL BOOKS AND GAMES FOR THIS UNIT

- **Levi Strauss & Co.: Levi's history**: The company's own history pages, including the story of Jacob Davis's letter of 1872 and the 1873 patent for riveted work pants. Good for Lesson 9.1.
- **Next Gen Personal Finance (NGPF)**: Free lessons on entrepreneurship and running a small business, for middle and high school students.

Not required. Every project in this unit works without them. School Launch has no ties to these authors, publishers or companies.

LESSONS IN THIS UNIT

9.1 Choosing a Partner and a Plan: Levi Strauss and Jacob Davis

2 sessions of 50 minutes

9.2 Write the Contract: Procter, Gamble and the Buttonwood Agreement

2 sessions of 50 minutes

9.3 Run It Together and Keep Joint Books: Marks and Spencer

2 sessions of 50 minutes

9.4 Close the Books, Split the Profit and Give: Abraham and Lot

2 sessions of 50 minutes

UNIT 9 REVIEW

Answer each question. Show your work for every calculation and use complete sentences for explanations. The review is worth 100 points.

1. **8 pts**

Why did Jacob Davis and Levi Strauss become partners, and what did each bring?

2. **8 pts**

Name three qualities of a good business partner.

3. **8 pts**

How did Procter and Gamble come to be partners in 1837?

4. **8 pts**

What did the twenty-four brokers promise in the Buttonwood Agreement of 1792?

5. **10 pts**

Name the seven questions a partnership agreement should answer.

6. **10 pts**

A partnership earns \$90 profit. Partner A put in \$30 and Partner B \$15. Find each share under (a) an equal split and (b) a split by money put in.

7. **8 pts**

What is a two-person count, and why does it protect both partners?

8. **10 pts**

Starting cash was \$20. Sales were \$85. The partners spent \$12 on supplies from the cash box. The ending count is \$91. Reconcile the cash. Is anything missing?

9. **8 pts**

How did Michael Marks and Tom Spencer divide the work of their partnership?

10. **12 pts**

Partners agree to return each partner's capital first and then split the remaining cash by hours worked. Sales were \$200. Partner A paid for \$40 of supplies and Partner B for \$20, out of their own pockets, and the business paid \$20 of other costs from its sales. A worked 10 hours and B 15 hours. Find the net profit and each partner's total payment.

11. **4 pts**

What did Abraham say to Lot when their herdsmen quarreled?

12. **6 pts**

Short answer: In three or four sentences, explain what you would do differently in your next partnership, and why.

ANSWER KEY

1. Davis had invented riveted work pants but could not afford the patent fee; Strauss had money, a warehouse, customers and a reputation. Davis brought the invention and tailoring skill; Strauss brought capital and a sales network. The patent was granted in 1873.
2. Any three: honesty and trustworthiness; shared values; complementary skills; hard work; keeping one's word; ability to talk through problems respectfully.
3. Procter, a candle maker, and Gamble, a soap maker, both bought fat from Cincinnati's packers and competed for it. Their father-in-law, Alexander Norris, suggested they join forces, and they signed a partnership agreement on October 31, 1837.
4. To trade stocks with each other and to charge customers a commission of at least one quarter of one percent. It became the start of the New York Stock Exchange.
5. Who the partners are; what each contributes; which jobs each does; how decisions are made; who keeps the books and how cash is counted; how profit and loss are split; how disagreements are settled and the partnership is ended.
6. (a) \$45 each. (b) A: $30 \div 45 \times 90 = \$60$; B: $15 \div 45 \times 90 = \$30$.
7. Counting cash with two people present, who both sign the count. It catches mistakes and keeps either partner from being suspected unfairly.
8. Expected ending cash = $20 + 85 - 12 = \$93$. Count is \$91, so \$2 is missing. Partners should check the arithmetic, look for an unrecorded expense or a sale recorded at the wrong price, or a counting mistake.
9. Marks, a gifted seller, ran the market stalls and found goods and new places to sell; Spencer, a bookkeeper, put in £300 for a half share and ran the office, warehouse, accounts and suppliers.
10. Net profit = $200 - (60 + 20) = \$120$. Cash on hand = $200 - 20 = \$180$. Return capital: A \$40, B \$20, leaving \$120. Split by hours: A $10/25 \times 120 = \$48$; B $15/25 \times 120 = \$72$. Totals: A \$88, B \$92 (sum \$180).
11. "Let there be no strife, I pray thee, between me and thee, and between my herdmen and thy herdmen; for we be brethren" (Genesis 13:8). He gave Lot the first choice of land.

12. A good answer names a specific lesson from the student's own business (about the contract, the division of work, the books, communication or the profit split) and explains how it would change the next partnership.

PORTFOLIO PIECE: OUR PARTNERSHIP FILE

Put together a complete file of your partnership business: the joint plan, the signed contract, the full joint ledger with receipts, every signed cash count and reconciliation, the minutes of each partners' meeting, the final income statement and balance sheet, the profit-split calculation, a record of what each partner gave, saved and spent, and the signed final report with your after-action review. Present the file to your family, and each partner explains one page of it.

LOOK FOR	WHAT IT MEANS
Agreement	A clear, signed plan and contract that answer the seven questions, with exact numbers and names.
Joint books	Complete sales and cost ledgers with receipts, two-person counts and daily reconciliations.
Settlement	Final statements and a profit split calculated correctly by the contract, with the shares adding up.
Partnership	Weekly meetings, an honest after-action review, a decision about giving, and a partnership ended in peace.

9.1 CHOOSING A PARTNER AND A PLAN: LEVI STRAUSS AND JACOB DAVIS

OBJECTIVES

- Tell how Jacob Davis and Levi Strauss became partners in 1873 and why each needed the other.
- Explain what makes a good business partner: shared values, complementary skills and trust.
- Choose a partner and a business, and write a one-page joint plan with a parent's approval.
- List each partner's strengths and decide how the work will be divided.

Warm-up. Think of a job you have done with someone else: a school project, a chore or a game. Write down what made it go well or badly. Did you agree at the start who would do what? What would you do differently?

WATCH

20th May 1873: Levi Strauss and Jacob Davis secure the patent for riveted blue jeans

HistoryPod · 2:23

<https://www.youtube.com/watch?v=MpfdKZGr0u8>

WHEN TO WATCH

After the story, before choosing a partner.

KEY TERMS

partner

One of two or more people who own a business together and share its work, profits and debts.

capital contribution

The money or property a partner puts into the business.

complementary skills

Different skills that fit together, so that each partner supplies what the other lacks.

sweat equity

The value of the work a partner puts into the business instead of money.

joint plan

A written plan both partners agree on before they begin.

CORE IDEAS

The story. In the gold-rush days, Levi Strauss, a young immigrant from Bavaria, ran a dry-goods wholesale business in San Francisco, selling cloth, clothing and supplies to small stores across the West. One of his customers was Jacob Davis, a tailor in Reno, Nevada, who bought heavy cotton cloth from him. In about 1870 a customer asked Davis for work pants strong enough not to tear. Davis had an idea: he put small copper rivets, the kind used on horse blankets, at the corners of the pockets, where pants usually ripped. The riveted pants sold so well that Davis wanted a **patent** to protect his idea, but he could not afford the fee of about \$68. In 1872 he wrote to Levi Strauss and proposed a partnership: if Strauss would pay for the patent, they would share it.

How they figured it out. Strauss saw the value at once. On May 20, 1873, the U.S. Patent Office granted patent number 139,121 to Jacob Davis and Levi Strauss & Company for an “improvement in fastening pocket-openings.” Each partner brought what the other lacked. Davis had the invention and the tailoring skill; Strauss had money, a warehouse, a network of customers and a reputation. Davis moved to San Francisco to oversee the making of the riveted pants, which were sewn first by seamstresses working at home and then in a factory, while Strauss’s company sold them across the West. The partnership protected the idea, and the riveted work pants became the blue jeans that are still made today.

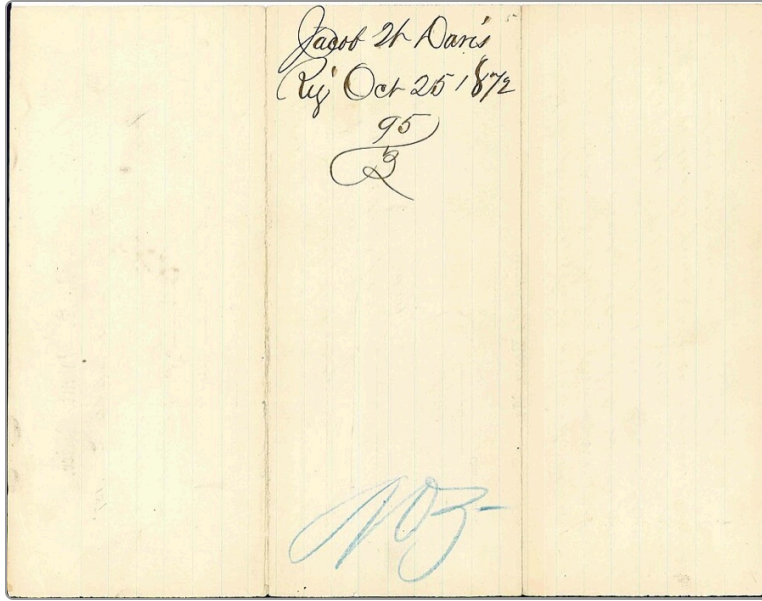
The big idea. A good partnership joins people with **shared values** and **complementary skills**. Shared values come first: partners must trust each other’s honesty, work ethic and word. Then skills: one partner may be good at making, another at selling, another at keeping books. A partner may bring a **capital contribution** (money or tools) or **sweat equity** (work). The danger is unclear expectations: one partner thinks he is doing most of the work, the other thinks he put in most of the money, and neither ever said so. That is why wise partners write a **joint plan** before they begin.

Think it through. “Can two walk together, except they be agreed?” (Amos 3:3). Before you choose a partner, ask honestly: Do we get along when things go wrong? Do we

each keep our word? Will we both work hard? Do our skills fit together? A best friend is not always the best partner, and a partnership that fails can hurt a friendship. Talk about these questions openly, with a parent present, before you start.

In business today. Many great companies began with two partners whose skills fit together: an inventor and a salesman, an engineer and a manager, a cook and a bookkeeper. Small partnerships run farms, stores, law offices and family businesses all over the world. In this unit you will run one yourself, with a parent supervising every step.

PICTURE STUDY



From the Patent File: Jacob Davis's "Improvement in Fastening Pocket-Openings", Jacob W. Davis, with the U.S. Patent Office, 1872–1873 · Patent case file document · U.S. National Archives

Image: [Wikimedia Commons](#), public domain

The National Archives keeps the full case file for patent 139,121: Jacob Davis's application, the drawings, the examiner's notes and the letters back and forth. The first application was rejected, and Davis and Strauss had to revise it before the patent was granted on May 20, 1873. Partners who want to protect an idea must be patient and careful.

Look closely

- Read the handwriting. What name and date can you find?
- The date shows when the Patent Office received the application. How long was it until the patent was granted on May 20, 1873?
- Look at the condition of the paper. Why does the government keep records like this for so long?

Talk about it

1. Why could Jacob Davis not protect his idea alone? What did Levi Strauss bring?
2. If the patent had been rejected for good, what would each partner have lost?
3. What written records will you and your partner keep, so that you both remember what you agreed?

Safety first. Both families must agree to the partnership, and a parent supervises all selling and handling of money. Sell only to people you know, at home or another safe place, never door to door to strangers or online without a parent. Check your town's rules for food sales and stands.

PROJECT

Choose a Partner, a Business and a Joint Plan

With your parents, you will choose a partner and a small business you can run together for about three weeks, list each partner's strengths, and write a one-page joint plan.

You will need

- Your ledger notebook and your Unit 6 business plan
- A partner, and a parent from each family
- Index cards

Steps

1. With your parents, choose a partner and agree that both families are willing. Write the partner's name and the supervising adult's name at the top of a new ledger page.
2. Each partner writes five strengths and two weaknesses on index cards, honestly. Trade cards and discuss: Where do your skills fit together?
3. Brainstorm at least six possible businesses you could run together for family, neighbors you know and church friends, such as baked goods, potted herbs, handmade cards, a car wash for family friends, yard help or a pet-care service.
4. For each idea, score from 1 to 5: Is there a real need? Can we do it safely? Can we make a profit? Will we both enjoy it? Choose the one with the highest total.
5. Write a one-page joint plan: the business, the customers, what you will sell and for how much, the start-up costs, what each partner will contribute (money or work), who will do which jobs, and how many hours a week each will work.
6. Estimate your costs and expected sales for three weeks, and your expected profit.
7. Have both partners and both supervising parents read and sign the plan.

8. Write one paragraph each: Why do you think this partnership will work?
What is the biggest risk?

Tips

- Choose a business small enough to run well in three weeks. A small business done well teaches more than a big one done badly.
- Talk honestly about money and work now. It is much easier before you start than after a disagreement.

Check your work

- ☐ I can explain why Levi Strauss and Jacob Davis needed each other.
- ☐ My joint plan names each partner's contributions and duties and is signed by both partners and both parents.
- ☐ I can name the qualities of a good partner and the biggest risk of our partnership.

LEDGER NOTEBOOK

1. Draw two overlapping circles, one for each partner's skills. Write the shared values in the middle.
2. Copy your business-idea scoring table and circle your choice.
3. Make a timeline: about 1870 Davis makes riveted pants; 1872 his letter to Strauss; May 20, 1873 patent granted; Davis moves to San Francisco.

From history. Levi Strauss never married. When he died in 1902, he left much of his fortune to his nephews, who ran the business, and to charities in San Francisco, including orphanages and scholarships at the University of California.

COMMON MISTAKES

- Choosing a partner only because you are friends. Shared values and complementary skills matter more.
- Starting without a written plan. Unclear expectations cause most partnership quarrels.
- Choosing a business too big to run safely and well in a short time.

Make it a game • Complementary Skills Cards. Write five skills you have and five you lack on cards. Your parent does the same. Together decide which pretend business needs both sets. Pitch the partnership in thirty seconds, explaining what each partner brings in capital or sweat equity and trust. Tell how Jacob Davis and Levi Strauss each needed the other in 1873.

Scripture. “Two are better than one; because they have a good reward for their labour.” (Ecclesiastes 4:9, KJV)

Solomon saw that two people working together can accomplish more than either alone, and can help each other up when one falls (Ecclesiastes 4:10). That is the promise of a good partnership.

9.2 WRITE THE CONTRACT: PROCTER, GAMBLE AND THE BUTTONWOOD AGREEMENT

OBJECTIVES

- Tell how William Procter and James Gamble formed their partnership in 1837 and how the Buttonwood Agreement of 1792 bound twenty-four brokers in two sentences.
- Name the parts of a good partnership contract.
- Write, discuss and sign a simple partnership contract with a partner and parents.
- Agree on how decisions will be made and how disagreements will be settled.

Warm-up. Read this sentence: “We will split the money fairly.” Write down at least three different ways two partners might understand the word “fairly.” How could they make the sentence clearer?

WATCH

17th May 1792: The Buttonwood Agreement establishes the New York Stock Exchange

HistoryPod • 2:30

<https://www.youtube.com/watch?v=lyIYBXCeU5I>

WHEN TO WATCH

With the story of the Buttonwood Agreement.

BACKUP VIDEO

How to Write Business Partnership Agreement - Step by Step

Young Entrepreneurs Forum • 3:24

<https://www.youtube.com/watch?v=bZE-ZCQMUNU>

Before writing your contract.

KEY TERMS

contract

An agreement between two or more people that the law will enforce, usually written and signed.

partnership agreement

A contract between partners setting out what each contributes, what each does, how decisions are made and how profits, losses and the ending of the partnership will be handled.

profit split

The agreed way of dividing a business's profit among its owners.

dispute resolution

The agreed way of settling disagreements, such as talking it out, asking a trusted adult to decide, or mediation.

dissolution

The formal ending of a partnership, with its books closed and its property divided.

CORE IDEAS

The story. In the 1830s, Cincinnati, Ohio, was a busy river city with many hog-packing plants, whose leftover fat was the raw material for candles and soap. William Procter, a candle maker who had come from England, and James Gamble, a soap maker who had come from Ireland, both bought fat from the same packers and competed for it. They had married two sisters, Olivia and Elizabeth Norris, and the sisters' father, Alexander Norris, suggested that the two brothers-in-law join forces instead of competing. On October 31, 1837, they signed a partnership agreement, each putting in about the same amount of money. Procter ran the store and the office; Gamble ran the factory. Their company, Procter & Gamble, is still one of the largest in the world.

How they figured it out. A partnership works only if the partners agree clearly on the important things, and a good written agreement does not need to be long. Forty-five years before Procter and Gamble, on May 17, 1792, twenty-four stockbrokers met under a buttonwood tree on Wall Street in New York and signed an agreement of just two sentences. They promised to buy and sell stocks only with each other, and to

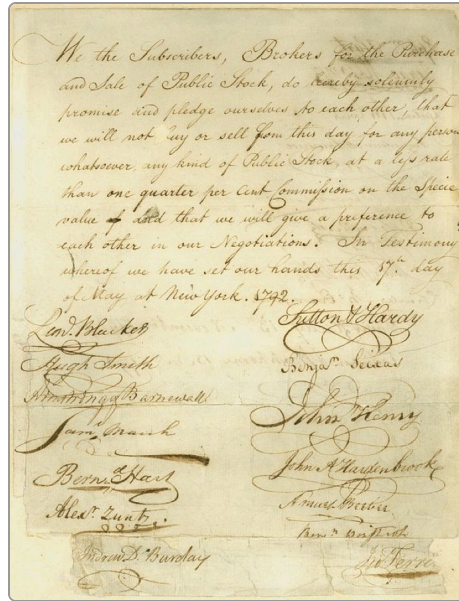
charge their customers a commission of at least one quarter of one percent. That short contract became the start of the New York Stock Exchange. Procter and Gamble's agreement, too, set out plainly what each partner would put in and do. For decades the two families worked side by side, and the partners' sons and grandsons ran the company after them.

The big idea. A good **partnership agreement** answers seven questions in plain words. **Who** are the partners? **What** will each contribute: money, tools, work hours? **Which jobs** will each do? **How** will decisions be made: together, or each in his own area? **Who keeps the books**, and how will the cash be counted? **How will profit and loss be split**: equally, by money put in, by hours worked, or a mix? And **how will disagreements be settled and the partnership ended**? Writing it down protects the friendship as well as the money, because each partner can see exactly what was promised.

Think it through. Jesus taught a way to settle disagreements: "if thy brother shall trespass against thee, go and tell him his fault between thee and him alone" (Matthew 18:15), and if that fails, bring one or two others. A good contract can follow the same pattern: first talk privately, then ask a trusted adult to help, and agree beforehand to accept his decision. In the parable of the vineyard, the owner reminds a grumbling worker, "didst not thou agree with me for a penny?" (Matthew 20:13). A clear agreement, kept faithfully, prevents most quarrels before they begin.

In business today. Every serious partnership has a written agreement, often prepared with a lawyer. For your small business, a one-page contract signed by both partners and both parents is enough. The habit you build now, of putting important promises in clear writing and then keeping them, will serve you in every job, purchase and agreement for the rest of your life.

PICTURE STUDY



The Buttonwood Agreement, Signed by twenty-four New York stockbrokers, May 17, 1792 · Ink on paper
· New York

Image: [Wikimedia Commons](#), public domain

The Buttonwood Agreement is one of the shortest important business contracts in history. In two sentences, its twenty-four signers agreed to deal with each other and to charge a minimum commission. They had been meeting to trade under a buttonwood (sycamore) tree outside 68 Wall Street. In 1817 their group took the name New York Stock and Exchange Board.

Look closely

- Count the signatures, or estimate them. Why would each broker sign his own name?
- Look at how short the agreement is. What do you think it leaves out?
- Look at the handwriting. How would you know that this is the original and not a copy?

Talk about it

1. Why could two sentences be enough for an agreement among twenty-four people?
2. What would make a broker keep this promise, even when breaking it might earn him more?

3. What two or three sentences would be the heart of your own partnership contract?

PROJECT

Write and Sign a Partnership Contract

You and your partner will write a one-page partnership contract for your business, discuss it with your parents, revise it, and sign it. Then you will test it against three “what if” situations.

You will need

- Your joint plan from Lesson 9.1
- Paper and a pen, or a word processor
- Both partners and a parent from each family

Steps

1. Each partner writes, alone, his answers to the seven questions in the lesson: who, contributions, jobs, decisions, books, profit split, and disagreements and ending.
2. Compare your answers. Circle every place where you disagree, and talk each one through until you agree.
3. Choose a profit split. Calculate an example: at the end the business has \$90 in cash. Partner A paid for \$20 of supplies and Partner B for \$10 out of their own pockets, so the profit is $\$90 - \$30 = \$60$. A worked 4 hours and B 8 hours. First return each partner's money; then split the \$60 profit (a) equally, (b) by money put in, and (c) by hours worked. What does each partner receive in all?
4. Write the contract in plain words, no longer than one page. Include a start date and an end date (about three weeks later).
5. Include a dispute rule: first talk privately, then ask the supervising parent to decide, and agree to accept the decision.
6. Test the contract with three “what if” situations: What if one partner is sick for a week? What if the business loses money? What if a customer complains? Does your contract answer each? If not, add a line.
7. Read the final contract aloud. Both partners and both parents sign and date it. Make a copy for each partner.

8. Write a paragraph comparing your contract with the Buttonwood Agreement: what does each include, and what does each leave out?

Tips

- Use numbers and names, not vague words. “Each partner works at least 4 hours a week” is better than “both work hard.”
- The best contracts are fair enough that both partners would be content to be in the other’s place.

Check your work

- ☐ I can name the seven parts of a good partnership agreement.
- ☐ I calculated the example three ways ((a) A \$50, B \$40; (b) A \$60, B \$30; (c) A \$40, B \$50).
- ☐ Our contract is signed by both partners and both parents and answers our three “what if” questions.

LEDGER NOTEBOOK

1. Draw a checklist of the seven questions a partnership agreement must answer, and tick each one your contract covers.
2. Copy the Buttonwood Agreement’s two promises in your own words.
3. Draw a family tree of Procter & Gamble: the Norris sisters, their husbands, and their father who suggested the partnership.

From history. In 1879 Procter & Gamble introduced a white soap that floated, which they named Ivory after a phrase in Psalm 45:8, “out of the ivory palaces.” Harley Procter, William’s son, chose the name after hearing the psalm read in church.

COMMON MISTAKES

- Using vague words like “fair” or “a lot.” Write exact numbers and names.
- Leaving out how the partnership ends. Every partnership ends someday, and planning for it prevents quarrels.
- Thinking a contract shows distrust. A clear contract protects trust by preventing misunderstandings.

Make it a game • Plug the Gaps. Write a partnership agreement in just two sentences, as the twenty-four Buttonwood brokers did. Then your parent throws three troubles at you: one partner wants out, a profit-split dispute, an unpaid share. Check whether your contract covers each. Add a clause for any gap. Name the parts of a good contract.

Scripture. “Can two walk together, except they be agreed?” (Amos 3:3, KJV)

Partners can work together only when they have agreed on where they are going and how. A written contract is a way of being agreed.

9.3 RUN IT TOGETHER AND KEEP JOINT BOOKS: MARKS AND SPENCER

OBJECTIVES

- Tell how Michael Marks and Tom Spencer became partners in 1894, one a seller and one a bookkeeper.
- Run the business with your partner for two to three weeks, each doing his agreed jobs.
- Keep joint books with a sales ledger, a cost ledger, receipts and two-person cash counts.
- Hold a weekly partners' meeting to review the numbers and solve problems.

Warm-up. Imagine you and a partner sold \$40 of goods today, but when you count the cash box there is only \$36. List every possible reason. How could you make sure this never happens, and that neither of you is ever suspected unfairly?

WATCH

The Penny Bazaar- The History of M&S

Just In Time · 6:17

<https://www.youtube.com/watch?v=PHf1g3-4vkQ>

WHEN TO WATCH

After the story, before setting up your joint books.

Note: From a small history channel; the company's own archive film cannot be shown on other sites. It tells the penny-bazaar story simply with old photographs.

KEY TERMS

joint books

Accounts kept by partners together, so that both can see every sale, cost and balance.

two-person count

Counting cash with two people present who both sign the count, to prevent mistakes and suspicion.

reconciliation

Checking that the cash on hand matches what the records say it should be, and finding the reason for any difference.

capital account

A record of how much each partner has put into the business and taken out of it.

fixed price

A price set in advance and marked clearly, the same for every customer, with no haggling.

CORE IDEAS

The story. Michael Marks came to England in the early 1880s as a young refugee from the Russian Empire, with little money and little English. He began as a peddler, carrying goods from village to village near Leeds. In 1884 he set up a stall in the Leeds Kirkgate Market with a simple idea that customers loved: everything on one part of his stall cost a penny, with a sign that said, “Don’t ask the price, it’s a penny.” Customers could look and choose freely without haggling or fearing to be cheated. His penny bazaars spread to other markets. But as the business grew, Marks needed help with something he did not enjoy: keeping the books. In 1894 he took a partner, Tom Spencer, a cashier at the wholesale firm that supplied him, who put in £300 for a half share of the business. The firm became Marks & Spencer.

How they figured it out. The two partners divided the work by their gifts. Marks ran the market stalls and found new goods and new places to sell. Spencer, an experienced bookkeeper, ran the office and the warehouse, kept the accounts and dealt with suppliers. Each could trust the other with his part because the books were clear: every sale, every purchase and every penny of each partner’s share was recorded. Together they opened penny bazaars and then shops across the north of England. Spencer retired in 1903 and died two years later, and Marks died in 1907. Marks’s son Simon later led the company for many years, and Marks & Spencer became one of the best-known stores in Britain.

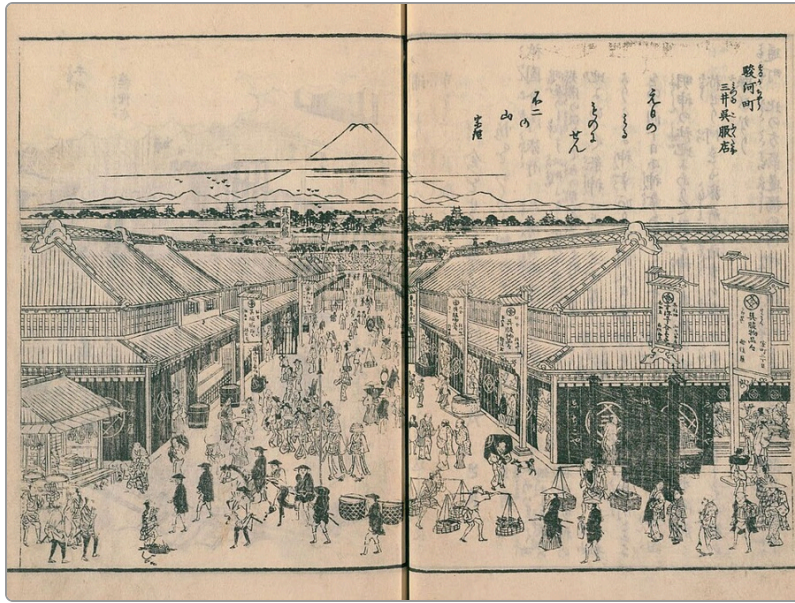
The big idea. When two people share a business, honest books protect both of them. Keep a **sales ledger** (date, item, price, paid) and a **cost ledger** (date, item, cost, who paid, receipt kept). Count the cash box with **two people present** at the start and end of every selling day, and both sign the count. Then **reconcile**: starting cash + sales –

cash spent should equal ending cash. If it does not, find out why together, without blame. Keep a **capital account** for each partner showing what he put in and what he has taken out. Paul handled a large gift of money for the poor in Jerusalem with others beside him, “Providing for honest things, not only in the sight of the Lord, but also in the sight of men” (2 Corinthians 8:21). Two-person counts do the same: they keep partners above suspicion.

Think it through. Running a business together will bring surprises: a day when nothing sells, a batch that fails, a partner who is tired or busy. That is what weekly partners’ meetings are for. Look at the numbers together: sales, costs, profit so far, and how each partner’s hours compare with the plan. Praise what is going well, name one problem, and agree on one change. Speak to each other with respect. A partnership that can talk honestly about small problems seldom has big ones.

In business today. Shops, restaurants and banks still count cash with two people present and reconcile their tills every day. Partners in small businesses meet regularly to review the books. And Marks’s idea of a clear, **fixed price** for every customer, which merchants in Japan and America also pioneered, is now so common that most of us never haggle at all.

PICTURE STUDY



The Mitsui Dry-Goods Store at Suruga-chō, Hasegawa Settan (illustrator), 1834 · Woodblock-printed book illustration, from *Edo meisho zue* (Illustrated Guide to Famous Places in Edo) · Published in Edo (Tokyo)

Image: [Wikimedia Commons](#), public domain

The great shops on both sides of this street belonged to the Echigoya, the dry-goods store of the Mitsui family, founded in 1673. The Echigoya became famous for selling cloth for cash at fixed, marked prices, the same for every customer, at a time when most merchants haggled and sold on long credit. This illustration comes from a popular guidebook to the city printed in the 1830s.

Look closely

- Find the shop curtains and signs hanging in front of the stores. What might they say?
- Count the people in the street. Who is shopping and who is carrying goods?
- Find Mount Fuji. Why might the artist have placed the mountain at the end of the street?

Talk about it

1. Why would customers trust a store with fixed, marked prices more than one where every price was haggled?
2. How did Michael Marks's "it's a penny" sign use the same idea?

3. A store this size needed many clerks handling money. What rules would it need to keep its books honest?

Safety first. A parent supervises all selling and keeps the cash box. Sell only to people you know, at home or another safe place, never door to door to strangers. Never give out personal information, and do not sell online without a parent. Follow safe food-handling rules and your town's rules for food sales and stands.

PROJECT

Run the Business and Keep Joint Books

Now you will run your partnership business for two to three weeks, following your contract. You will keep joint books, count cash with two people every selling day, reconcile, and hold a weekly partners' meeting.

You will need

- Your contract and plan
- Materials and supplies for your product or service, with receipts
- A cash box with starting change, kept by the supervising parent
- A shared ledger notebook (or a shared free spreadsheet) with pages for sales, costs, cash counts and each partner's hours and capital

Steps

1. Set up the ledger: a sales page, a cost page (with a pocket or envelope for receipts), a daily cash-count page, an hours page for each partner, and a capital account for each partner.
2. Record each partner's starting contribution (money or supplies) in his capital account.
3. Before each selling day, count the starting cash together and both sign the count.
4. During the day, record every sale as it happens. Use fixed, marked prices.
5. After each selling day, count the cash together, both sign, and reconcile: starting cash + sales – cash spent = ending cash. Record and explain any difference.
6. Record each partner's hours every day.
7. Hold a partners' meeting each week with the supervising parent: review total sales, costs, profit so far and hours; name one thing going well and one problem; agree on one change and write it down.
8. Keep a short daily log: what happened, what you learned and anything that surprised you.

Tips

- Never take money from the cash box for yourself during the business. Every payment out must be recorded with a receipt.
- If the cash does not match, check the arithmetic first, then look for a missing sale or receipt. Most differences are honest mistakes.

Check your work

- ☐ Our sales and cost ledgers are complete, with receipts for every cost.
- ☐ Every cash count is signed by both partners, and every day is reconciled.
- ☐ We held a partners' meeting each week and recorded the change we agreed on.

LEDGER NOTEBOOK

1. Copy one day's reconciliation: starting cash, sales, cash spent and ending cash, with both signatures.
2. Draw a bar graph of each week's sales and costs.
3. Write the minutes of one partners' meeting: the date, who was there, the numbers, the problem and the change agreed.

From history. Michael Marks arrived in England speaking little English, and an early supplier, Isaac Dewhirst, lent him £5 to buy his first stock of goods. Tom Spencer was a cashier at Dewhirst's firm, so the partners already knew and trusted each other before they joined forces.

COMMON MISTAKES

- Counting the cash alone. A two-person count protects both partners.
- Spending from the cash box without a receipt. Every penny out must be recorded.
- Waiting until the end to look at the numbers. Weekly reviews catch problems while they are small.

Make it a game • Count Twice. Pile twenty pretend goods, such as buttons and pencils. Each of you counts them separately and writes the number. If the counts differ, reconcile them together and find the reason. Then keep a joint book of three sales at a fixed price. Tell how Marks, the seller, and Spencer, the bookkeeper, built their business.

Scripture. “Providing for honest things, not only in the sight of the Lord, but also in the sight of men.” (2 Corinthians 8:21, KJV)

Paul arranged for trusted companions to travel with him when he carried a gift of money, so that no one could suspect him. Two-person counts and open books do the same for partners.

9.4 CLOSE THE BOOKS, SPLIT THE PROFIT AND GIVE: ABRAHAM AND LOT

OBJECTIVES

- Close the partnership's books with a final income statement and balance sheet.
- Calculate each partner's share using the contract's profit split, and settle each capital account.
- Decide together what to give, save and spend from each share.
- Reflect on the partnership and end it in peace, as Abraham and Lot did.

Warm-up. Read Genesis 13:5-12. Abraham and his nephew Lot had grown so rich in flocks that the land could not support them both, and their herdsmen were quarreling. Write down what Abraham proposed, and why you think he gave Lot the first choice.

WATCH

Abraham & Lot | The Story of the Promised Land

Bible Kids • 4:30

<https://www.youtube.com/watch?v=Ub9u49OSlsw>

WHEN TO WATCH

With the warm-up, before reading Genesis 13.

Note: An animated Bible story made for younger children; it retells Genesis 13 simply.

KEY TERMS

closing the books

Finishing the records at the end of a period: totaling every account, preparing final statements and settling what is owed.

net profit

Total revenue minus all costs.

final settlement

The payment to each partner of his share when a partnership ends.

distribution

A payment of profit, or a return of capital, from the business to a partner.

after-action review

An honest look back at a project: what went well, what went wrong, and what to do differently next time.

CORE IDEAS

The story. Abraham and his nephew Lot traveled together from Mesopotamia into Canaan, and God blessed them both with great flocks and herds. In time, the land could not feed all their animals, and their herdsmen began to quarrel. Abraham, the elder, could have demanded the best land for himself. Instead he said to Lot, “Let there be no strife, I pray thee, between me and thee, and between my herdmen and thy herdmen; for we be brethren” (Genesis 13:8), and he offered Lot the first choice of the land. Lot chose the well-watered plain of the Jordan, and Abraham took the hill country. They parted in peace, and when Lot was later in danger, Abraham came to his rescue. It is one of the oldest stories of a partnership ended without bitterness.

How they figured it out. Every partnership ends someday, and the end tests the partners as much as the beginning. Famous partners have ended well and badly. Hewlett and Packard stayed partners and friends all their lives. Tom Spencer retired from Marks & Spencer after nine years and was paid his share in full according to their agreement. Others have quarreled over the last dollar and lost both their money and their friendship. The partners who end well have usually done three things: kept honest books all along, written down at the start how the end would be handled, and cared more about each other than about winning the last argument.

The big idea. To close the books, total every sale and every cost to find the **net profit**. Prepare a final income statement and a balance sheet: list any supplies or equipment left and what they are worth. Then settle each partner’s **capital account** by the contract. Example: Anna paid for \$24 of supplies and Ben for \$12, out of their own pockets, and the business paid \$24 for other costs out of its sales. Sales were \$150, so total costs were \$60 and net profit is $\$150 - \$60 = \$90$. The cash box holds $\$150 - \$24 = \$126$. The contract says first return each partner’s money, then split the rest by hours. Anna worked 12 hours and Ben 18. Anna receives $\$24 + 12 \div 30 \times \$90 = \$24 + \$36 = \$60$; Ben receives $\$12 + 18 \div 30 \times \$90 = \$12 + \$54 = \$66$. Check: $\$60 + \$66 = \$126$, the cash in the box.

Think it through. The purpose of profit is not only to keep it. “Every man according as he purposeth in his heart, so let him give; not grudgingly, or of necessity: for God loveth a cheerful giver” (2 Corinthians 9:7). Before you spend your share, decide together whether the partnership will make a gift, and then each partner decides what he will give, save and spend from his own share. Last, hold an honest **after-action review**: What went well? What went wrong? What did each of you learn about work, money, honesty and friendship? Would you be partners again?

In business today. Partners in law firms, medical practices, farms and family businesses close their books every year and divide the profit by agreement, and when a partner retires, they settle his share. The best of them, like Abraham, choose peace over advantage, and keep their friendship long after the partnership has ended. *Fabricando fit faber*: by making, one becomes a maker, and by working faithfully with others, one becomes a good partner.

PICTURE STUDY



Mountain Landscape with Abraham and Lot Separating, Tobias Verhaecht, About 1600 · Oil on panel

Image: [Wikimedia Commons](#), public domain

Tobias Verhaecht was a Flemish painter of grand, imaginary mountain landscapes, and he was the first teacher of the young Peter Paul Rubens. In this painting the story of Abraham and Lot is told by small figures in a vast landscape: two households with their animals, turning in different directions. The land itself shows why they had to part: there was not room for all their flocks in one place.

Look closely

- Find the two groups of people and animals. Which way is each one going?
- Look at the landscape on each side. Which side looks like the well-watered plain Lot chose?
- Look at the size of the people compared with the mountains. Why might the painter make them so small?

Talk about it

1. Abraham gave Lot the first choice. What did that cost Abraham, and what did it gain?
2. How does this story help two partners end a business in peace?

3. If you and your partner could each choose one thing to keep from your business, how would you decide who chooses first?

Safety first. A parent is present for the final cash count and settlement. Any gift of money should be made through your family, church or another organization your parents choose.

PROJECT

Close the Books, Settle Up and Give

You and your partner will close your business's books, prepare final statements, settle each partner's share by your contract, decide on giving, and hold an after-action review with your parents.

You will need

- Your joint ledger, receipts and contract
- The cash box, counted with both partners and a parent present
- A calculator or spreadsheet
- Envelopes labeled Give, Save and Spend for each partner

Steps

1. Count all the cash with both partners and a parent present. Both partners sign the final count.
2. Total all sales and all costs from your ledgers. Calculate net profit. Check that $\text{starting cash} + \text{sales} - \text{costs paid} = \text{final cash}$. Explain any difference.
3. Prepare a final income statement and a simple balance sheet (cash, supplies left over, anything owed).
4. Decide what to do with leftover supplies: sell them, divide them, or give them away. Record the decision.
5. Settle each partner's capital account using your contract's profit split. Show every calculation, and check that the two shares add up to the cash available.
6. Decide whether the partnership will make a gift together. Then each partner fills his Give, Save and Spend envelopes from his own share, and records the amounts.
7. Hold an after-action review with your parents: what went well, what went wrong, what each partner learned, and whether you would be partners again. Record the answers.
8. Write a final report of one to two pages: the business, the numbers, the profit split, the gift, and what you learned. Both partners sign it.

Tips

- If you disagree about the split, go back to the contract first, then to your dispute rule. Remember Abraham: peace is worth more than a few cents.
- Thank your customers, your supplier and your supervising parents. A thank-you note is part of closing a business well.

Check your work

- ☐ Our final books are complete, signed and reconciled.
- ☐ Each partner's share was calculated by our contract, and the shares add up correctly.
- ☐ We decided on giving, saving and spending, and we held an honest after-action review.

LEDGER NOTEBOOK

1. Copy your final profit-split calculation, with every step shown.
2. Draw a map of Abraham and Lot's parting: Bethel and Ai, the plain of the Jordan to the east, and the hill country of Canaan.
3. Write three lessons you learned about partnership that you want to remember when you are grown.

From history. After Abraham and Lot parted, God told Abraham to lift up his eyes and look in every direction, and promised him the land as far as he could see (Genesis 13:14-17). Abraham had given up the first choice, but he did not lose God's blessing.

COMMON MISTAKES

- Dividing the cash without first paying every cost and returning each partner's capital as the contract says.
- Forgetting leftover supplies and anything still owed. They belong in the final books too.
- Ending with an argument over a small amount. A good name and a friendship are worth more.

Make it a game • Split and Settle. Your parent hands you a made-up final net profit and a profit split of 60 to 40. Calculate each partner's share, then settle the capital accounts and write the distribution. Time it to beat three minutes. Then read what Abraham did when he let Lot choose first, and decide how you would give from the profit.

Scripture. “And Abram said unto Lot, Let there be no strife, I pray thee, between me and thee, and between my herdmen and thy herdmen; for we be brethren.” (Genesis 13:8, KJV)

Abraham chose peace over advantage. Partners who end a business this way keep their friendship and their good name.

BONUS: A BUSINESS WITH A PARTNER

This optional bonus unit is your chance to run a real small business, not alone this time, but with a **partner**: a brother or sister, a cousin or a friend, with both families' permission and a parent supervising. Partnership is one of the oldest ways of doing business. Paul worked as a tentmaker beside Aquila and Priscilla (Acts 18:3), and Solomon wrote, "Two are better than one; because they have a good reward for their labour" (Ecclesiastes 4:9). But partnerships also fail, usually not because of money but because the partners never agreed clearly on who would do what and how the money would be shared.

Over four lessons you will choose a partner and a business, write a short partnership contract, run the business together with shared books, and close the books with a fair profit split and a gift. Along the way you will learn from famous partners: Levi Strauss and Jacob Davis, William Procter and James Gamble, the twenty-four brokers of the Buttonwood Agreement, Michael Marks and Tom Spencer, and, long before them all, Abraham and Lot, who parted in peace. Every lesson asks you to keep careful records and to keep your word.

PREREQUISITES

- Has finished or nearly finished Units 1–8, especially the business plan (Unit 6) and the books (Unit 7)
- A partner of similar age, with both families' permission
- A parent or other adult who agrees to supervise all selling and money handling

MASTERY CHECKLIST

- ☐ I can explain what makes a good business partner and a good partnership.
- ☐ I can write a simple partnership contract that covers contributions, duties, decisions, books, profit split and ending.
- ☐ I can keep joint books with my partner, with two-person cash counts and receipts.
- ☐ I can calculate a fair profit split by capital and by work, and close a partnership's books.
- ☐ I can settle a disagreement with my partner peacefully and honestly.

OPTIONAL BOOKS AND GAMES FOR THIS UNIT

- **Levi Strauss & Co.: Levi's history**: The company's own history pages, including the story of Jacob Davis's letter of 1872 and the 1873 patent for riveted work pants. Good for Lesson 9.1.
- **Next Gen Personal Finance (NGPF)**: Free lessons on entrepreneurship and running a small business, for middle and high school students.

Not required. Every project in this unit works without them. School Launch has no ties to these authors, publishers or companies.

LESSONS IN THIS UNIT

9.1 Choosing a Partner and a Plan: Levi Strauss and Jacob Davis

2 sessions of 50 minutes

9.2 Write the Contract: Procter, Gamble and the Buttonwood Agreement

2 sessions of 50 minutes

9.3 Run It Together and Keep Joint Books: Marks and Spencer

2 sessions of 50 minutes

9.4 Close the Books, Split the Profit and Give: Abraham and Lot

2 sessions of 50 minutes

UNIT 9 REVIEW

Answer each question. Show your work for every calculation and use complete sentences for explanations. The review is worth 100 points.

1. **8 pts**
Why did Jacob Davis and Levi Strauss become partners, and what did each bring?
2. **8 pts**
Name three qualities of a good business partner.
3. **8 pts**
How did Procter and Gamble come to be partners in 1837?

4. **8 pts**

What did the twenty-four brokers promise in the Buttonwood Agreement of 1792?

5. **10 pts**

Name the seven questions a partnership agreement should answer.

6. **10 pts**

A partnership earns \$90 profit. Partner A put in \$30 and Partner B \$15. Find each share under (a) an equal split and (b) a split by money put in.

7. **8 pts**

What is a two-person count, and why does it protect both partners?

8. **10 pts**

Starting cash was \$20. Sales were \$85. The partners spent \$12 on supplies from the cash box. The ending count is \$91. Reconcile the cash. Is anything missing?

9. **8 pts**

How did Michael Marks and Tom Spencer divide the work of their partnership?

10. **12 pts**

Partners agree to return each partner's capital first and then split the remaining cash by hours worked. Sales were \$200. Partner A paid for \$40 of supplies and Partner B for \$20, out of their own pockets, and the business paid \$20 of other costs from its sales. A worked 10 hours and B 15 hours. Find the net profit and each partner's total payment.

11. **4 pts**

What did Abraham say to Lot when their herdsmen quarreled?

12. **6 pts**

Short answer: In three or four sentences, explain what you would do differently in your next partnership, and why.

ANSWER KEY

1. Davis had invented riveted work pants but could not afford the patent fee; Strauss had money, a warehouse, customers and a reputation. Davis brought the invention and tailoring skill; Strauss brought capital and a sales network. The patent was granted in 1873.
2. Any three: honesty and trustworthiness; shared values; complementary skills; hard work; keeping one's word; ability to talk through problems respectfully.
3. Procter, a candle maker, and Gamble, a soap maker, both bought fat from Cincinnati's packers and competed for it. Their father-in-law, Alexander Norris, suggested they join forces, and they signed a partnership agreement on October 31, 1837.
4. To trade stocks with each other and to charge customers a commission of at least one quarter of one percent. It became the start of the New York Stock Exchange.
5. Who the partners are; what each contributes; which jobs each does; how decisions are made; who keeps the books and how cash is counted; how profit and loss are split; how disagreements are settled and the partnership is ended.
6. (a) \$45 each. (b) A: $30 \div 45 \times 90 = \$60$; B: $15 \div 45 \times 90 = \$30$.
7. Counting cash with two people present, who both sign the count. It catches mistakes and keeps either partner from being suspected unfairly.
8. Expected ending cash = $20 + 85 - 12 = \$93$. Count is \$91, so \$2 is missing. Partners should check the arithmetic, look for an unrecorded expense or a sale recorded at the wrong price, or a counting mistake.
9. Marks, a gifted seller, ran the market stalls and found goods and new places to sell; Spencer, a bookkeeper, put in £300 for a half share and ran the office, warehouse, accounts and suppliers.
10. Net profit = $200 - (60 + 20) = \$120$. Cash on hand = $200 - 20 = \$180$. Return capital: A \$40, B \$20, leaving \$120. Split by hours: A $10/25 \times 120 = \$48$; B $15/25 \times 120 = \$72$. Totals: A \$88, B \$92 (sum \$180).
11. "Let there be no strife, I pray thee, between me and thee, and between my herdmen and thy herdmen; for we be brethren" (Genesis 13:8). He gave Lot the first choice of land.

12. A good answer names a specific lesson from the student's own business (about the contract, the division of work, the books, communication or the profit split) and explains how it would change the next partnership.

PORTFOLIO PIECE: OUR PARTNERSHIP FILE

Put together a complete file of your partnership business: the joint plan, the signed contract, the full joint ledger with receipts, every signed cash count and reconciliation, the minutes of each partners' meeting, the final income statement and balance sheet, the profit-split calculation, a record of what each partner gave, saved and spent, and the signed final report with your after-action review. Present the file to your family, and each partner explains one page of it.

LOOK FOR	WHAT IT MEANS
Agreement	A clear, signed plan and contract that answer the seven questions, with exact numbers and names.
Joint books	Complete sales and cost ledgers with receipts, two-person counts and daily reconciliations.
Settlement	Final statements and a profit split calculated correctly by the contract, with the shares adding up.
Partnership	Weekly meetings, an honest after-action review, a decision about giving, and a partnership ended in peace.