

GRADE 4 ART

First edition

8 units

32 lessons

A video for every lesson

FIRST EDITION

COURSE GUIDE

Fourth grade is the year a young artist starts to draw what is really there, not just what they think is there. In this course your student learns to look hard and draw carefully: contour and gesture lines, hatching and stippling, forms and ellipses, the proportions of faces, people and animals, a seven-step value scale, and the way light makes highlights, form shadows, cast shadows and reflected light.

Color grows deeper too. Students learn the three parts of every color (hue, value and intensity), mix tertiary colors, make rich browns and grays from complements, and choose color schemes on purpose. A whole unit on material science explains what paint, paper and ink are really made of, so the student knows why watercolor glows, why tempera is chalky, and why a good nib needs good paper. Later units add printmaking, carving and clay, one-point perspective, atmospheric perspective, composition and a short journey from the monks who made the Book of Kells to Giotto, the first painter of the Renaissance.

Every lesson follows the same three-part rhythm: **look** (a picture study of a great work of art), **learn** (a short video and clear teaching) and **make** (a studio project and sketchbook practice). We hold that beauty, truth and goodness are real, that God is the first Maker, and that children made in His image grow into makers by making: *Fabricando fit faber*.

Every lesson has a short teaching video from YouTube, chosen from art teachers and drawing channels such as Circle Line Art School, Mr. Otter Art Studio, The Virtual Instructor, That Art Teacher, Smarthistory and others. Each one was checked frame by frame for wholesome content, including every artwork shown on screen, and for fit with the lesson. Many art teachers mention their own websites, courses or paint brands at the start or end; you can skip those parts. A few videos were made for older students or adults; the lesson's note tells you when to pause and explain. Please preview a video

yourself if your child watches alone, since YouTube may show other suggestions after it ends.

Start with Lesson 1.1 →

WHO IT IS FOR

Students about 9–10 years old who can read independently and hold a pencil with control. No earlier art course is required, though children who did the Grade 3 course will recognize the strands and go deeper. Older beginners (ages 11–12) can use it comfortably too.

HOW TO USE THIS COURSE

1. **Weekly rhythm.** One lesson a week for 32 weeks, in two sessions of about 45 minutes. Session 1: warm-up, video, core ideas and picture study. Session 2: the studio project and sketchbook practice. In the last week of each unit, add a third session for the unit review and portfolio piece.
2. **Picture study.** Show the painting large (a laptop or printed copy is fine). Let the student look quietly for two full minutes without talking. Then put the picture away and ask them to tell back everything they saw, in order, with as much detail as they can. Bring the picture back and use the “Look for” points and questions. Do not rush this; careful looking is half of drawing.
3. **Read the core ideas together.** The core ideas are written to the student and are the real teaching of the lesson. A fourth grader can read them alone, but reading aloud together and pausing to try things out works best. Key terms are listed at the top; ask the student to explain each one back in their own words.
4. **Videos.** Watch the video at the point the lesson suggests. Pause often. If a video moves quickly, watch it twice: once to see, once to draw along.
5. **Sketchbook habit.** Keep one sketchbook for the whole year and date every page. The sketchbook exercises are short and can be done on other days of the week. A sketchbook is for practice, so mistakes stay in; do not tear out pages.
6. **Unit review and portfolio.** Each unit ends with a short review (50 points) that the student answers aloud or in writing, and a portfolio piece that pulls the unit’s skills together. Keep portfolio pieces flat in a large folder; at the end of the year they make a family art show.

7. **When something is hard.** Fourth graders are often frustrated when a drawing does not match what they see. That is a sign their eyes are growing faster than their hands, which is good. Encourage a second try instead of a rescue, and praise careful looking more than “talent.”

SCOPE AND SEQUENCE

UNIT 1 • WEEKS 1–4

Drawing Skills

Contour and gesture drawing, hatching, cross-hatching and stippling, and a careful still life drawn from real objects.

- 1.1 Contour Lines: Drawing the Edges
- 1.2 Gesture Drawing: Lines That Move
- 1.3 Hatching, Cross-Hatching and Stippling
- 1.4 Drawing a Still Life

UNIT 3 • WEEKS 9–12

Color

Hue, value and intensity; mixing tertiary colors; making browns and grays from complements; and choosing color schemes.

- 3.1 Hue, Value and Intensity
- 3.2 Mixing Tertiary Colors
- 3.3 Neutrals and Browns from Complements
- 3.4 Choosing a Color Scheme

UNIT 2 • WEEKS 5–8

Form and Proportion

Forms and ellipses, the proportions of the face, measuring the body in “heads,” and building animals from simple shapes.

- 2.1 Forms and Ellipses
- 2.2 Proportions of the Face
- 2.3 Measuring the Figure in Heads
- 2.4 Drawing Animals from Shapes

UNIT 4 • WEEKS 13–16

Value and Light

A seven-step value scale, the light source and form shadow, the direction of cast shadows, and reflected light.

- 4.1 The Seven-Step Value Scale
- 4.2 The Light Source and the Form Shadow
- 4.3 Which Way Do Cast Shadows Fall?
- 4.4 Reflected Light

UNIT 5 • WEEKS 17–20

Material Science

Material science: how watercolor glazes work, what binds tempera and acrylic, how paper is made and weighed, and drawing with ink and a nib.

- 5.1 Watercolor: Transparent Layers and Glazing
- 5.2 Tempera and Acrylic: What Holds the Color
- 5.3 Paper: Fibers, Weight and Cotton
- 5.4 Ink, Quill and Nib

UNIT 7 • WEEKS 25–28

Space and Perspective

One-point perspective in a room and on a road, atmospheric perspective, and a landscape with real depth.

- 7.1 A Room in One-Point Perspective
- 7.2 Vanishing Point and Orthogonals
- 7.3 Atmospheric Perspective
- 7.4 Painting a Landscape with Depth

UNIT 6 • WEEKS 21–24

Texture, Printmaking and Sculpture

Drawn texture, relief printing with foam plates, carving versus building in sculpture, and a clay animal.

- 6.1 Drawing Texture
- 6.2 Relief Printing with Foam
- 6.3 Carving Away and Building Up
- 6.4 A Clay Animal

UNIT 8 • WEEKS 29–32

Composition and Art History

The rule of thirds and emphasis, illuminated manuscripts, and the change from Medieval to Renaissance painting, ending with a final masterwork.

- 8.1 The Rule of Thirds
- 8.2 Emphasis: Where the Eye Goes First
- 8.3 Illuminated Manuscripts
- 8.4 From Medieval to Renaissance: Giotto

WEEKLY PACING CALENDAR

WEEK	PLAN
1	- Session 1: Lesson 1.1 Contour Lines: Drawing the Edges: warm-up, video, teaching and picture study - Session 2: Lesson 1.1 studio project and sketchbook practice <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 Gesture Drawing: Lines That Move: warm-up, video, teaching and picture study

WEEK	PLAN
	Session 2: Lesson 1.2 studio project and sketchbook practice
3	- Session 1: Lesson 1.3 Hatching, Cross-Hatching and Stippling: warm-up, video, teaching and picture study - Session 2: Lesson 1.3 studio project and sketchbook practice
4	- Session 1: Lesson 1.4 Drawing a Still Life: warm-up, video, teaching and picture study - Session 2: Lesson 1.4 studio project and sketchbook practice - Session 3: Unit 1 review and portfolio piece
5	- Session 1: Lesson 2.1 Forms and Ellipses: warm-up, video, teaching and picture study - Session 2: Lesson 2.1 studio project and sketchbook practice
6	- Session 1: Lesson 2.2 Proportions of the Face: warm-up, video, teaching and picture study - Session 2: Lesson 2.2 studio project and sketchbook practice
7	- Session 1: Lesson 2.3 Measuring the Figure in Heads: warm-up, video, teaching and picture study - Session 2: Lesson 2.3 studio project and sketchbook practice
8	- Session 1: Lesson 2.4 Drawing Animals from Shapes: warm-up, video, teaching and picture study - Session 2: Lesson 2.4 studio project and sketchbook practice - Session 3: Unit 2 review and portfolio piece
9	- Session 1: Lesson 3.1 Hue, Value and Intensity: warm-up, video, teaching and picture study - Session 2: Lesson 3.1 studio project and sketchbook practice
10	- Session 1: Lesson 3.2 Mixing Tertiary Colors: warm-up, video, teaching and picture study - Session 2: Lesson 3.2 studio project and sketchbook practice
11	- Session 1: Lesson 3.3 Neutrals and Browns from Complements: warm-up, video, teaching and picture study - Session 2: Lesson 3.3 studio project and sketchbook practice
12	Session 1: Lesson 3.4 Choosing a Color Scheme: warm-up, video, teaching and picture study

WEEK	PLAN
	• Session 2: Lesson 3.4 studio project and sketchbook practice • Session 3: Unit 3 review and portfolio piece
13	• Session 1: Lesson 4.1 The Seven-Step Value Scale: warm-up, video, teaching and picture study • Session 2: Lesson 4.1 studio project and sketchbook practice
14	• Session 1: Lesson 4.2 The Light Source and the Form Shadow: warm-up, video, teaching and picture study • Session 2: Lesson 4.2 studio project and sketchbook practice
15	• Session 1: Lesson 4.3 Which Way Do Cast Shadows Fall?: warm-up, video, teaching and picture study • Session 2: Lesson 4.3 studio project and sketchbook practice
16	• Session 1: Lesson 4.4 Reflected Light: warm-up, video, teaching and picture study • Session 2: Lesson 4.4 studio project and sketchbook practice • Session 3: Unit 4 review and portfolio piece
17	• Session 1: Lesson 5.1 Watercolor: Transparent Layers and Glazing: warm-up, video, teaching and picture study • Session 2: Lesson 5.1 studio project and sketchbook practice
18	• Session 1: Lesson 5.2 Tempera and Acrylic: What Holds the Color: warm-up, video, teaching and picture study • Session 2: Lesson 5.2 studio project and sketchbook practice
19	• Session 1: Lesson 5.3 Paper: Fibers, Weight and Cotton: warm-up, video, teaching and picture study • Session 2: Lesson 5.3 studio project and sketchbook practice
20	• Session 1: Lesson 5.4 Ink, Quill and Nib: warm-up, video, teaching and picture study • Session 2: Lesson 5.4 studio project and sketchbook practice • Session 3: Unit 5 review and portfolio piece
21	• Session 1: Lesson 6.1 Drawing Texture: warm-up, video, teaching and picture study • Session 2: Lesson 6.1 studio project and sketchbook practice

WEEK	PLAN
22	• Session 1: Lesson 6.2 Relief Printing with Foam: warm-up, video, teaching and picture study • Session 2: Lesson 6.2 studio project and sketchbook practice
23	• Session 1: Lesson 6.3 Carving Away and Building Up: warm-up, video, teaching and picture study • Session 2: Lesson 6.3 studio project and sketchbook practice
24	• Session 1: Lesson 6.4 A Clay Animal: warm-up, video, teaching and picture study • Session 2: Lesson 6.4 studio project and sketchbook practice • Session 3: Unit 6 review and portfolio piece
25	• Session 1: Lesson 7.1 A Room in One-Point Perspective: warm-up, video, teaching and picture study • Session 2: Lesson 7.1 studio project and sketchbook practice
26	• Session 1: Lesson 7.2 Vanishing Point and Orthogonals: warm-up, video, teaching and picture study • Session 2: Lesson 7.2 studio project and sketchbook practice
27	• Session 1: Lesson 7.3 Atmospheric Perspective: warm-up, video, teaching and picture study • Session 2: Lesson 7.3 studio project and sketchbook practice
28	• Session 1: Lesson 7.4 Painting a Landscape with Depth: warm-up, video, teaching and picture study • Session 2: Lesson 7.4 studio project and sketchbook practice • Session 3: Unit 7 review and portfolio piece
29	• Session 1: Lesson 8.1 The Rule of Thirds: warm-up, video, teaching and picture study • Session 2: Lesson 8.1 studio project and sketchbook practice
30	• Session 1: Lesson 8.2 Emphasis: Where the Eye Goes First: warm-up, video, teaching and picture study • Session 2: Lesson 8.2 studio project and sketchbook practice
31	• Session 1: Lesson 8.3 Illuminated Manuscripts: warm-up, video, teaching and picture study

WEEK	PLAN
	Session 2: Lesson 8.3 studio project and sketchbook practice
32	- Session 1: Lesson 8.4 From Medieval to Renaissance: Giotto: warm-up, video, teaching and picture study - Session 2: Lesson 8.4 studio project and sketchbook practice - Session 3: Unit 8 review and portfolio piece <i>Last week. Hold a family art show: hang the best piece from each unit and let the student tell guests about one of them.</i>

MATERIALS

Sketchbook (9×12 in, mixed-media paper, about 60 sheets)

For warm-ups and sketchbook practice all year. Mixed-media paper takes pencil, ink and light watercolor.

Drawing pencils: HB, 2B, 4B and 6B

Used for the value scale, shading and still life. HB is light and hard; 6B is soft and dark.

Kneaded eraser and a white plastic eraser

The kneaded eraser lifts graphite gently and can be shaped to a point for highlights.

Fine black pens (0.3 and 0.5 mm, waterproof)

For hatching, stippling and contour drawing.

Drawing paper (pad of 9×12 in or larger)

For finished projects and portfolio pieces.

Watercolor paper (140 lb / 300 gsm), a small pad

Heavy enough to hold water without buckling badly. A cotton sheet or two is a nice treat for Unit 5.

Watercolor pan set (at least 12 colors) and round brushes (sizes 4, 8 and 12)

Student-grade is fine. Brushes with a good point matter more than the paint brand.

Tempera paint in red, yellow, blue, white and black

For color mixing in Unit 3 and the tempera test in Unit 5.

Small set of student acrylics (same five colors)

For comparing with tempera in Unit 5. Wear old clothes; acrylic does not wash out once dry.

Colored pencils (24 or more) and oil pastels

For color schemes, illuminated letters and the final pieces.

Dip pen holder with two or three nibs, and a bottle of black India ink or washable drawing ink

For Lesson 5.4. Washable ink is easier for younger hands; India ink is permanent.

Foam printing plates (or clean foam trays), a soft rubber brayer and water-based block printing ink

For relief printing in Unit 6. Washable tempera can stand in for printing ink.

Air-dry clay (about 2 lb) and simple tools (a craft stick, toothpick, fork, plastic knife)

For the clay animal in Unit 6. Keep clay off carpets and let pieces dry slowly.

A bar of soap (plain, rectangular) and a plastic knife or spoon

For the carving project in Unit 6.

Ruler (12 in), glue stick, child scissors, masking tape

Used throughout, especially for perspective in Unit 7.

A desk lamp and a few plain objects (white eggs or balls, a mug, a box, fruit)

Light and shadow lessons need one strong light you can move.

Gold or yellow metallic marker or paint (optional)

For the illuminated letter in Unit 8.

GRADING

Art is graded on effort, skill growth and following the lesson's goals, not on natural talent. Each part below is scored, and the weights give the final grade.

PART	%
Studio projects (one per lesson)	40
Sketchbook practice and warm-ups	20
Unit reviews (8 × 50 points)	15
Portfolio pieces (one per unit)	25

Scale: A 90–100, B 80–89, C 70–79, D 60–69, below 60 needs more practice before moving on.

- Score each studio project out of 10 using its “Check your work” statements: about 3 points for each statement the student can honestly say yes to, plus 1 for clean, careful work.
- Sketchbook pages earn full credit when they are dated, finished and show real effort. A messy but honest page earns full credit; a blank page earns none.
- Portfolio pieces use the rubric in each unit. Give each criterion 0–5 points and scale to 100.
- Write one sentence of specific praise on each portfolio piece (for example, “Your cast shadows all point away from the lamp”). Specific praise teaches more than a grade.

A NOTE TO PARENTS

You do not need to be an artist to teach this course. Each lesson tells you what to say, what to show and what to look for. Your most important job is to slow your child down: to sit beside them during picture study, to ask “What do you see?” and to wait for a real answer. Children who learn to look carefully learn to draw, and they also learn to notice the world God made with gratitude.

Set up a simple art corner with a table you do not mind getting messy, a jar for water, paper towels and good light. Expect some projects to disappoint your child. Treat those as practice, praise the effort and the specific things that went well, and try again next week. By the end of the year you will have a portfolio of real work and a child who knows the names of great painters and the reasons their pictures are beautiful.

UNIT 1

DRAWING SKILLS

Drawing is the root of all the other arts. Painters, sculptors, builders and printmakers all begin by drawing. In this unit you will learn four of the most important drawing skills that artists have used for hundreds of years: contour lines, gesture lines, shading with lines and dots, and drawing a still life from real objects.

The secret of every lesson in this unit is the same: **look more than you draw**. Your eyes will learn to slow down and notice edges, movement, light and dark. Your hand will follow. By the end of the unit you will have a drawing of a still life that shows all four skills together.

PREREQUISITES

- Can hold a pencil lightly and draw long, smooth lines
- Knows the basic shapes (circle, square, triangle, rectangle)
- Has a sketchbook, an HB and a 2B pencil, an eraser and a fine black pen

MASTERY CHECKLIST

- ☐ I can draw a slow contour line that follows the edges of a real object.
- ☐ I can draw a quick gesture that shows how a person is moving.
- ☐ I can shade with hatching, cross-hatching and stippling, making darker areas by putting lines or dots closer together.
- ☐ I can arrange a still life and draw it from life, with overlapping objects sitting on a table.
- ☐ I can tell how Dürer, Millet and Rembrandt used line in their work.

LESSONS IN THIS UNIT

1.1 Contour Lines: Drawing the Edges

2 sessions of 45 minutes

1.2 Gesture Drawing: Lines That Move

2 sessions of 45 minutes

1.3 Hatching, Cross-Hatching and Stippling

2 sessions of 45 minutes

1.4 Drawing a Still Life

2 sessions of 45 minutes

UNIT 1 REVIEW

Answer each question aloud or in writing. For drawing questions, draw in your sketchbook and show your parent. Total: 50 points.

1. 5 pts

What is the difference between an outline and a contour line?

2. 5 pts

What is a blind contour drawing, and why do artists practice it?

3. 5 pts

What is the first line you draw in a gesture drawing?

4. 5 pts

Draw three small squares and shade one with hatching, one with cross-hatching and one with stippling.

5. 5 pts

In hatching or stippling, how do you make an area look darker?

6. 5 pts

What is a still life? Name three things you might put in one.

7. 5 pts

When you draw a still life, should an object closer to you be drawn higher or lower on the paper?

8. 5 pts

Why do artists overlap objects in a still life?

9. 5 pts

Who drew *Praying Hands*, and what kind of line did he use to show the knuckles and sleeves?

10. 5 pts

How did Rembrandt make the dark parts of the *Hundred Guilder Print* without paint?

ANSWER KEY

1. An outline goes only around the outside edge. A contour line follows the outside edges and the important inside edges, such as folds, overlaps and knuckles.
2. A contour drawing made while looking only at the object, not the paper. It trains the eye and hand to work together and teaches careful looking.
3. The line of action: one curved line that shows the main movement of the pose.
4. Square 1 has parallel lines; square 2 has crossing layers of lines; square 3 has dots. All three should be evenly shaded.
5. Put the lines or dots closer together (and add more layers or thicker lines).
6. A picture of objects that do not move, arranged by the artist. For example fruit, a jug and a book (any reasonable objects).
7. Lower on the paper.
8. Overlapping shows which object is in front and makes the picture look deep and natural instead of lined up.
9. Albrecht Dürer. He used careful contour lines, including inside edges, along with white highlights.
10. With many layers of cross-hatched lines packed close together.

PORTFOLIO PIECE: A STILL LIFE IN LINE

Set up a new still life of four or five objects, including at least one natural object (a pine cone, shell, flower or fruit). Make a finished drawing on good paper in pencil or pen. Use contour lines for the edges and one or more line-shading techniques (hatching, cross-hatching or stippling) for light and shadow. Sign and date it in the lower corner.

LOOK FOR	WHAT IT MEANS
Observation	The objects are drawn from life with careful contours, including inside edges and overlaps.
Arrangement	Objects are different sizes, some overlap, and the group fills the page without crowding.
Line shading	Hatching, cross-hatching or stippling is controlled, with clear light and dark areas and white highlights.
Space	Objects closer to the viewer sit lower on the page, and cast shadows connect them to the table.
Craftsmanship	The drawing is clean, finished, signed and dated.

1.1 CONTOUR LINES: DRAWING THE EDGES

OBJECTIVES

- Explain what a contour line is and how it differs from an outline.
- Draw a blind contour and a modified contour of your own hand.
- Draw a careful contour drawing of a real object with inside edges as well as outside edges.

Warm-up. Put your non-drawing hand flat on the table. Without picking up your pencil, trace the air around your fingers with your eyes only, very slowly, like an ant walking along every bump and wrinkle. Then do it again with your pencil on the sketchbook page, looking at your hand, not the paper. Take two full minutes.

WATCH

An Easy Way to Teach Contour Drawing!

[Cassie Stephens](#) · 6:19

<https://www.youtube.com/watch?v=RpZ1TwGaugM>

WHEN TO WATCH

After reading the core ideas and before the studio project. Have your sketchbook open and try the exercise along with the class.

BACKUP VIDEO

Contour Drawing: What Is It? How Do You Do It?

[The Pencil Room Online](#) · 5:15

<https://www.youtube.com/watch?v=4qNMzOb-DY8>

Watch on the second day if you want another clear explanation of why contour drawing trains your eyes.

KEY TERMS

contour line

A line that follows the edges of a form, both the outside edge and the important edges inside it, like the folds of a sleeve or the crease of a knuckle.

outline

A flat line around only the outside of a shape, like a cookie cutter. A contour line does more than an outline.

blind contour

A contour drawing made while looking only at the object, never at the paper. It trains your eyes and hand to work together.

modified contour

A contour drawing where you look mostly at the object and only glance at the paper now and then to check your place.

observation

Drawing what you actually see in front of you, instead of what you remember or imagine.

CORE IDEAS

Most people draw a hand the same way every time: a palm and five sausages. That is drawing from memory, the picture of a hand stored in your head. Artists learn to draw what is really in front of them. A **contour line** is the best tool for this. It is a line that travels slowly along every edge you can see, outside and inside.

An **outline** only goes around the outside, like tracing a shadow. A contour line also goes inside the shape wherever there is an important edge: where one finger crosses in front of another, where skin folds at a knuckle, where a fingernail begins. Those inside lines are what make a drawing look like a real, rounded thing.

The best way to learn contour drawing is a **blind contour**. Look only at the object. Imagine your pencil point is touching the edge, and move it at the same slow speed as your eye. Do not peek at the paper! The drawing will look funny and wobbly, and that is fine. Its job is to train you to look. Many famous artists practiced this way every day.

Next comes the **modified contour**. Now you may glance at your paper, but only to check where you are, and only when your pencil is stopped. Spend about 80 percent of your time looking at the object. Use one steady, slow line. If you need to jump to a new edge, lift your pencil, look, then set it down where that edge begins.

Speed is the enemy here. A good contour drawing of a hand might take ten minutes. If your line is racing ahead of your eye, slow down. You are not trying to finish; you are trying to notice.

God made every hand, leaf and shell with more detail than we could ever draw.
Contour drawing is a way of paying close attention to that detail, and attention is the beginning of gratitude.

PICTURE STUDY



Praying Hands, Albrecht Dürer, 1508 · Brush and ink with white highlights on blue-prepared paper ·
Albertina, Vienna

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

Albrecht Dürer was a German artist who lived about 500 years ago and was famous for his careful drawings. He made this study of hands to help him paint an altarpiece. It has become one of the best-known drawings in the world because of how closely he looked.

Look closely

- Follow the contour of one thumb from the tip to the wrist. Notice how the line bends at every joint.
- Find the inside edges: the knuckles, the wrinkles at the joints, the veins on the back of the hand.
- Look at the sleeve cuffs. Dürer used curving contour lines to show the cloth folding around the wrists.
- See how the dark lines and the white highlights work together to make the hands look rounded.

Talk about it

1. Is this an outline or a contour drawing? How can you tell?
2. Do these hands look young or old? What lines tell you?

3. Why do you think an artist would spend so long drawing just a pair of hands?

STUDIO PROJECT

Three Hands and a Pine Cone

You will make three drawings of your own hand, each one a little more careful than the last, and then use what you learned to draw a natural object with many edges.

You will need

- Sketchbook or drawing paper
- HB pencil
- Fine black pen (optional for the last drawing)
- A pine cone, shell, seed pod, leaf or other natural object
- A timer

Steps

1. Set a timer for 3 minutes. Make a **blind contour** of your relaxed hand. Look only at your hand. Do not lift the pencil and do not peek.
2. Set the timer for 5 minutes. Make a second blind contour of your hand in a new pose, like holding a pencil or making a fist. Move even slower this time.
3. Now set the timer for 10 minutes. Make a **modified contour** of your hand. Glance at the paper only when your pencil is stopped. Include inside edges: knuckles, nails and the place where fingers overlap.
4. Compare the three drawings. Write one sentence under each about what you noticed.
5. Place your natural object in front of you on a plain sheet of paper so you can see its edges clearly.
6. Draw the object with a modified contour, filling at least half your page. Start with the edge nearest you and travel slowly.
7. Add the inside contours: the scales of the pine cone, the ridges of the shell or the veins of the leaf. Use lighter, thinner lines for small edges and firmer lines for big edges.
8. If you like, go over your best lines with a fine pen. Do not erase the extra searching lines; they show your looking.

Tips

- If your hand gets tired or tense, shake it out and start again. A relaxed hand draws a smoother line.
- Pretend your pencil is an ant walking along every edge. Ants never hurry and never skip a bump.

Check your work

- ☐ My drawings follow the real edges, including some inside edges.
- ☐ My modified contour of my hand looks like my hand, not a memory of a hand.
- ☐ I worked slowly and used one steady line most of the time.

SKETCHBOOK PRACTICE

1. Do a 2-minute blind contour of a shoe, a spoon and a kitchen tool each day for three days.
2. Draw a family member's face in modified contour while they read. Keep it to 5 minutes.
3. Draw a houseplant with contour lines, paying attention to where leaves overlap.

From history. Dürer filled notebooks with studies of hands, faces, plants and animals. He believed that an artist must learn from nature itself, and he wrote that true art is “hidden in nature” and belongs to the one who can draw it out. His careful studies were used by artists across Europe for generations.

COMMON MISTAKES

- Peeking during a blind contour. The point is to train the eye, not to make a good-looking picture.
- Drawing quickly and guessing. Slow down so your hand moves at the speed of your eye.
- Drawing only an outline. Look for the inside edges that make the object round.

Make it a game • Peek Budget. Draw your hand twice. First, a blind contour: eyes on your hand, no peeks at all. Second, a modified contour: you may peek at the paper only five times. Spend your peeks wisely. Your parent judges which drawing has the most accurate edges, scoring each out of five. Say how a contour line differs from an outline.

Scripture. “I will praise thee; for I am fearfully and wonderfully made: marvellous are thy works; and that my soul knoweth right well.” (Psalms 139:14, KJV)

When you draw your own hand slowly, you discover how wonderfully it is made. Careful drawing can become a kind of praise.

1.2 GESTURE DRAWING: LINES THAT MOVE

OBJECTIVES

- Explain how a gesture drawing is different from a contour drawing.
- Find the line of action in a pose and draw it first.
- Make quick gesture drawings of people and animals in 30 seconds to 2 minutes.

Warm-up. Stand up and copy three poses a parent makes: reaching up high, bending to pick something up, and running in place. For each one, say out loud which way your back is curving. Then draw one quick curved line in your sketchbook for each pose.

WATCH

Fun Gesture drawing activity

Mr. Otter Art Studio • 2:48

<https://www.youtube.com/watch?v=npKfElje8AQ>

WHEN TO WATCH

After the core ideas. Watch how each figure is caught with a few quick, flowing lines. Watch once, then watch again and draw along.

Note: The video paints watercolor squares first; you can skip that and draw your gestures straight on paper.

BACKUP VIDEO

Quick Intro to Gesture Drawing for Kids

Susie Brookshire (Mrs. Brookshire's Art) • 3:36

<https://www.youtube.com/watch?v=Hazbmb8I-58>

A short second introduction to gesture drawing for kids.

KEY TERMS

gesture drawing

A quick, loose drawing that captures the movement and pose of a figure rather than its details.

line of action

One long, curved line that shows the main movement of a pose, usually running from the head through the spine to the leg that holds the weight.

pose

The position a body is in, such as standing, bending, reaching or running.

proportion

How big one part is compared to another, such as the head compared to the whole body.

CORE IDEAS

A contour drawing is slow and careful. A **gesture drawing** is the opposite: fast, loose and full of energy. Its job is not to show what someone looks like. Its job is to show what they are *doing*: leaning, twisting, reaching, running.

Every pose has a **line of action**. Look at a person bending to tie a shoe. Their whole body makes one big curve, like a letter C. A person throwing a ball might make an S curve. Always draw the line of action first, in one smooth stroke, before anything else.

Next, add the parts quickly: an oval for the head, a bean shape for the chest and hips, and simple lines for the arms and legs. Bend the lines where the elbows and knees bend. Do not draw fingers, faces or clothes yet. If the pose only lasts 30 seconds, you only have time for the movement, and that is the point.

Gesture drawing trains you to see the big idea before the details. Even when you make a slow, finished drawing later, it is wise to start with a light gesture. Then your figure will look alive instead of stiff like a robot.

Keep your wrist loose. Hold the pencil farther back from the point and use your whole arm. Long, sweeping lines are better than short, scratchy ones.

PICTURE STUDY



The Gleaners, Jean-François Millet, 1857 · Oil on canvas · Musée d'Orsay, Paris

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

Millet was a French painter who grew up on a farm and loved to paint country people at work. Gleaners were poor women who were allowed to pick up the grain the harvesters left behind, just like Ruth in the Bible. Millet gave their hard, humble work dignity and beauty.

Look closely

- Trace the line of action of each woman with your finger. Two are bent almost in half; one is just rising.
- Notice how their backs make strong curves that repeat each other, like a slow dance.
- Look at their arms. Where are the hands, and what are they doing?
- Compare the three big women in front with the tiny workers and haystacks far away.

Talk about it

1. If you drew only one line for each woman, what shape would it be?
2. How does Millet make you feel how tiring this work is, without showing any faces clearly?
3. Where in the Bible do we read about someone gleaning in a field?

STUDIO PROJECT

A Page of Movement

You will fill a page with timed gesture drawings of a family member, then turn your favorite into a finished figure drawing that still keeps its energy.

You will need

- Large drawing paper or 2 sketchbook pages
- HB and 2B pencils
- A timer
- A family member willing to pose (or photos of people playing sports or working)
- Colored pencils (optional)

Steps

1. Ask your model to hold simple, active poses: reaching for a shelf, sweeping, kicking a ball, sitting on the floor, bending to pick up a toy.
2. For each pose, draw the line of action first in one curved stroke.
3. Add an oval head, a bean for the chest and hips, and lines for arms and legs. Stop when the timer rings.
4. Do six 30-second gestures, then four 1-minute gestures, then two 2-minute gestures. Fill the page; drawings may overlap.
5. Circle the gesture that shows the most movement.
6. On a new sheet, draw that pose again, larger, starting with a light gesture. Then slowly add the shape of the arms, legs and simple clothing over it.
7. Keep the line of action visible underneath. Darken the most important edges with the 2B pencil.

Tips

- If you miss a pose, it does not matter. Just start the next one. Speed builds skill.
- Exaggerate the curve a little. Real poses look stiff on paper unless you push them.

Check your work

- ☐ Every gesture started with a line of action.
- ☐ My figures look like they are moving, not standing like posts.
- ☐ My finished drawing kept the movement of the gesture.

SKETCHBOOK PRACTICE

1. Watch people at the park, a ball game or church fellowship time and draw ten 30-second gestures.
2. Draw your pet or a bird five times in gesture as it moves. Animals have lines of action too.
3. Draw three gestures of the same pose: one in 10 seconds, one in 30 seconds, one in 2 minutes. Which one has the most life?

From history. Millet's paintings of farm workers were not always popular in Paris when he made them. Many people thought poor workers were not a fit subject for a large painting. Today *The Gleaners* and *The Angelus* are among the most loved paintings in France.

COMMON MISTAKES

- Starting with the head and adding details. Start with the line of action.
- Drawing stick figures with straight, stiff lines. Real bodies curve and bend.
- Pressing hard. Gesture lines should be light and loose.

Make it a game · Action Statues. Act out a sport or a job for twenty seconds and freeze in a pose, like a bat swing, hammering or reaching up. Your parent draws the line of action first, then quick shapes, in twenty seconds. Then guess what action it was from the drawing alone. Score a point for each right guess. Swap roles.

1.3 HATCHING, CROSS-HATCHING AND STIPPLING

OBJECTIVES

- Make light and dark values using only lines and dots.
- Shade a form using hatching, cross-hatching and stippling.
- Explain how printmakers and pen artists show shadow without smudging.

Warm-up. Draw a row of five small squares in your sketchbook. Fill the first with lines far apart, and each next square with lines a little closer together, until the last is nearly black. Do it in pen so you cannot erase.

WATCH

How to Draw With Pen and Ink

Drawing & Painting - The Virtual Instructor · 6:57

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

WHEN TO WATCH

After the core ideas. Pause after hatching, cross-hatching and random lines and try each one on scrap paper.

BACKUP VIDEO

Shading Forms Using Hatching, Cross-hatching, Stippling and Scribbling

Windy Lampson · 10:10

<https://www.youtube.com/watch?v=8L6olWi5u7A>

More practice shading forms with hatching, cross-hatching, stippling and scribbling.

KEY TERMS

value

How light or dark something is.

cross-hatching

Shading with layers of lines that cross each other. Each new layer makes the area darker.

hatching

Shading with many parallel lines. Lines close together look darker; lines far apart look lighter.

stippling

Shading with many small dots. More dots packed closer together make a darker value.

contour hatching

Hatching lines that curve around a form, following its surface, to help it look round.

CORE IDEAS

When you shade with a pencil, you can smudge and blend. But pens, etching needles and carving tools cannot smudge. For hundreds of years, artists who worked in ink and in prints made light and dark with lines and dots alone. You can learn their tricks.

Hatching is a group of parallel lines. The closer the lines, the darker the value. Thicker lines are darker too. Keep the lines going the same direction and about the same length, and lift your pen at the end of each one so it does not leave a hook.

Cross-hatching adds a second layer of lines at an angle across the first. Add a third or fourth layer for the darkest shadows. Areas with no lines at all stay white, and those become your brightest highlights.

Stippling uses dots. Hold the pen straight up and tap it; do not drag it, or the dots become commas. Many dots close together make a dark area; a few scattered dots make a light one. Stippling is slow, but it makes beautiful, soft gradations.

To make a shape look round, curve your hatching lines around it, like the stripes on a ball. This is called **contour hatching**. Put the closest lines on the side away from the light, and leave the side facing the light open and white.

PICTURE STUDY



The Hundred Guilder Print (Christ Healing the Sick), Rembrandt van Rijn, about 1648 · Etching, drypoint and engraving on paper · Rijksmuseum, Amsterdam, and other print collections

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

Rembrandt was a Dutch master of light and dark. This print shows Jesus welcoming the sick and the little children, from Matthew 19. It got its nickname because people said a single copy once sold for one hundred guilders, a huge price. Every shadow in it is made with lines.

Look closely

- Find the brightest area. Is it covered with lines or left almost white?
- Look at the darkest corner on the right. How many layers of crossing lines can you imagine there?
- Compare the left side, drawn with light, open lines, to the right side, packed with dark cross-hatching.
- Find a robe or sleeve where the hatching lines curve to follow the folds.

Talk about it

1. How did Rembrandt make Jesus stand out from the crowd?
2. Why do you think some people are drawn with just a few lines and others with many?

3. Which do you think took Rembrandt longer: the light side or the dark side?
Why?

STUDIO PROJECT

Three Shaded Spheres and a Pear

You will make three shaded balls using each technique, then shade a real pear (or apple) in the technique you like best.

You will need

- Drawing paper
- Fine black pens (0.3 and 0.5 mm)
- Pencil and eraser
- A small round lid or cup to trace
- A pear or apple
- A desk lamp

Steps

1. Trace three circles about 2 inches across in a row with pencil. Draw a small arrow in the top left corner of the page to show where the light comes from.
2. In each circle, lightly mark a small oval near the upper left for the highlight. You will leave it white.
3. Circle 1: shade with **hatching**. Curve your lines around the ball. Put them closest together on the lower right, away from the light.
4. Circle 2: shade with **cross-hatching**. Add one layer over most of the ball, a second layer on the shadow half and a third only on the darkest edge.
5. Circle 3: shade with **stippling**. Pack dots tightly on the lower right and spread them out toward the highlight. Leave the highlight empty.
6. Under each ball, add a cast shadow on the table using the same technique, darkest right under the ball.
7. Set the pear under the lamp. Draw its contour lightly in pencil, then shade it in ink using your favorite technique. Leave the brightest spot white.
8. When the ink is dry, gently erase the pencil lines.

Tips

- Build up dark areas slowly. You can always add more lines, but ink cannot be erased.
- Turn your paper so your hand moves in its most comfortable direction.

Check your work

- ☐ Each ball goes smoothly from light to dark.
- ☐ I left the highlights white.
- ☐ My pear looks round because of the shading.

SKETCHBOOK PRACTICE

1. Make a hatching value scale and a stippling value scale, each with five steps from white to nearly black.
2. Draw a tree trunk using only contour hatching that wraps around it.
3. Find a black-and-white illustration in an old book and copy a small part of it, noticing how the lines are arranged.

From history. Before photographs, nearly all pictures in books were printed from engravings, etchings or woodcuts, so they were made with lines. Rembrandt made about 300 etchings, scratching his drawings into a wax-covered copper plate that was then bathed in acid and printed.

COMMON MISTAKES

- Scribbling instead of hatching. Keep lines parallel and controlled.
- Dragging the pen when stippling, which makes tails on the dots.
- Covering the highlight. Plan where it goes before you start.

Make it a game • Roll and Shade. Make a chart of six boxes. Roll a die for each one: 1 or 2 means hatching, 3 or 4 cross-hatching and 5 or 6 stippling. Roll again for the value: odd means light, even means dark. Fill each box in sixty seconds. Your parent awards a point when the value matches the roll. Beat your score.

1.4 DRAWING A STILL LIFE

OBJECTIVES

- Arrange a still life with overlapping objects of different sizes and heights.
- Draw the objects from observation, comparing sizes and checking where they sit on the table.
- Shade the still life using one of the line techniques from Lesson 1.3.

Warm-up. Hold up your pencil at arm's length and close one eye. Measure how tall a mug on the table looks against your pencil. Then measure an apple next to it. Which is taller, and by how much? Try it with three objects.

WATCH

Draw a Still Life: From Line Drawing to Shading

Circle Line Art School · 5:59

<https://www.youtube.com/watch?v=tpFBpo17ORA>

WHEN TO WATCH

Watch during Session 2 if you want help comparing sizes and showing which object is in front. Watch the bottoms of the objects: their ellipses show where each one sits.

BACKUP VIDEO

Bowl of Fruit Still Life Lesson

Ms. G's Studio · 4:20

<https://www.youtube.com/watch?v=8Y528yBwpvU>

A simpler still life demonstration with a bowl of fruit.

KEY TERMS

still life

A picture of objects that do not move, such as fruit, cups, bottles, flowers and books, usually arranged on a table.

overlap

When one object is in front of another and hides part of it. Overlapping shows which one is closer.

arrangement

The way the artist places the objects before drawing them.

sighting

Measuring with a pencil held at arm's length to compare sizes and angles.

eye level

The height of your eyes. Objects below your eye level show their tops.

CORE IDEAS

A **still life** is a picture of ordinary things that hold still. Artists love them because you can look as long as you like. Fruit, a jug, a loaf of bread and a cloth can become a beautiful picture when drawn with care.

First, make a good **arrangement**. Choose three to five objects of different heights and shapes, such as something tall, something round and something small. Let some objects **overlap**, so one hides part of another. Do not line them up in a row like soldiers. Put them on a plain cloth and shine a lamp from one side.

When you draw, start big and light. Lightly sketch each object as a simple shape: a cylinder for the jug, a circle for the apple. Use **sighting** to check sizes: is the jug twice as tall as the apple, or three times? Fix the sizes now, before you add detail.

Watch the bottoms of the objects. An object nearer to you sits lower on the paper; an object farther back sits higher. Most beginners draw everything sitting on the same line, which makes it look like a shelf. Look carefully at where each object touches the table.

When the shapes and sizes are right, draw the contours carefully, including overlaps. Then shade with hatching, cross-hatching or stippling, leaving the highlights white and adding cast shadows on the table.

PICTURE STUDY



Quince, Cabbage, Melon and Cucumber, Juan Sánchez Cotán, about 1602 · Oil on canvas · San Diego Museum of Art, California

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

Sánchez Cotán was a Spanish painter who later became a monk. His still lifes are simple and quiet: a few vegetables in a stone window, glowing against the dark. He shows that ordinary food, carefully looked at, is worth our wonder.

Look closely

- Follow the curve the objects make from the hanging quince down to the cucumber on the right.
- Notice that some objects hang in the air and some sit on the ledge. How do you know which are in front?
- Look at the light. Which side of each object is brightest?
- Find the cast shadows on the stone ledge.

Talk about it

1. Why do you think the artist chose a black background?
2. How did he arrange the objects so they are not in a straight row?
3. If you made a still life from food in your kitchen, what would you choose?

STUDIO PROJECT

My Kitchen Still Life

You will set up a still life of three to five things from your kitchen and make a finished drawing using contour lines and line shading.

You will need

- Drawing paper (9×12 in or larger)
- HB and 2B pencils, eraser
- Fine black pen (optional)
- 3–5 objects of different heights (a mug or jug, an apple, a lemon, a small box, a spoon)
- A plain cloth or towel
- A desk lamp

Steps

1. Put the cloth on a table. Arrange your objects so at least two overlap, with a tall one toward the back. Turn on the lamp from one side and turn off other lights.
2. Sit so your eyes are a little above the tabletop. Do not move your chair once you start.
3. Lightly sketch each object as a simple shape. Make the whole group fill most of the page.
4. Use sighting to check heights and widths. Fix any sizes that are off.
5. Check where each object sits. Objects closer to you should sit lower on your page.
6. Draw the contours carefully, including overlaps and the inside edges.
7. Shade with the technique you liked best in Lesson 1.3. Leave highlights white and add cast shadows on the cloth.
8. Add a few lines for the folds of the cloth and the back edge of the table.

Tips

- Squint to see the big light and dark shapes.

- If a shape is wrong, fix it early with light lines rather than drawing harder over the mistake.

Check your work

- ☐ My objects overlap and are different sizes.
- ☐ Objects nearer to me sit lower on the page.
- ☐ I shaded the objects and added cast shadows.

SKETCHBOOK PRACTICE

1. Draw a single piece of fruit three times from three different sides.
2. Make three tiny thumbnail drawings (2×3 in) of three different arrangements of the same objects. Circle the best one.
3. Draw your shoes as a still life, one overlapping the other.

From history. Still life became a favorite subject in Spain and the Netherlands around 1600. Spanish painters called these pictures *bodegones*, from a word for a pantry or tavern. Their quiet, careful style influenced painters for the next 300 years.

COMMON MISTAKES

- Lining everything up in a row. Overlap and stagger the objects.
- Drawing everything sitting on the same line. Look at where each bottom touches the table.
- Starting with tiny details before the sizes are right.

Make it a game • Sizing Duel. Arrange three objects of different heights, partly overlapping. Both players guess in writing how many times taller the tallest is than the shortest. Then hold a pencil at arm's length and sight to measure. Closest guess wins a point. Do three rounds with new arrangements. Then draw one still life, checking sizes as you go.

Scripture. “Consider the lilies of the field, how they grow; they toil not, neither do they spin: And yet I say unto you, That even Solomon in all his glory was not arrayed like one of these.” (Matthew 6:28-29, KJV)

Jesus told us to consider, which means to look closely. A still life is a way of considering simple things until we see how beautiful they are.

UNIT 1

DRAWING SKILLS

Drawing is the root of all the other arts. Painters, sculptors, builders and printmakers all begin by drawing. In this unit you will learn four of the most important drawing skills that artists have used for hundreds of years: contour lines, gesture lines, shading with lines and dots, and drawing a still life from real objects.

The secret of every lesson in this unit is the same: **look more than you draw**. Your eyes will learn to slow down and notice edges, movement, light and dark. Your hand will follow. By the end of the unit you will have a drawing of a still life that shows all four skills together.

PREREQUISITES

- Can hold a pencil lightly and draw long, smooth lines
- Knows the basic shapes (circle, square, triangle, rectangle)
- Has a sketchbook, an HB and a 2B pencil, an eraser and a fine black pen

MASTERY CHECKLIST

- ☐ I can draw a slow contour line that follows the edges of a real object.
- ☐ I can draw a quick gesture that shows how a person is moving.
- ☐ I can shade with hatching, cross-hatching and stippling, making darker areas by putting lines or dots closer together.
- ☐ I can arrange a still life and draw it from life, with overlapping objects sitting on a table.
- ☐ I can tell how Dürer, Millet and Rembrandt used line in their work.

LESSONS IN THIS UNIT

1.1 Contour Lines: Drawing the Edges

2 sessions of 45 minutes

1.2 Gesture Drawing: Lines That Move

2 sessions of 45 minutes

1.3 Hatching, Cross-Hatching and Stippling

2 sessions of 45 minutes

1.4 Drawing a Still Life

2 sessions of 45 minutes

UNIT 1 REVIEW

Answer each question aloud or in writing. For drawing questions, draw in your sketchbook and show your parent. Total: 50 points.

1. 5 pts

What is the difference between an outline and a contour line?

2. 5 pts

What is a blind contour drawing, and why do artists practice it?

3. 5 pts

What is the first line you draw in a gesture drawing?

4. 5 pts

Draw three small squares and shade one with hatching, one with cross-hatching and one with stippling.

5. 5 pts

In hatching or stippling, how do you make an area look darker?

6. 5 pts

What is a still life? Name three things you might put in one.

7. 5 pts

When you draw a still life, should an object closer to you be drawn higher or lower on the paper?

8. 5 pts

Why do artists overlap objects in a still life?

9. 5 pts

Who drew *Praying Hands*, and what kind of line did he use to show the knuckles and sleeves?

10. 5 pts

How did Rembrandt make the dark parts of the *Hundred Guilder Print* without paint?

ANSWER KEY

1. An outline goes only around the outside edge. A contour line follows the outside edges and the important inside edges, such as folds, overlaps and knuckles.
2. A contour drawing made while looking only at the object, not the paper. It trains the eye and hand to work together and teaches careful looking.
3. The line of action: one curved line that shows the main movement of the pose.
4. Square 1 has parallel lines; square 2 has crossing layers of lines; square 3 has dots. All three should be evenly shaded.
5. Put the lines or dots closer together (and add more layers or thicker lines).
6. A picture of objects that do not move, arranged by the artist. For example fruit, a jug and a book (any reasonable objects).
7. Lower on the paper.
8. Overlapping shows which object is in front and makes the picture look deep and natural instead of lined up.
9. Albrecht Dürer. He used careful contour lines, including inside edges, along with white highlights.
10. With many layers of cross-hatched lines packed close together.

PORTFOLIO PIECE: A STILL LIFE IN LINE

Set up a new still life of four or five objects, including at least one natural object (a pine cone, shell, flower or fruit). Make a finished drawing on good paper in pencil or pen. Use contour lines for the edges and one or more line-shading techniques (hatching, cross-hatching or stippling) for light and shadow. Sign and date it in the lower corner.

LOOK FOR	WHAT IT MEANS
Observation	The objects are drawn from life with careful contours, including inside edges and overlaps.
Arrangement	Objects are different sizes, some overlap, and the group fills the page without crowding.
Line shading	Hatching, cross-hatching or stippling is controlled, with clear light and dark areas and white highlights.
Space	Objects closer to the viewer sit lower on the page, and cast shadows connect them to the table.
Craftsmanship	The drawing is clean, finished, signed and dated.

UNIT 2

FORM AND PROPORTION

A shape is flat, like a paper cutout. A **form** is solid: it has height, width and depth, like a can, a ball or a horse. In this unit you will learn to draw forms that look solid, starting with the ellipse, the tricky oval that appears whenever you see a circle at an angle.

Then you will learn **proportion**: how big each part is compared to the others. Artists have measured faces, bodies and animals for centuries so that their drawings look right. You will learn the same simple measurements the old masters used, and you will find them in paintings by Vermeer, Gainsborough and Stubbs.

PREREQUISITES

- Can draw slow contour lines and quick gesture lines (Unit 1)
- Can shade with hatching or pencil pressure
- Knows how to sight-measure with a pencil at arm's length

MASTERY CHECKLIST

- ☐ I can draw a cylinder with smooth, rounded ellipses at the top and bottom.
- ☐ I can place the eyes, nose, mouth and ears on a face using guidelines.
- ☐ I can measure a figure in “heads” and draw a standing person with good proportions.
- ☐ I can build an animal from simple shapes and forms before adding details.

LESSONS IN THIS UNIT

2.1 Forms and Ellipses

2 sessions of 45 minutes

2.2 Proportions of the Face

2 sessions of 45 minutes

2.3 Measuring the Figure in Heads

2 sessions of 45 minutes

2.4 Drawing Animals from Shapes

2 sessions of 45 minutes

UNIT 2 REVIEW

Answer each question aloud or in writing. For drawing questions, draw in your sketchbook and show your parent. Total: 50 points.

1. (5 pts)

What is the difference between a shape and a form? Give one example of each.

2. (5 pts)

Draw a cylinder with two ellipses. What should the ends of an ellipse look like?

3. (5 pts)

On a glass sitting below your eye level, which ellipse is rounder: the top or the bottom?

4. (5 pts)

Where do the eyes sit on a head?

5. (5 pts)

How wide is a face, measured in eye-widths? How much space is between the eyes?

6. (5 pts)

Where do the tops and bottoms of the ears line up?

7. (5 pts)

About how many heads tall is a grown man? A child your age?

8. (5 pts)

Where is the midpoint of an adult's body, and where do the wrists reach?

9. (5 pts)

What are the first shapes you draw when you construct a horse?

10. (5 pts)

Who painted *Whistlejacket*, and how did he learn to draw horses so well?

ANSWER KEY

1. A shape is flat (height and width), like a circle. A form is solid (height, width and depth), like a sphere or a can.
2. A cylinder with an ellipse at top and bottom joined by straight sides. The ends of an ellipse are smooth and rounded, never pointed.
3. The bottom ellipse is rounder, because it is farther below eye level.
4. On the line halfway between the top of the head and the chin.
5. About five eyes wide, with one eye-width between the eyes.
6. The top lines up with the eyebrows and the bottom with the bottom of the nose.
7. About $7\frac{1}{2}$ to 8 heads for a grown man; about 6 heads for a child of 9 or 10.
8. The midpoint is at the hips, and the wrists reach the hips.
9. A circle for the chest and a circle for the hips, joined into the body (then the neck and head).
10. George Stubbs. He studied how horses are built for many months and made careful drawings of them.

PORTFOLIO PIECE: PERSON AND ANIMAL

Make one finished drawing that shows a person standing next to an animal, such as a farmer with a horse, a child with a dog, or a shepherd with sheep. Use the head-measuring method for both figures, construct them from simple forms, and finish with clean contour lines and shading. Add a ground line, cast shadows and one cylinder-shaped object (a bucket, a basket or a fence post) with correct ellipses.

LOOK FOR	WHAT IT MEANS
Figure proportion	The person is measured in heads, with the midpoint at the hips and arms of the right length.
Animal construction	The animal is built from simple forms, with legs that bend at the right joints.
Ellipses and form	The round object has smooth, rounded ellipses, and the forms look solid.
Shading and ground	Shading and cast shadows make the subjects stand on the ground.
Craftsmanship	Guidelines are erased, lines are clean, and the drawing is signed and dated.

2.1 FORMS AND ELLIPSES

OBJECTIVES

- Tell the difference between a shape and a form.
- Draw ellipses that change with eye level, with rounded ends.
- Draw cylinders and cups from observation using ellipses.

Warm-up. Hold a round cup or jar lid at eye level so you see its edge as a flat line. Slowly lower it and watch the circle open into a thin oval, then a fatter one. Draw five ellipses in a row, from very thin to almost a circle.

WATCH

How to Draw a Still Life: A Cup and Saucer

Circle Line Art School • 10:56

<https://www.youtube.com/watch?v=CSBoEHlnvj0>

WHEN TO WATCH

After the core ideas. Watch how the cup is built from ellipses before any shading is added.

BACKUP VIDEO

DRAWING Ellipses and Cylinders A Beginners Guide

A HAND WITH ART • 6:55

<https://www.youtube.com/watch?v=IE07Tqbboz0>

Extra practice drawing ellipses and cylinders.

KEY TERMS

shape

A flat area with height and width only, such as a circle or square.

form

A solid object with height, width and depth, such as a sphere, cube, cylinder or cone.

ellipse

The oval you see when you look at a circle from an angle, like the top of a cup.

eye level

An imaginary line at the height of your eyes. Ellipses get thinner the closer they are to your eye level.

cylinder

A form like a can or a tube, with two circles for ends joined by straight sides.

CORE IDEAS

Draw a circle and it looks flat. Draw a circle with straight sides going down to a curved bottom, and suddenly it looks like a can. That is the change from a **shape** to a **form**. The four basic forms are the sphere (ball), cube (box), cylinder (can) and cone. Almost everything you will ever draw is built from these four.

When you look at a round thing from an angle, its circle turns into an **ellipse**. An ellipse is a squashed circle, and it is the key to drawing cups, bowls, wheels, vases and tree trunks. Ellipses have smooth, **rounded ends**. They are never pointed like a lemon or a football.

The shape of the ellipse depends on your **eye level**. Hold a cup right at your eyes, and the top looks like a straight line. Lower it, and the ellipse opens up. The farther below your eyes, the rounder the ellipse. So on a tall glass sitting on the table, the bottom ellipse is a little rounder than the top ellipse.

To draw a cylinder: draw a light center line straight down. Draw the top ellipse, centered on that line. Draw the bottom ellipse a little rounder. Then connect the widest points of the two ellipses with straight, parallel sides. The back half of the bottom ellipse is hidden, so erase it or leave it very light.

A good habit is to **draw through**: lightly draw the whole ellipse, even the part you cannot see, so the curves line up. Then darken only the parts that show.

PICTURE STUDY



Old Woman Frying Eggs, Diego Velázquez, 1618 · Oil on canvas · Scottish National Gallery, Edinburgh

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

Velázquez painted this when he was only about nineteen years old, in Seville, Spain. It is a kitchen scene full of everyday pots, bowls and jugs. He painted them so carefully that you can almost feel the cold glaze and hot clay. It is a great painting for studying forms and ellipses.

Look closely

- Count every round object you can find: bowls, plates, jugs, a mortar and pestle, a dish with eggs. Each one has an ellipse.
- Look at the dish the eggs are cooking in. Is its ellipse thin or round? What does that tell you about where the painter's eyes were?
- Find a cylinder or a jug. Trace its two sides with your finger. Are they straight?
- Notice the light on the white glazed bowl and the brass mortar.

Talk about it

1. Which object looks most solid to you? Why?
2. Do any of the ellipses look pointed at the ends? Why do you think Velázquez made them round?
3. What can you tell about this kitchen and the people in it?

STUDIO PROJECT

Cups, Cans and Bowls

You will draw a group of cylinder-shaped objects from your kitchen, showing their ellipses correctly, and shade them to look solid.

You will need

- Drawing paper
- HB and 2B pencils
- Eraser
- 3 round objects of different heights: a mug, a can, a bowl or a jar
- A desk lamp

Steps

1. Set the three objects on a table a little below your eye level. Let one overlap another.
2. Lightly draw a vertical center line for each object.
3. Draw the top ellipse of each object across its center line. Keep the ends rounded.
4. Draw the bottom ellipse of each object, a little rounder than its top ellipse. Draw through the hidden back half lightly.
5. Connect the top and bottom with straight sides touching the widest points of the ellipses.
6. Add handles, rims and the inside of the bowl. For a rim, draw a second ellipse just inside the first.
7. Erase the hidden back lines of the bottom ellipses and the center lines.
8. Shade each form: light on the side facing the lamp, darker on the other side, and a cast shadow on the table.

Tips

- Draw ellipses with your whole arm in a quick, smooth motion, going around two or three times lightly. Then pick the best line.
- If an ellipse has corners, it is wrong. Round them off.

Check your work

- ☐ My ellipses have rounded ends, with no points.
- ☐ The bottom ellipses are a little rounder than the top ones.
- ☐ My objects look solid because of the shading.

SKETCHBOOK PRACTICE

1. Fill a page with ellipses: thin ones, fat ones, tiny ones, huge ones. Go around each two or three times.
2. Draw a cone (like an ice cream cone or a party hat) and a cylinder lying on its side.
3. Draw a bicycle wheel or a plate seen from three different heights.

From history. Velázquez trained in Seville, where painters made many *bodegones*, kitchen scenes with food and pots. A few years later he became painter to the King of Spain. His early kitchen pictures show how hard he practiced drawing simple, solid objects.

COMMON MISTAKES

- Pointed ends on ellipses (the “football” mistake).
- Flat bottoms on cups. The bottom of a cup is a curve, not a straight line.
- Making the bottom ellipse thinner than the top when the object sits below eye level.

Make it a game • Ellipse Predictions. Set a cup on the table. Crouch to look at the rim at eye level, then stand and look from above. Before looking each time, draw how wide you expect the ellipse to be. Check by looking and draw the true one. A point for each correct prediction. Remember: ellipses have rounded ends and open as you look from above.

2.2 PROPORTIONS OF THE FACE

OBJECTIVES

- Use guidelines to place the eyes, nose, mouth and ears on a front-view face.
- Measure your own face and discover the proportions for yourself.
- Draw a self-portrait from a mirror using correct proportions.

Warm-up. Look in a mirror. Put a finger at the top of your head and a finger at your chin. Now find the halfway point. What is there? Most people guess the eyes are near the top, but check! Write down what you find.

WATCH

How To: Draw Face | Easy Beginner Proportion Tutorial

Lazy Arts · 16:03

<https://www.youtube.com/watch?v=gT5zBXuK03I>

WHEN TO WATCH

Draw along with the video on scrap paper, then do the project from the mirror. You may stop when the guidelines and features are placed.

Note: The full video is long; the proportion guidelines are in the first half.

BACKUP VIDEO

Self-portrait drawing 3-5th grade

Jacqui Spetrino shortartists · 6:14

https://www.youtube.com/watch?v=_8egu9J4n1s

A shorter self-portrait lesson made for grades 3–5.

KEY TERMS

proportion

The size of one part compared to another part or to the whole.

feature

A part of the face, such as an eye, the nose, the mouth or an ear.

guideline

A light line drawn to help place features, erased or covered later.

portrait

A picture of a real person, usually showing the face.

self-portrait

A portrait an artist makes of himself or herself, often using a mirror.

CORE IDEAS

Faces are all different, yet they share the same basic **proportions**. Learning them is like learning the rules of a game: once you know them, your portraits stop looking like cartoons.

Start with an egg shape, a little narrower at the chin. Draw a light vertical line down the middle. Then draw a horizontal line exactly halfway between the top of the head and the chin. **The eyes sit on this halfway line.** This surprises almost everyone; we tend to put eyes too high because we forget about the hair and the top of the head.

The face is about five eyes wide. There is one eye-width between the two eyes, and about one eye-width on each side to the edge of the head. The bottom of the nose sits about halfway between the eye line and the chin. The mouth sits about one third of the way from the nose to the chin. The corners of the mouth line up below the centers of the eyes.

The ears are bigger than most people think. The top of the ear lines up with the eyebrows and the bottom lines up with the bottom of the nose. The neck comes straight down from below the ears; it is not a thin stick.

These are guidelines, not laws. Everyone God made is a little different, and that is what makes a portrait look like a particular person. Use the guidelines to get started, then look carefully at the real face in front of you and adjust.

PICTURE STUDY



Girl with a Pearl Earring, Johannes Vermeer, about 1665 · Oil on canvas · Mauritshuis, The Hague, Netherlands

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

Vermeer was a Dutch painter who lived in the town of Delft. This is not a portrait of a known person but a study of a face, a kind of painting the Dutch called a *tronie*. It is one of the most famous faces in all of art.

Look closely

- Her head is turned, so the center line of her face curves. Can you see where it would run, down the nose and through the lips?
- Find the halfway point between the top of her turban and her chin. Where are her eyes?
- Notice how the far eye looks a little narrower than the near one because the head is turning.
- Find the brightest spots: the pearl, the eyes and the lips.

Talk about it

1. What do you think she is about to say or do?
2. How did Vermeer make the face stand out from the background?
3. Do the face proportions you learned still work when the head is turned?

STUDIO PROJECT

A Mirror Self-Portrait

You will measure your own face, then draw a careful self-portrait from a mirror using guidelines and shading.

You will need

- Drawing paper
- HB and 2B pencils
- Eraser
- A mirror you can prop up (a bathroom mirror or a hand mirror)
- Ruler

Steps

1. Prop the mirror so you can see your whole face while sitting at the table.
2. Draw a large egg shape filling most of the page, narrower at the chin. Draw a light center line down it.
3. Draw a light line across the exact middle. Divide it into five equal parts and draw the two eyes in the second and fourth parts.
4. Mark the bottom of the nose halfway between the eye line and the chin. Mark the mouth one third of the way down from the nose to the chin.
5. Add the ears between the eyebrow line and the bottom of the nose, and draw the neck coming down from below the ears.
6. Now look hard in the mirror. Is your face rounder or longer? Are your eyes wider apart? Adjust the shapes to look like you.
7. Draw the hair as large shapes first, growing from the hairline, not as single lines sitting on top of the head.
8. Shade gently: under the eyebrows, under the nose, under the lower lip and along one side of the face. Erase the guidelines.

Tips

- Draw the eyes as almond shapes with a circle for the iris partly hidden by the upper lid.

- Draw the nose mostly with its shadow and the shape of the nostrils, not with two long lines down the sides.

Check your work

- ☐ My eyes are on the halfway line of my head.
- ☐ My ears line up between the eyebrows and the bottom of the nose.
- ☐ My portrait looks like a real person, with some shading.

SKETCHBOOK PRACTICE

1. Draw ten eyes from photos or from family members, each a different shape.
2. Draw a family member's face in 10 minutes using the guidelines.
3. Copy the face from a portrait by Vermeer, Rembrandt or Raphael and check its proportions with a ruler.

From history. Only about 35 paintings by Vermeer are known today. For many years after he died he was almost forgotten, until a French writer rediscovered him in the 1860s. Now his paintings are treasured for their quiet light.

COMMON MISTAKES

- Placing the eyes too high. The eyes are halfway down the head.
- Making the ears too small and the neck too thin.
- Drawing the hair as a small cap on top of the head. Leave room for the round top of the head.

Make it a game • Face Map Beat-the-Clock. In ninety seconds, draw a front-view face guideline from memory: an oval, a center line, an eye line halfway down, a nose line and a mouth line, and where the ears go. Your parent checks six points from the lesson. Then measure your own face with string. Beat your best on a second try.

2.3 MEASURING THE FIGURE IN HEADS

OBJECTIVES

- Use the height of the head as a unit to measure the whole body.
- Know the main landmarks of a standing figure (shoulders, waist, hips, knees).
- Draw a clothed standing figure with good proportions.

Warm-up. Lie on a long sheet of paper (or several taped together) while a parent traces around you. Then measure your head with a ruler from chin to the top of your head, and count how many of your heads fit from your head to your feet.

WATCH

Figure proportions - DRAWING ESSENTIALS

Mr. Otter Art Studio • 4:42

https://www.youtube.com/watch?v=kKGC_js35x0

WHEN TO WATCH

After the warm-up and core ideas. Draw the figure chart along with him in your sketchbook.

BACKUP VIDEO

Learn how to draw easily: Learn the human body proportions

SIKANA English • 3:30

<https://www.youtube.com/watch?v=laWSSkc8Lg>

Another short demonstration of measuring the body in heads.

KEY TERMS

unit of measure

Something used over and over to measure. Artists use the height of the head.

heads tall

How many head-lengths fit in the whole height of a figure. A grown man is about 7½ to 8 heads tall; a child your age is about 6.

landmark

A point on the body that helps you check proportion, such as the shoulders, elbows, hips and knees.

midpoint

The point halfway down the figure. On an adult it is at the hips.

CORE IDEAS

How do you know how long to draw the arms or how far down the knees go? Artists use the head as a ruler. They count how many **heads tall** a person is. A grown man is about 7½ to 8 heads tall. A woman is often a little less. A baby is only about 4 heads tall, and a child your age is about 6. That is why children's heads look big for their bodies.

For an adult 8-head figure, here are the **landmarks**. Head 1 ends at the chin. Head 2 ends at the chest, just below the armpits. Head 3 ends at the waist, where the elbows reach. Head 4 ends at the hips, which is the **midpoint** of the body. Head 6 ends just below the knees. Head 8 ends at the bottom of the feet.

Arms are longer than most beginners think. With the arms hanging down, the wrists reach the hips and the fingertips reach the middle of the thigh. The shoulders are about two heads wide on a man and a little narrower on a woman.

To draw a figure, first mark the top and bottom of the page where it will stand. Divide the height into equal parts (8 for an adult, 6 for a child). Draw a light gesture, then build the body with simple forms: an oval head, a box-like chest, a smaller box for the hips, and cylinders for arms and legs. Then add the clothing over the body, letting it fold at the elbows, waist and knees.

Real people vary, and painters sometimes stretch a figure a little to make it look graceful. But knowing the normal proportions is what lets an artist choose on purpose.

PICTURE STUDY



The Blue Boy, Thomas Gainsborough, about 1770 · Oil on canvas · The Huntington Library, Art Museum and Botanical Gardens, San Marino, California

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

Gainsborough was an English portrait and landscape painter. This full-length portrait of a young man in a blue satin costume is one of the most famous paintings in America. It is perfect for studying how a standing figure is measured.

Look closely

- Measure with your finger or a strip of paper: how many heads tall is the Blue Boy?
- Find the midpoint of his body. Is it at his hips?
- Look at where his hanging hand reaches. Does it match the landmarks you learned?
- Notice how the shiny satin folds at his elbows and knees.

Talk about it

1. Is the Blue Boy a child or a young man? How can you tell from the proportions?
2. How does Gainsborough make him stand out from the background?
3. Which do you notice first: his face, his clothes or the background? Why?

STUDIO PROJECT

A Figure Eight Heads Tall

You will draw a proportion chart, then a full-length clothed figure of a grown-up in your family, using the head as your measuring unit.

You will need

- Tall drawing paper (at least 9×12 in, used tall)
- HB and 2B pencils
- Eraser
- Ruler
- Colored pencils (optional)
- A family member willing to stand still for 10 minutes, or a full-length photo

Steps

1. Draw a line down the middle of the page. Mark the top and bottom of the figure, leaving a little space above and below.
2. Divide the line into 8 equal parts with a ruler and number them 1 to 8.
3. Draw the head as an oval in space 1. Mark the chest at line 2, the waist at line 3, the hips at line 4, the knees just below line 6 and the feet at line 8.
4. Draw the shoulders about two heads wide just below the chin. Draw the hips a little narrower.
5. Build the body with simple forms: a tapered box for the chest, a shorter box for the hips, cylinders for the upper and lower arms and legs. Check that the wrists reach the hips.
6. Now look at your model or photo and draw the clothing over the body: collar, sleeves, belt, pants or skirt, shoes. Let the fabric fold at the elbows and knees.
7. Add the face lightly using what you learned in Lesson 2.2, and draw the hands as simple mitten shapes with a thumb.
8. Erase the guidelines, darken the final lines and add simple shading or color.

Tips

- Draw everything lightly first. Proportions are easy to fix with light lines and hard to fix with dark ones.
- Feet are about as long as the head is tall. Do not make them tiny.

Check your work

- ☐ My figure is about eight heads tall, with the hips at the midpoint.
- ☐ The arms reach the middle of the thighs.
- ☐ The clothing wraps around the body and folds at the joints.

SKETCHBOOK PRACTICE

1. Draw a 6-head child next to an 8-head adult on the same page, using the same size head.
2. Find people in a magazine or catalog and measure them in heads with a strip of paper.
3. Draw three quick figures standing, sitting and walking, checking the midpoint each time.

From history. Artists in ancient Greece and Rome wrote rules for the proportions of the body, and Renaissance artists such as Leonardo and Dürer measured hundreds of people to test them. Dürer wrote whole books on human proportion. Gainsborough learned these rules and then painted with a free, feathery brush.

COMMON MISTAKES

- Making the arms too short. Wrists reach the hips.
- Making the legs too short. The legs are half the height of the body.
- Shrinking the feet and hands.

Make it a game • Heads Tall Guess. Cut a paper strip the height of your head. Guess how many head units tall you are, and your parent guesses too. Then measure by stacking strips along a wall. Closest guess earns a point. A drawn figure is about eight heads tall. Name the landmarks: shoulders, waist, hips and knees.

2.4 DRAWING ANIMALS FROM SHAPES

OBJECTIVES

- Break an animal into simple shapes and forms before drawing details.
- Use the animal's own head as a unit to check its proportions.
- Draw a horse or another animal from a photo with a convincing form.

Warm-up. Look at a photo of a horse, dog or cat. With a pencil, draw only circles and ovals over a tracing paper copy of it (or lightly beside it): one for the chest, one for the hips, one for the head. Notice how big the body circles are compared to the head.

WATCH

How to Draw a Horse: Step by Step

Circle Line Art School • 10:02

<https://www.youtube.com/watch?v=jjJyGKPH1yk>

WHEN TO WATCH

During Session 2, before the project. Draw along, pausing after each step.

Note: He draws fairly quickly; pause the video as often as you need.

BACKUP VIDEO

Create with Caleb | Art 101: How to Draw Anything Using Basic Shapes

Create with Caleb • 9:40

https://www.youtube.com/watch?v=_SCfT8NUudc

A helpful extra about breaking any subject down into basic shapes.

KEY TERMS

construction

Building a drawing from simple shapes and forms before adding details.

barrel

The large, rounded middle of an animal's body between the front and back legs.

joint

A place where a leg or neck bends.
Animal legs have joints in places that surprise people.

reference

A photo or real subject you look at while drawing.

CORE IDEAS

Animals can look hard to draw because of fur, legs and all their details. But every animal is built from a few simple forms. A horse is two big circles (chest and hips) joined into a barrel, a long tapered neck, a head shaped like a wedge, and legs like jointed sticks. Drawing these first is called **construction**.

Start with the big shapes. Draw a circle for the chest and another for the hips, then connect them with a top line for the back and a bottom line for the belly. Add the neck as a thick, tapering tube, and the head as a small circle for the cheek joined to a smaller one for the muzzle.

Use the head as a measuring unit, just like on people. A horse's body (from chest to rump) is about two and a half heads long, and its legs are about as long as its body is deep. Check your drawing by comparing these sizes.

Pay attention to the **joints**. A horse's back leg bends forward at the stifle (like our knee) and backward at the hock (like our heel). Draw the leg as lines with small circles at each joint, then thicken it. Legs get thinner toward the hoof.

Only after the shapes and proportions look right do you draw the contour, add the mane and tail with flowing lines, and shade to show the round muscles. God gave each animal its own design; when you draw it carefully you start to see how well it is made for running, leaping or swimming.

PICTURE STUDY



Whistlejacket, George Stubbs, about 1762 · Oil on canvas · The National Gallery, London

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

George Stubbs was an English painter who studied horses more carefully than anyone before him. He spent eighteen months studying how horses are built so he could paint them correctly. *Whistlejacket* is life-size and shows a famous racehorse rearing up with no background at all.

Look closely

- Find the two big circles in the horse's body: the chest and the hips.
- Follow the back legs. Where do they bend forward, and where do they bend back?
- Look at the muscles of the neck and shoulders. How does Stubbs show they are round?
- Notice that there is no background. What does that do to the horse?

Talk about it

1. Why do you think Stubbs left the background empty?
2. How many of the horse's heads would fit along its body?
3. Does this horse look calm or excited? What shows you?

STUDIO PROJECT

A Horse Built from Forms

You will draw a standing or walking horse (or another four-legged animal you love) from a photo, building it from shapes first and then finishing it with contour lines and shading.

You will need

- Drawing paper
- HB and 2B pencils
- Eraser
- A clear side-view photo of a horse, dog, deer or cow
- Colored pencils (optional)

Steps

1. Look at your reference photo and find the big shapes. Say them out loud: chest circle, hip circle, neck tube, head wedge.
2. Lightly draw the chest circle and the hip circle with a space between them. Connect them with a back line and a belly line.
3. Measure the head length and check: is the body about two and a half heads long?
4. Add the neck as a thick tube rising from the chest, and the head at the end of it.
5. Draw the legs as lines with small circles at each joint. Check the photo for which way each joint bends. Make the legs taper toward the hooves or paws.
6. Draw the contour around your construction shapes, smoothing the joins. Add ears, eyes, nostrils, mane and tail.
7. Erase extra construction lines. Shade the side away from the light and under the belly, using curved hatching to show round muscles.
8. Add a ground line and a short cast shadow under the animal so it stands on something.

Tips

- Draw the mane and tail with long, flowing strokes in the direction the hair grows.
- If the animal looks stiff, check that you started with a curved back line, not a straight one.

Check your work

- ☐ I started with circles and simple forms.
- ☐ The legs bend at the right joints and taper toward the feet.
- ☐ My animal looks solid because of shading, and it stands on the ground.

SKETCHBOOK PRACTICE

1. Draw your pet (or a neighbor's) in five quick construction sketches as it moves.
2. Draw three animals using only circles and ovals: a bird, a rabbit and a cat.
3. Copy a small section of an Audubon or Stubbs animal, starting with its shapes.

From history. Stubbs published a book of careful drawings showing how a horse is built, which was used by artists and animal doctors for many years. Because he understood the inside, his horses looked more real on the outside than any painted before.

COMMON MISTAKES

- Starting with the eye or the nose. Start with the big body shapes.
- Drawing the legs too short and too straight.
- Forgetting the ground and cast shadow, so the animal floats.

Make it a game • Construction Crew. Your parent names an animal: horse, bear, goat. In forty-five seconds draw only its construction: barrel body, joints and simple forms, with no details. Can your parent guess? One point if they do. Use the animal's head as a unit to check proportions. Take six turns each, then add details to your best one.

Scripture. “And God made the beast of the earth after his kind, and cattle after their kind, and every thing that creepeth upon the earth after his kind: and God saw that it was good.” (Genesis 1:25, KJV)

Every animal was designed by God “after his kind,” with its own proportions and shapes. Drawing animals carefully helps us see that what He made is good.

UNIT 2

FORM AND PROPORTION

A shape is flat, like a paper cutout. A **form** is solid: it has height, width and depth, like a can, a ball or a horse. In this unit you will learn to draw forms that look solid, starting with the ellipse, the tricky oval that appears whenever you see a circle at an angle.

Then you will learn **proportion**: how big each part is compared to the others. Artists have measured faces, bodies and animals for centuries so that their drawings look right. You will learn the same simple measurements the old masters used, and you will find them in paintings by Vermeer, Gainsborough and Stubbs.

PREREQUISITES

- Can draw slow contour lines and quick gesture lines (Unit 1)
- Can shade with hatching or pencil pressure
- Knows how to sight-measure with a pencil at arm's length

MASTERY CHECKLIST

- ☐ I can draw a cylinder with smooth, rounded ellipses at the top and bottom.
- ☐ I can place the eyes, nose, mouth and ears on a face using guidelines.
- ☐ I can measure a figure in “heads” and draw a standing person with good proportions.
- ☐ I can build an animal from simple shapes and forms before adding details.

LESSONS IN THIS UNIT

2.1 Forms and Ellipses

2 sessions of 45 minutes

2.2 Proportions of the Face

2 sessions of 45 minutes

2.3 Measuring the Figure in Heads

2 sessions of 45 minutes

2.4 Drawing Animals from Shapes

2 sessions of 45 minutes

UNIT 2 REVIEW

Answer each question aloud or in writing. For drawing questions, draw in your sketchbook and show your parent. Total: 50 points.

1. (5 pts)

What is the difference between a shape and a form? Give one example of each.

2. (5 pts)

Draw a cylinder with two ellipses. What should the ends of an ellipse look like?

3. (5 pts)

On a glass sitting below your eye level, which ellipse is rounder: the top or the bottom?

4. (5 pts)

Where do the eyes sit on a head?

5. (5 pts)

How wide is a face, measured in eye-widths? How much space is between the eyes?

6. (5 pts)

Where do the tops and bottoms of the ears line up?

7. (5 pts)

About how many heads tall is a grown man? A child your age?

8. (5 pts)

Where is the midpoint of an adult's body, and where do the wrists reach?

9. (5 pts)

What are the first shapes you draw when you construct a horse?

10. (5 pts)

Who painted *Whistlejacket*, and how did he learn to draw horses so well?

ANSWER KEY

1. A shape is flat (height and width), like a circle. A form is solid (height, width and depth), like a sphere or a can.
2. A cylinder with an ellipse at top and bottom joined by straight sides. The ends of an ellipse are smooth and rounded, never pointed.
3. The bottom ellipse is rounder, because it is farther below eye level.
4. On the line halfway between the top of the head and the chin.
5. About five eyes wide, with one eye-width between the eyes.
6. The top lines up with the eyebrows and the bottom with the bottom of the nose.
7. About $7\frac{1}{2}$ to 8 heads for a grown man; about 6 heads for a child of 9 or 10.
8. The midpoint is at the hips, and the wrists reach the hips.
9. A circle for the chest and a circle for the hips, joined into the body (then the neck and head).
10. George Stubbs. He studied how horses are built for many months and made careful drawings of them.

PORTFOLIO PIECE: PERSON AND ANIMAL

Make one finished drawing that shows a person standing next to an animal, such as a farmer with a horse, a child with a dog, or a shepherd with sheep. Use the head-measuring method for both figures, construct them from simple forms, and finish with clean contour lines and shading. Add a ground line, cast shadows and one cylinder-shaped object (a bucket, a basket or a fence post) with correct ellipses.

LOOK FOR	WHAT IT MEANS
Figure proportion	The person is measured in heads, with the midpoint at the hips and arms of the right length.
Animal construction	The animal is built from simple forms, with legs that bend at the right joints.
Ellipses and form	The round object has smooth, rounded ellipses, and the forms look solid.
Shading and ground	Shading and cast shadows make the subjects stand on the ground.
Craftsmanship	Guidelines are erased, lines are clean, and the drawing is signed and dated.

UNIT 3

COLOR

You already know red, yellow and blue, and how to mix orange, green and violet. This year you will go further. Every color has three parts: its **hue** (its name on the color wheel), its **value** (how light or dark it is) and its **intensity** (how bright or dull it is). Painters who understand these three parts can mix almost any color they see.

In this unit you will paint a twelve-part color wheel, mix beautiful browns and grays from opposite colors, and plan pictures with color schemes. You will look at how Monet, Van Gogh and Millet used color to make you feel a sunrise, a garden, an evening prayer and a starry night.

PREREQUISITES

- Knows the primary colors (red, yellow, blue) and secondary colors (orange, green, violet)
- Can mix secondary colors with paint
- Can keep a brush clean between colors

MASTERY CHECKLIST

- ☐ I can explain hue, value and intensity and point them out in a painting.
- ☐ I can mix all six tertiary colors and name them correctly.
- ☐ I can mix browns and grays by mixing complementary colors.
- ☐ I can plan a picture with a monochromatic, analogous or complementary color scheme.

LESSONS IN THIS UNIT

3.1 Hue, Value and Intensity

2 sessions of 45 minutes

3.2 Mixing Tertiary Colors

2 sessions of 45 minutes

3.3 Neutrals and Browns from Complements

2 sessions of 45 minutes

3.4 Choosing a Color Scheme

2 sessions of 45 minutes

UNIT 3 REVIEW

Answer each question aloud or in writing. You may use your color wheel. Total:

50 points.

1. 5 pts

Name the three parts of every color.

2. 5 pts

What is the difference between a tint and a shade?

3. 5 pts

How can you lower the intensity of a color?

4. 5 pts

Name all six tertiary colors.

5. 5 pts

When mixing two colors, which should you start with, the lighter or the darker?
Why?

6. 5 pts

Name the three pairs of complementary colors.

7. 5 pts

What happens when you mix two complementary colors?

8. 5 pts

What is the difference between a monochromatic and an analogous color scheme?

9. 5 pts

In *Impression, Sunrise*, why does the small orange sun stand out so strongly?

10. 5 pts

What color scheme did Van Gogh use in *Café Terrace at Night*?

ANSWER KEY

1. Hue, value and intensity.
2. A tint is a color mixed with white (lighter); a shade is a color mixed with black (darker).
3. Add a little gray or a little of its complement (the color opposite it on the color wheel).
4. Red-orange, yellow-orange, yellow-green, blue-green, blue-violet, red-violet.
5. The lighter one, because a little dark color changes a light color quickly, but it takes a lot of light color to change a dark one.
6. Red and green, yellow and violet, blue and orange.
7. They make a neutral: a brown or gray.
8. Monochromatic uses one hue in different values; analogous uses neighboring colors on the color wheel.
9. It is the one intense color surrounded by dull blue-grays, and orange is the complement of blue.
10. Complementary: blues (and violets) with yellows and oranges.

PORTFOLIO PIECE: A LANDSCAPE WITH A COLOR PLAN

Paint a landscape from your imagination or from a photo (a field, a lake, a garden or a village at dusk). Before you start, choose a color scheme and write it on the back. Use mixed tertiaries and at least two neutrals mixed from complements. Make most colors lower in intensity and save your most intense color for the most important spot.

LOOK FOR	WHAT IT MEANS
Color scheme	The painting follows a clear, planned scheme written on the back.
Mixing	Tertiary colors and neutrals are mixed by the student, clean and not muddy.
Intensity	Most colors are quieter, and the most intense color draws the eye to an important place.
Value	There are clear lights, middles and darks.
Craftsmanship	Edges are neat, the paper is covered, and the work is signed and dated.

3.1 HUE, VALUE AND INTENSITY

OBJECTIVES

- Define hue, value and intensity.
- Change the value of a color with white and black, and its intensity by dulling it.
- Paint a small sunrise that uses dull colors around one intense color.

Warm-up. Find five things in your house that are all “blue” but different: a pale blue towel, dark navy jeans, a bright blue toy, a grayish blue mug. Line them up. In what ways are they different from each other?

WATCH

Hue, Value & Intensity Explained

Painting Lessons with Marla · 6:28

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

WHEN TO WATCH

After the warm-up and core ideas. Pause after each of the three parts and say it back in your own words.

BACKUP VIDEO

Understanding Color: Hue, Saturation & Value- Windy Shih

Windys.Art · 4:00

<https://www.youtube.com/watch?v=RJu5ELxHqs>

A short second explanation with clear painted examples.

KEY TERMS

hue

The name of a color on the color wheel, such as red, blue-green or yellow-orange.

value

How light or dark a color is.

tint

A color mixed with white to make it lighter.

shade

A color mixed with black to make it darker.

intensity

How bright and pure, or dull and grayed, a color is. Also called saturation or chroma.

CORE IDEAS

Think about the blue things in the warm-up. They were all blue, but they were not the same. Artists describe every color with three questions. First: what is its **hue**? That is its family name on the color wheel: red, orange, yellow-green and so on.

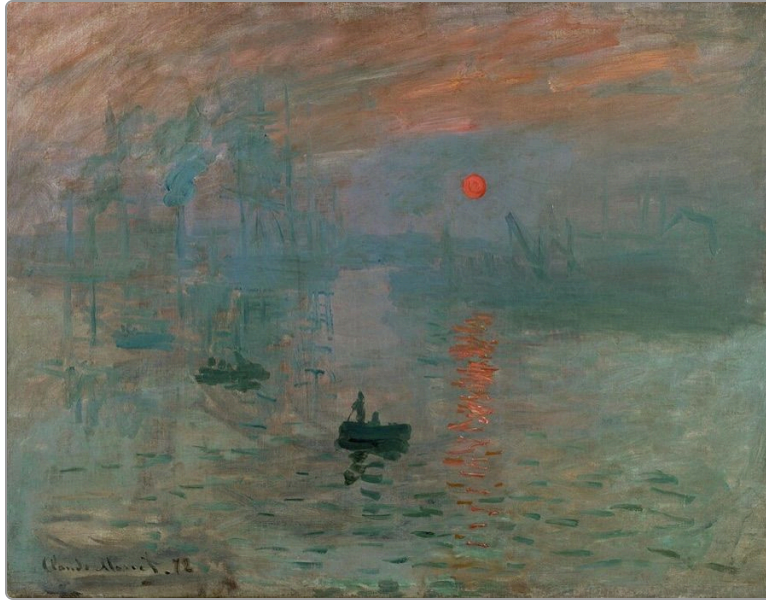
Second: what is its **value**? That is how light or dark it is. Adding white makes a **tint** (pink is a tint of red). Adding black makes a **shade** (maroon is a shade of red). Yellow is naturally a light-value hue; violet is naturally dark.

Third: what is its **intensity**? A high-intensity color is bright and pure, straight from the tube, like a fire truck. A low-intensity color is dull or grayed, like a brick or an old flowerpot. You lower the intensity by adding a little gray or a little of the color's opposite on the color wheel.

Here is the secret painters use: a bright color looks brightest when it is surrounded by dull colors. If every color in your picture is at full intensity, nothing stands out and the picture can look loud and flat. If most colors are quiet and one is bright, that one bright spot sings.

Value matters most of all. If you take a black-and-white photo of a good painting, you can still read it, because the lights and darks are well planned. Hue gets the attention, but value holds the picture together.

PICTURE STUDY



Impression, Sunrise, Claude Monet, 1872 · Oil on canvas · Musée Marmottan Monet, Paris

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

Monet painted this view of the harbor at Le Havre, France, early one misty morning. When it was shown in Paris, a critic made fun of its title and called the painters “Impressionists.” The name stuck, and a whole movement was named after this little painting.

Look closely

- Find the most intense color in the whole painting. What hue is it?
- Look at all the blues and grays around it. Are they bright or dull?
- Squint. Is the orange sun lighter or darker than the sky around it? (Many people are surprised by the answer.)
- Look at how the reflection of the sun is painted with just a few quick strokes.

Talk about it

1. Why does the small sun stand out so strongly?
2. What time of day is it, and how do the colors tell you?
3. If Monet had painted the sky bright blue, how would the painting feel different?

STUDIO PROJECT

Color Ladders and a Misty Sunrise

You will paint two color “ladders” to see value and intensity change, then paint a small misty harbor or lake at sunrise where one intense color glows among dull ones.

You will need

- Tempera paint: red, yellow, blue, white, black
- Heavy paper or watercolor paper
- Brushes (a flat or a size 8 round)
- Palette or paper plate
- Water jar and paper towels
- Pencil and ruler

Steps

1. Draw two rows of five boxes. Label the first row “Value” and the second row “Intensity.”
2. Value ladder: mix orange from red and yellow. Paint it in the middle box. To the left, add more and more white for two lighter tints. To the right, add a tiny bit of black for two darker shades.
3. Intensity ladder: paint pure orange in the first box. In each next box, mix in a little more blue (orange’s opposite). Watch the orange turn dull, then brownish, then grayish.
4. On a new sheet, lightly draw a low horizon line, a few boat shapes and a circle for the sun.
5. Mix a dull blue-gray (blue + a little orange + white). Paint the sky and water with it, making some areas lighter and some darker.
6. Paint the boats with a darker, dull blue-gray.
7. Last, paint the sun in pure, intense orange, and add a few short orange strokes on the water below it for the reflection.

Tips

- Add dark colors to light ones a tiny bit at a time; it takes much less dark than you think.
- Clean your brush before the final orange so it stays pure.

Check your work

- ☐ My value ladder goes evenly from light to dark.
- ☐ My intensity ladder goes from bright to dull.
- ☐ My sun is the most intense color in my painting.

SKETCHBOOK PRACTICE

1. Glue in ten small color samples cut from magazines. Under each, write its hue and whether it is high or low intensity.
2. Make a tint ladder and a shade ladder of blue with colored pencil, pressing harder or adding a gray pencil layer.
3. Draw something with only dull colors and one bright spot.

From history. The Impressionists painted outdoors, quickly, to catch the changing light. New tubes of paint, invented in the 1840s, made this possible, because painters could carry their colors outside instead of grinding pigments in the studio.

COMMON MISTAKES

- Thinking that “dull” means “bad.” Dull colors make bright ones shine.
- Adding too much black at once. Black is very strong.
- Confusing value (light or dark) with intensity (bright or dull).

Make it a game • Color Commands. Collect six paper scraps of the same color family, such as blues, from light to dark and dull to bright. Your parent calls a command: 'same hue, lower value' or 'same hue, duller.' Point to the right scrap in five seconds. One point for each correct. Name hue, value and intensity out loud as you go.

3.2 MIXING TERTIARY COLORS

OBJECTIVES

- Mix the six tertiary colors from primaries and secondaries.
- Name tertiary colors correctly, primary first.
- Paint a twelve-part color wheel and use tertiaries in a flower study.

Warm-up. With three crayons or colored pencils (red, yellow, blue), color three overlapping circles. Where two overlap, you make a secondary color. Name all six colors you see.

WATCH

How to Mix the Tertiary / Intermediate Colors Watercolor Art Lesson - Art With Trista Video Tutorial

Art With Trista • 7:20

<https://www.youtube.com/watch?v=DX7OLFlxjDA>

WHEN TO WATCH

Before the studio project. Watch how two neighbors on the color wheel are mixed to make each tertiary color.

BACKUP VIDEO

Tertiary Colours | Two types of Tertiary Colors | Colour Theory | Colour Mixing | The Color Wheel

Riecreate • 3:22

<https://www.youtube.com/watch?v=Fo8Y3dQyHyk>

A short extra showing two ways to mix tertiary colors.

KEY TERMS

primary colors

Red, yellow and blue. They cannot be mixed from other paint colors.

secondary colors

Orange, green and violet, each mixed from two primaries.

tertiary colors

The six colors made by mixing a primary with the secondary next to it: red-orange, yellow-orange, yellow-green, blue-green, blue-violet and red-violet.

color wheel

A circle that shows how colors are related, with primaries, secondaries and tertiaries in order.

CORE IDEAS

The color wheel you learned when you were younger had six colors. Now you will fill in the spaces between them. Mix a primary color with the secondary color next to it, and you get a **tertiary color**. There are six of them, and they make the color wheel twelve colors around.

Tertiary colors are always named with the primary first: red-orange, yellow-orange, yellow-green, blue-green, blue-violet and red-violet. (Some people say “orange-red,” but artists usually say it the other way.) Many beautiful natural colors are tertiaries: the yellow-green of new spring leaves, the blue-violet of an iris, the red-orange of a robin’s breast.

Mixing paint takes patience. Colors are not equally strong. A tiny bit of blue turns yellow green very fast, but it takes a lot of yellow to change blue. Always start with the **lighter** color and add the darker one a little at a time.

Keep your colors clean. Rinse your brush and blot it between mixes. If a mix turns brown or muddy, it probably has a bit of all three primaries in it. Start a fresh puddle.

Because tertiary colors sit side by side with their parents on the wheel, they make smooth, natural changes. Van Gogh used many tertiaries in his paintings of flowers and fields, putting strokes of slightly different colors next to each other so they shimmer.

PICTURE STUDY



Irises, Vincent van Gogh, 1889 · Oil on canvas · J. Paul Getty Museum, Los Angeles

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

Van Gogh painted this garden of irises at a hospital in southern France, where he was resting after an illness. He called painting “the lightning conductor” for his troubles. He found peace in looking at flowers and painting them with bold outlines and strong color.

Look closely

- How many different violets and blue-violets can you find in the flowers?
- Look at the leaves. Find yellow-green, green and blue-green.
- Find the orange-brown soil and the few orange flowers. Why might Van Gogh put orange next to blue-violet?
- Find the one white iris. Where is it?

Talk about it

1. Which tertiary colors can you name in this painting?
2. Why do you think the white iris stands out?
3. How does the painting make you feel, and which colors cause that feeling?

STUDIO PROJECT

A Twelve-Color Wheel and an Iris Study

In Session 2 you will paint a twelve-part color wheel from just three primaries, and then paint a small iris or other flower using tertiary colors.

You will need

- Tempera or watercolor: red, yellow, blue (and white)
- Heavy paper
- A plate to trace, ruler and pencil
- Round brushes (size 4 and 8)
- Palette, water jar, paper towels

Steps

1. Trace a large circle and divide it into twelve wedges like a clock. Number them 1 to 12.
2. Paint yellow at 12, red at 4 and blue at 8.
3. Mix and paint the secondaries halfway between: orange at 2, violet at 6, green at 10.
4. Mix and paint the tertiaries in the spaces: yellow-orange at 1, red-orange at 3, red-violet at 5, blue-violet at 7, blue-green at 9, yellow-green at 11. Label each one.
5. On a second sheet, lightly draw two or three iris flowers and their long, pointed leaves (or another flower from your garden or a photo).
6. Paint the petals with blue-violet and red-violet, the leaves with yellow-green, green and blue-green, side by side so they shimmer.
7. Paint the background or soil with a tertiary from the other side of the wheel, such as yellow-orange or red-orange.

Tips

- Mix each color in its own puddle on the palette, not on the paper.
- If your violet looks brown, your red may lean toward orange. Try a cooler red (like crimson or magenta) if you have one.

Check your work

- ☐ My color wheel has twelve clean colors in the right order, labeled correctly.
- ☐ I can name each tertiary color, primary first.
- ☐ My flower painting uses at least three tertiary colors.

SKETCHBOOK PRACTICE

1. Go on a color hunt outdoors. Write down five tertiary colors you find in nature and what they were on.
2. Make a mini color wheel with colored pencils by layering one color over another.
3. Mix three different greens with paint (yellow-green, green, blue-green) and paint three leaves.

From history. In the 1660s Isaac Newton split sunlight into a band of colors with a glass prism. Later, in his book *Opticks* (1704), he arranged those colors in a circle, one of the first color wheels. Artists have used color wheels ever since to plan their mixing.

COMMON MISTAKES

- Adding the dark color first. Start with the lighter color.
- Using a dirty brush, so colors turn muddy.
- Naming tertiaries backward. Say the primary first.

Make it a game • Tertiary Rapid Round. Your parent names two colors, one primary and one secondary, and you name the tertiary color they make: red and orange make red-orange. Always say the primary first. Do twelve in sixty seconds. Then your parent tests you in reverse: name the two that make blue-green. Beat your time and score.

3.3 NEUTRALS AND BROWNS FROM COMPLEMENTS

OBJECTIVES

- Name the three pairs of complementary colors.
- Mix browns and grays by mixing complements, instead of using black.
- Paint an evening field scene with rich, mixed neutrals.

Warm-up. Look at your twelve-color wheel from Lesson 3.2. Put your finger on red and draw a line straight across the circle. What color is on the other side? Do the same for yellow and blue.

WATCH

What Colors Make Brown? The Ultimate Guide To Mixing Brown

Chris Breier · 9:58

<https://www.youtube.com/watch?v=U3xJasFwWSg>

WHEN TO WATCH

After the core ideas, before you start the mixing chart.

Note: He paints with acrylics, but the same mixing works with tempera and watercolor. He mentions his website and course; you may skip those parts.

BACKUP VIDEO

How to mix complex browns | Winsor & Newton Masterclass

Winsor & Newton · 2:34

<https://www.youtube.com/watch?v=90DRRNb0fgo>

A short extra showing more ways to mix browns.

KEY TERMS

complementary colors

Colors directly opposite each other on the color wheel: red and green, yellow and violet, blue and orange.

neutral

A quiet color with very low intensity, such as brown, gray, tan or beige.

earth colors

Browns, tans and dull reds and yellows like the colors of soil and rock.

muddy

A color that has become dull by accident, usually because of a dirty brush or too many colors mixed.

CORE IDEAS

Colors that sit straight across from each other on the color wheel are **complements**: red and green, yellow and violet, blue and orange. Side by side, they make each other look brighter. But mixed together, something surprising happens: they cancel each other out and make a **neutral**, a brown or a gray.

This is how painters make browns. Mix orange and blue and you get a deep brown or slate gray, depending on how much of each. Red and green make a warm brown or a deep forest dark. Yellow and violet make a golden tan or an olive gray. Add white to any of these and you get soft, beautiful grays and beiges.

Why not just use black and a tube of brown? Mixed neutrals are richer and more alive. They lean a little warm or a little cool, and they fit in with the other colors in your painting because they are made from them. Many great painters used very little black.

You can use the same trick to lower intensity just a little. If a green looks too bright for a tree in shadow, add a touch of red. If a blue sky looks too loud, add a whisper of orange.

Neutral colors are not boring. Most of the world is made of them: soil, bark, stone, clouds, wool and wood. Learning to mix them well is one of the most useful skills a painter can have.

PICTURE STUDY



The Angelus, Jean-François Millet, 1857–1859 · Oil on canvas · Musée d'Orsay, Paris

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

Twice a day, the church bells in French villages rang for a prayer called the Angelus. Millet remembered his grandmother stopping her work in the field to pray when she heard the bells. In this painting, a farm couple pause at sunset to pray. Notice how much of the painting is made of quiet browns and grays.

Look closely

- Find all the different browns: in the soil, the basket, the clothes, the wheelbarrow.
- Are the browns all the same, or do some lean warm (reddish or golden) and some cool (grayish)?
- Look at the sky. Where is it golden and where is it gray-blue?
- Find the faint church steeple on the horizon.

Talk about it

1. Why do you think Millet used such quiet colors for this scene?
2. What sound do you imagine when you look at this painting?
3. How do the colors help you feel the time of day?

STUDIO PROJECT

A Complement Chart and an Evening Field

You will make a chart showing how complements mix into neutrals, then paint a simple evening field like Millet's using only colors you mixed yourself, with no black and no brown from a bottle.

You will need

- Tempera or watercolor: red, yellow, blue, white
- Heavy paper
- Brushes
- Palette, water jar, paper towels
- Pencil and ruler

Steps

1. Draw three rows of five boxes. Label them Red-Green, Blue-Orange, Yellow-Violet.
2. In each row, paint the first color pure in box 1 and its complement pure in box 5. (Mix the green, orange and violet first.)
3. In box 3 mix equal amounts of both to make a neutral. In box 2 mix mostly the first color with a little of the second; in box 4, mostly the second with a little of the first.
4. Circle your favorite brown and your favorite gray.
5. On a new sheet, draw a low horizon, a field with a few furrows, a tree or haystack, and a tiny steeple far away.
6. Paint the sky: golden yellow-orange near the horizon, fading up into a soft gray-violet (yellow and violet with white).
7. Paint the field with your mixed browns: warmer and lighter far away, darker and richer close to you.
8. Paint the tree, haystack or figures in dark mixed neutrals. Add one small spot of brighter color, such as a red kerchief or a golden sun.

Tips

- Make plenty of each neutral; it is hard to mix the exact same brown twice.
- If a mix is too dark, add white or water; if too bright, add a touch of its complement.

Check your work

- ☐ My chart shows bright colors at the ends and neutrals in the middle.
- ☐ I did not use black or bottled brown.
- ☐ My painting has at least three different browns or grays.

SKETCHBOOK PRACTICE

1. Find five brown or gray things at home. Mix paint or layer colored pencils to match each one, and say which complements you used.
2. Draw a red apple on green leaves with colored pencils and notice how the complements make each other glow.
3. Paint a tree trunk using only blue and orange.

From history. *The Angelus* became one of the most famous paintings in the world in the 1800s. Copies of it hung in homes all over France and America, and an American collector once bought it for a record price before it was brought back to France.

COMMON MISTAKES

- Reaching for black to darken everything. Try a complement instead.
- Mixing all colors together until everything turns to mud. Mix two at a time.
- Making all the browns the same. Vary them warm and cool.

Make it a game • Brown Lab. Set out red, green, blue, orange, yellow and purple paint. Your parent calls a request: 'warm brown,' 'cool gray' or 'dark brown.' Choose a complementary pair and mix it, without black. Judge whether it is a rich neutral or muddy. Score one point for each good neutral. Name the three complementary pairs first.

Scripture. “Man goeth forth unto his work and to his labour until the evening.” (Psalms 104:23, KJV)

Millet painted ordinary work done faithfully until evening. Even humble brown soil and simple labor can be beautiful when we see them rightly.

3.4 CHOOSING A COLOR SCHEME

OBJECTIVES

- Describe monochromatic, analogous, complementary and warm or cool color schemes.
- Find the color scheme in a master painting.
- Color the same picture in three different schemes and compare the moods.

Warm-up. Look around the room. Pick one object and name its color. Then find two colors that sit next to it on the color wheel and one color that sits opposite. Can you see any of them in the room?

WATCH

COLOR THEORY BASICS: Use the Color Wheel & Color Harmonies to Choose Colors that Work Well Together

Sarah Renae Clark · 6:58

<https://www.youtube.com/watch?v=Yel6Wqn4I78>

WHEN TO WATCH

After the core ideas and before the picture study.

Note: She is a designer and shows digital color palettes; the same ideas work with paint and pencils.

BACKUP VIDEO

Elements of art: Color - Easy color theory for beginners, middle school art & elementary art #color

unschooled art · 4:13

<https://www.youtube.com/watch?v=7DtedKc0gzk>

A quick review of color terms from this whole unit.

KEY TERMS

color scheme

A plan for which colors to use together in a picture.

monochromatic

Using one hue with its tints and shades, such as all blues from pale to dark.

analogous

Using three to five colors that sit next to each other on the color wheel, such as yellow, yellow-green and green.

complementary scheme

Using a pair of opposite colors, such as blue and orange, often with one as the main color and the other as an accent.

warm and cool colors

Warm colors (reds, oranges, yellows) feel sunny and lively; cool colors (blues, greens, violets) feel calm and quiet.

CORE IDEAS

When you choose crayons, do you grab every color in the box? Good artists usually plan a **color scheme**: a small family of colors that work well together. A plan makes a picture feel unified, like a choir singing in harmony instead of everyone shouting.

A **monochromatic** scheme uses one hue in many values. Imagine a painting in only blues, from pale sky to deep navy. It feels calm and unified. An **analogous** scheme uses neighbors on the color wheel, like yellow, yellow-orange, orange and red-orange, the colors of a fall leaf. Analogous schemes feel natural and peaceful because they are common in nature.

A **complementary** scheme uses opposites, such as blue and orange or red and green. Complements make each other look stronger, so this scheme is full of energy. The trick is to let one color be the main one and use the other as an accent. A whole picture half red and half green can look like a fight.

You can also think in **warm** and **cool** colors. Warm colors seem to come forward and feel lively. Cool colors seem to step back and feel calm. Many landscapes put warm colors close and cool colors far away.

Choose your scheme to fit what you want the viewer to feel. A quiet snowy morning might be monochromatic blue. A busy market might be complementary. There is no single right answer, but there should be a reason.

PICTURE STUDY



Café Terrace at Night, Vincent van Gogh, 1888 · Oil on canvas · Kröller-Müller Museum, Otterlo, Netherlands

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

Van Gogh painted this street in the town of Arles, France, at night, standing outside with his easel. He wrote to his sister that he loved painting night scenes with no black at all, only beautiful blues, violets and greens, with the lamplight glowing yellow.

Look closely

- Find the two main color families. Which hues are they?
- Are those two families close together or opposite on the color wheel?
- Look at the stars. What shape and color are they?
- Look at the cobblestones. What colors did Van Gogh use for them?

Talk about it

1. What color scheme is this? How can you tell?
2. Which part feels warm and which feels cool?
3. Van Gogh used no black for the night. How did he make it look dark?

STUDIO PROJECT

One Picture, Three Schemes

You will draw one simple scene three times and color each copy with a different scheme. Then you will compare how the moods change.

You will need

- Drawing paper cut into three equal pieces (or three sketchbook pages)
- Pencil and black fine pen
- Colored pencils or oil pastels
- Your color wheel from Lesson 3.2

Steps

1. Draw a simple scene: a house with a tree, a sailboat on water, or a church on a hill. Keep it to a few large shapes.
2. Trace or redraw it so you have three copies the same size. Outline them in pen.
3. Copy 1, **monochromatic**: choose one hue. Use the lightest pressure for the sky and the darkest for the closest shapes.
4. Copy 2, **analogous**: choose three or four neighbors on the color wheel, such as blue-green, blue and blue-violet, or yellow, yellow-orange and orange.
5. Copy 3, **complementary**: choose one pair of opposites. Use one for most of the picture and the other for a small, important accent like a window, a sail or the sun.
6. Label each copy with its scheme. Below each, write one word for the mood it gives.

Tips

- Use your color wheel to choose colors before you begin.
- Remember value: even in one hue, you need light, middle and dark.

Check your work

- ☐ Each copy clearly uses its scheme and nothing else.
- ☐ My complementary copy has one main color and one accent.

- I can explain how the mood changed from one copy to another.

SKETCHBOOK PRACTICE

1. Find a painting, a book cover or a photo and name its color scheme.
2. Color a leaf in an analogous scheme of fall colors.
3. Draw a night scene using only blues, violets and one warm yellow light.

From history. Van Gogh studied color theory books and wrote long letters about color to his brother Theo. He wanted colors to express feeling, not just to copy nature exactly.

COMMON MISTAKES

- Using every color in the box. Choose a few on purpose.
- Giving complements equal amounts. Let one lead.
- Forgetting value in a monochromatic picture, so it looks flat.

Make it a game • Scheme Scavenger. Set a three-minute timer. Find an object, a package or a magazine page that shows each color scheme: monochromatic, analogous, complementary, warm or cool. Show your parent and name the scheme. One point for each correct match. Then pick one scheme and plan which colors you would use for a picture.

Scripture. “I do set my bow in the cloud, and it shall be for a token of a covenant between me and the earth.” (Genesis 9:13, KJV)

The rainbow is God’s own color wheel set in the sky, with every hue in perfect order, as a sign of His faithful promise.

UNIT 3

COLOR

You already know red, yellow and blue, and how to mix orange, green and violet. This year you will go further. Every color has three parts: its **hue** (its name on the color wheel), its **value** (how light or dark it is) and its **intensity** (how bright or dull it is). Painters who understand these three parts can mix almost any color they see.

In this unit you will paint a twelve-part color wheel, mix beautiful browns and grays from opposite colors, and plan pictures with color schemes. You will look at how Monet, Van Gogh and Millet used color to make you feel a sunrise, a garden, an evening prayer and a starry night.

PREREQUISITES

- Knows the primary colors (red, yellow, blue) and secondary colors (orange, green, violet)
- Can mix secondary colors with paint
- Can keep a brush clean between colors

MASTERY CHECKLIST

- ☐ I can explain hue, value and intensity and point them out in a painting.
- ☐ I can mix all six tertiary colors and name them correctly.
- ☐ I can mix browns and grays by mixing complementary colors.
- ☐ I can plan a picture with a monochromatic, analogous or complementary color scheme.

LESSONS IN THIS UNIT

3.1 Hue, Value and Intensity

2 sessions of 45 minutes

3.2 Mixing Tertiary Colors

2 sessions of 45 minutes

3.3 Neutrals and Browns from Complements

2 sessions of 45 minutes

3.4 Choosing a Color Scheme

2 sessions of 45 minutes

UNIT 3 REVIEW

Answer each question aloud or in writing. You may use your color wheel. Total:

50 points.

1. 5 pts

Name the three parts of every color.

2. 5 pts

What is the difference between a tint and a shade?

3. 5 pts

How can you lower the intensity of a color?

4. 5 pts

Name all six tertiary colors.

5. 5 pts

When mixing two colors, which should you start with, the lighter or the darker?
Why?

6. 5 pts

Name the three pairs of complementary colors.

7. 5 pts

What happens when you mix two complementary colors?

8. 5 pts

What is the difference between a monochromatic and an analogous color scheme?

9. 5 pts

In *Impression, Sunrise*, why does the small orange sun stand out so strongly?

10. 5 pts

What color scheme did Van Gogh use in *Café Terrace at Night*?

ANSWER KEY

1. Hue, value and intensity.
2. A tint is a color mixed with white (lighter); a shade is a color mixed with black (darker).
3. Add a little gray or a little of its complement (the color opposite it on the color wheel).
4. Red-orange, yellow-orange, yellow-green, blue-green, blue-violet, red-violet.
5. The lighter one, because a little dark color changes a light color quickly, but it takes a lot of light color to change a dark one.
6. Red and green, yellow and violet, blue and orange.
7. They make a neutral: a brown or gray.
8. Monochromatic uses one hue in different values; analogous uses neighboring colors on the color wheel.
9. It is the one intense color surrounded by dull blue-grays, and orange is the complement of blue.
10. Complementary: blues (and violets) with yellows and oranges.

PORTFOLIO PIECE: A LANDSCAPE WITH A COLOR PLAN

Paint a landscape from your imagination or from a photo (a field, a lake, a garden or a village at dusk). Before you start, choose a color scheme and write it on the back. Use mixed tertiaries and at least two neutrals mixed from complements. Make most colors lower in intensity and save your most intense color for the most important spot.

LOOK FOR	WHAT IT MEANS
Color scheme	The painting follows a clear, planned scheme written on the back.
Mixing	Tertiary colors and neutrals are mixed by the student, clean and not muddy.
Intensity	Most colors are quieter, and the most intense color draws the eye to an important place.
Value	There are clear lights, middles and darks.
Craftsmanship	Edges are neat, the paper is covered, and the work is signed and dated.

UNIT 4

VALUE AND LIGHT

Light is what lets us see anything at all. When light falls on a form, it makes a pattern of lights and darks that tells our eyes the form is round, flat, near or far. Artists call these lights and darks **value**. If you can see and draw values, you can make a flat piece of paper look like it holds a real, solid object.

In this unit you will make a seven-step value scale, learn the names of the parts of light and shadow on a form, discover which way cast shadows fall, and find the soft glow of reflected light. You will study three masters of light: Rembrandt, Vermeer and Joseph Wright of Derby.

PREREQUISITES

- Can shade with pencil and with hatching (Unit 1)
- Can draw spheres, cubes and cylinders (Unit 2)
- Has HB, 2B, 4B and 6B pencils, a kneaded eraser and a desk lamp

MASTERY CHECKLIST

- ☐ I can make a smooth seven-step value scale from white to black.
- ☐ I can find the light source and shade a form with highlight, light, halftone and form shadow.
- ☐ I can draw cast shadows that point away from the light and get longer when the light is low.
- ☐ I can show reflected light on the shadow side of a form without making it too bright.

LESSONS IN THIS UNIT

4.1 The Seven-Step Value Scale

2 sessions of 45 minutes

4.2 The Light Source and the Form Shadow

2 sessions of 45 minutes

4.3 Which Way Do Cast Shadows Fall?

2 sessions of 45 minutes

4.4 Reflected Light

2 sessions of 45 minutes

UNIT 4 REVIEW

Answer each question aloud or in writing. For drawing questions, draw in your sketchbook and show your parent. Total: 50 points.

1. 5 pts

What is a value scale, and how many steps does ours have?

2. 5 pts

Which pencil is softer and darker, an HB or a 6B?

3. 5 pts

What is the first question you ask before you shade anything?

4. 5 pts

Name the five parts of light on a sphere.

5. 5 pts

Draw a cube lit from the upper left. Which side is lightest and which is darkest?

6. 5 pts

Which way does a cast shadow point?

7. 5 pts

When are shadows longer, at noon or in the evening? Why?

8. 5 pts

What is reflected light, and why must it stay darker than the light side?

9. 5 pts

In *The Milkmaid*, where does the light come from?

10. 5 pts

How did Rembrandt use light in *The Return of the Prodigal Son* to show what matters most?

ANSWER KEY

1. A row of boxes that steps evenly from white to black. Ours has seven steps.
2. The 6B.
3. Where is the light coming from?
4. Highlight, light (with halftones), core shadow, reflected light and cast shadow.
5. The top is lightest, the left side is a middle value, and the right side (away from the light) is darkest.
6. Away from the light source.
7. In the evening, because the sun is low. A low light makes long shadows.
8. Light bouncing off a nearby surface into the shadow side. It belongs to the shadow family; if it is too bright the form looks like it has a second light or looks glassy.
9. From the window on the left.
10. He put the brightest light on the father's face and hands and the son, and let the rest fade into darkness.

PORTFOLIO PIECE: A STILL LIFE IN LIGHT AND SHADOW

Arrange three or four light-colored objects of different forms (for example an egg, a mug, a box and a lemon) on a cloth under a single lamp. Make a finished pencil drawing that uses the full seven-step range of values. Show every part of light: highlights, halftones, core shadows, reflected light, and cast shadows that all point away from the lamp.

LOOK FOR	WHAT IT MEANS
Light source	Highlights and shadows all agree on where the light comes from.
Value range	The drawing uses the full range from white paper to deep dark, with smooth gradations.
Form shadow and reflected light	Each form has a core shadow and subtle reflected light that stays darker than the light side.
Cast shadows	Cast shadows point away from the light, connect to the objects, and soften as they move away.
Craftsmanship	The drawing is clean, carefully observed, signed and dated.

4.1 THE SEVEN-STEP VALUE SCALE

OBJECTIVES

- Make an even seven-step value scale with pencils of different grades.
- Use a value viewer to judge the values of real objects.
- Make a small value study that uses the full range from white to black.

Warm-up. Squint at the room until it gets blurry. Point to the lightest thing you can see and the darkest thing. Then try to find something exactly in the middle. Squinting hides small details and shows big values.

WATCH

How to shade in Pencil - Value scale

Mr. Otter Art Studio • 14:46

<https://www.youtube.com/watch?v=YpUFcOBYIj0>

WHEN TO WATCH

Before the project. Watch how changing the pressure on the pencil makes each box of the value scale a little darker than the last.

BACKUP VIDEO

Value Scale & Sphere Shading Exercise | Learn How To Shade

That Art Teacher • 12:16

<https://www.youtube.com/watch?v=qNju05AR3Kc>

Watch in Session 2 for another value scale, plus a shaded sphere that previews the next lesson.

KEY TERMS

value

How light or dark something is.

gradation

A smooth change from light to dark with no jumps.

value scale

A row of boxes that steps evenly from white to black.

contrast

A big difference in value, such as white next to black.

pencil grade

The letter and number on a pencil. H pencils are hard and light; B pencils are soft and dark. HB is in the middle.

CORE IDEAS

Before you can shade well, your eye needs a ruler for light and dark. That ruler is a **value scale**. A seven-step scale has white paper at one end (step 1), the darkest dark you can make at the other (step 7), and five even steps between. The middle box, step 4, is called the middle value.

Use your pencils wisely. An HB pencil is good for the light steps. A 2B or 4B makes the middle values. A 6B gives the deepest darks. Pencils with a B are softer because they have more graphite and less clay in them, so they leave more dark mark on the paper. You will learn more about this in Unit 5.

Shade each box evenly. Hold the pencil at a low angle and use small, overlapping strokes or circles. Build darks in layers instead of pressing hard all at once. Pressing too hard makes shiny marks and dents the paper.

When you finish, punch a small hole in steps 2, 4 and 6. Now you have a **value viewer**. Hold it up to things in the room and look through the holes. Is that apple step 3 or step 5? This trains your eye to judge values truly.

Great painters plan their values first. Rembrandt used nearly the whole scale in his paintings, with the brightest lights on the most important faces and deep darks around them. Strong **contrast** pulls the eye; soft, close values feel quiet.

PICTURE STUDY



The Return of the Prodigal Son, Rembrandt van Rijn, about 1661–1669 · Oil on canvas · Hermitage Museum, Saint Petersburg, Russia

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

Rembrandt painted this near the end of his life. It shows the moment in Jesus' parable (Luke 15) when the father welcomes home the son who had wasted everything. The light falls on the father's face and hands, and the rest of the room fades into darkness.

Look closely

- Find the brightest values in the painting. Whose face and hands are they on?
- Find the darkest values. Where are they?
- Look at the people standing on the right. Are they in strong light or softer middle values?
- Squint. Can you see a big shape of light in the middle of the dark?

Talk about it

1. Why do you think Rembrandt made the father's hands so bright?
2. If you used a value viewer on this painting, which steps would you find?
3. How does the light help tell the story of the parable?

STUDIO PROJECT

My Value Scale and a Value Map

You will make a careful seven-step value scale that you will use all year, then draw a simple still life showing only values, with no outlines.

You will need

- Heavy drawing paper or cardstock
- HB, 2B, 4B and 6B pencils
- Kneaded eraser
- Ruler
- Hole punch
- Scissors
- 3 objects of different values (for example a white mug, a gray stone and a dark book)
- A desk lamp

Steps

1. Draw a long rectangle 7 inches by 1 inch on cardstock. Divide it into seven 1-inch boxes and number them 1 to 7.
2. Leave box 1 white. Shade box 7 as dark as you can with the 6B, in several layers.
3. Shade box 4 to look exactly halfway between white and black.
4. Shade boxes 2 and 3 between white and the middle, and boxes 5 and 6 between the middle and black. Squint and fix any jumps until the steps look even.
5. Cut out your scale and punch a hole in boxes 2, 4 and 6. This is your value viewer.
6. Set the three objects under the lamp. Use the viewer to decide the value of each object's light side and shadow side.
7. Draw the objects lightly, then shade them as big shapes of value, matching the steps you saw. Do not draw outlines; let the edges appear where one value meets another.

8. Write the step numbers lightly in a few areas of your drawing to show your thinking.

Tips

- Keep a scrap paper under your hand so you do not smudge the lighter boxes.
- If a box gets too dark, lift some graphite by pressing the kneaded eraser on it.

Check your work

- ☐ My scale steps evenly from white to black with no big jumps.
- ☐ My value map has at least five different values.
- ☐ My objects look solid without outlines.

SKETCHBOOK PRACTICE

1. Make a seven-step scale with hatching and one with stippling.
2. Draw a smooth gradation bar that goes from white to black with no steps at all.
3. Copy a small part of a black-and-white photograph in values only.

From history. Rembrandt was famous for *chiaroscuro* (kee-AR-oh-SKOOR-oh), an Italian word meaning “light-dark.” He learned it from painters who followed the Italian master Caravaggio, but he made it gentler and used it to show thoughtfulness, sorrow and love.

COMMON MISTAKES

- Big jumps between steps, often between 1 and 2. Make step 2 just a little gray.
- Pressing hard instead of layering, which makes the dark shiny and dented.
- Not making step 7 dark enough. Push the darks.

Make it a game • Chip Shuffle. Make a seven-step value scale and cut it into seven chips. Mix them behind your back. Race the clock to put them back in order. Your parent times you. Then close your eyes while your parent removes one chip, and say which step is missing. Each round beats the last by a second.

4.2 THE LIGHT SOURCE AND THE FORM SHADOW

OBJECTIVES

- Find the light source in a scene and in a painting.
- Name and draw the highlight, light, halftone and form shadow on a form.
- Shade a sphere, cube and cylinder lit from one side.

Warm-up. In a dim room, hold a white egg or ball under a desk lamp. Move the lamp slowly around it in a circle. Watch the bright spot and the shadow side move. Draw three tiny circles showing three positions of the light.

WATCH

How to Shade Basic Forms - Pencil Tutorial

Drawing & Painting - The Virtual Instructor • 9:20

<https://www.youtube.com/watch?v=vMr6eimcolc>

WHEN TO WATCH

After the warm-up and core ideas. Pause after each form and shade it in your sketchbook.

KEY TERMS

light source

Where the light comes from, such as the sun, a lamp or a window.

highlight

The brightest spot on a form, where the light hits it most directly.

halftone

The middle values on the lit side of a form, between the light and the shadow.

form shadow

The darker side of a form that faces away from the light.

core shadow

The darkest band in the form shadow, just past where the light stops reaching.

CORE IDEAS

Every time you shade, first ask: **where is the light coming from?** Draw a small arrow or sun in the corner of your paper so you never forget. Everything else follows from that answer.

On a ball lit from the upper left, the light makes a pattern. The **highlight** is a small bright spot facing the light. Around it is the **light** area. As the surface turns away, it gets gradually darker; these middle values are the **halftones**. Then, where the light can no longer reach, there is a turning point into the **form shadow**.

The darkest part of the form shadow is a band called the **core shadow**, right after the turning point. Beginners often make the very edge of the ball the darkest part, but the core shadow is a little inside the edge. You will learn why in Lesson 4.4.

Different forms show light differently. A sphere changes smoothly from light to dark. A cube has flat sides, so each side is one even value: the top might be lightest, one side middle, and the side away from the light darkest. A cylinder is like a sphere sideways: its value changes smoothly across, but stays the same from top to bottom.

Keep the shadow side and the light side separate. Do not let lights wander into the shadow or darks into the light. Squint at your object to see the two big shapes, then work out the gradations within each.

PICTURE STUDY



The Milkmaid, Johannes Vermeer, about 1658 • Oil on canvas • Rijksmuseum, Amsterdam

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

Vermeer loved to paint quiet moments in rooms lit by a single window. Here a kitchen maid carefully pours milk. Every object, from the bread to her sleeve, shows exactly how light falls from the window on the left.

Look closely

- Find the window. Which way is the light traveling?
- Look at her face and arms. Which side is in light and which is in shadow?
- Find highlights: tiny bright dots on the bread, the jug and the basket.
- Look at the wall behind her. Is it the same value from top to bottom, or does it change?

Talk about it

1. Where is the brightest spot in the whole picture?
2. How does Vermeer show that the jug is round?
3. Why do you think Vermeer painted such an ordinary task so carefully?

STUDIO PROJECT

Three Forms by Lamplight

You will set up a sphere, a cube and a cylinder under one lamp and shade them with the full pattern of light and shadow.

You will need

- Drawing paper
- HB, 2B and 4B pencils
- Kneaded eraser
- Your value scale
- A white ball or egg, a box and a can or roll of paper towels (white objects work best)
- A desk lamp, in a darkened room

Steps

1. Set the three objects on a white paper. Put the lamp to the upper left, close enough to make strong shadows. Turn off other lights.
2. Draw a small arrow in the corner of your paper pointing the way the light travels.
3. Lightly draw the three forms. Use ellipses for the cylinder.
4. Squint and lightly outline where the shadow side begins on each form.
5. Fill each form shadow with an even middle-dark value (about step 5).
6. On the sphere, darken a curved core shadow band just inside the shadow edge, and blend halftones into the light side. Leave the highlight white.
7. On the cube, make each flat side one even value: lightest on the top, middle on the side facing the light, darkest on the side away from it.
8. On the cylinder, shade in vertical bands: light, halftone, core shadow, then slightly lighter at the far edge.
9. Check your values against your value scale and adjust.

Tips

- Shade in the direction of the form: curved strokes on the sphere, straight ones on the cube.
- Use the kneaded eraser to lift out the highlight if it gets covered.

Check your work

- ☐ All my forms are lit from the same side.
- ☐ Each form has a clear light side and shadow side.
- ☐ My sphere has a highlight, halftones and a core shadow.

SKETCHBOOK PRACTICE

1. Draw a ball lit from the left, then the right, then above.
2. Shade three boxes in different positions, keeping the top lightest.
3. Find a pear or an orange and shade it, naming the highlight and core shadow.

From history. Some historians think Vermeer may have used a *camera obscura*, a dark box with a lens that projects the scene onto a surface, to study light and focus. Whether he did or not, his paintings show months of patient looking.

COMMON MISTAKES

- Shading around the edge of a circle like a ring. Shadows belong on the side away from the light.
- Different light directions on different objects.
- Making the shadow side too light and timid. Use the 4B.

Make it a game • Where Is the Lamp?. Turn away while your parent places a lamp somewhere and sets a pear on the table. Turn back. Look at the highlight, light and form shadow and point to where the lamp must be. Correct earns a point. Name the highlight, halftone and core shadow as proof. Swap roles for five rounds.

Scripture. “And God said, Let there be light: and there was light.” (Genesis 1:3, KJV)

Light was God’s first gift in creation. Without it there would be no shapes, no colors and no pictures at all.

4.3 WHICH WAY DO CAST SHADOWS FALL?

OBJECTIVES

- Explain how the position of the light changes the direction and length of a cast shadow.
- Draw cast shadows that point away from the light and connect to the object.
- Draw the same object lit from three different directions.

Warm-up. On a sunny day, go outside and look at your own shadow. Which way does it point compared with the sun? Is it long or short? If it is cloudy, use a flashlight and a toy in a dark room instead.

WATCH

Quick Tip 233 - Locating Cast Shadows

In the Studio Art Instruction · 9:07

<https://www.youtube.com/watch?v=vld2WGUQQjc>

WHEN TO WATCH

After the core ideas. She is an art teacher speaking to adults, so pause to point out where each cast shadow falls.

BACKUP VIDEO

Light & Shadow | Art Basics

Dena Ackerman · 8:42

<https://www.youtube.com/watch?v=iH-pGF-6aYo>

An extra that reviews light and shadow on an egg, including the cast shadow.

KEY TERMS

cast shadow

The dark shape an object throws onto the surface around it, where it blocks the light.

form shadow

The shadow on the object itself, on the side turned away from the light.

occlusion shadow

The very darkest thin shadow right where an object touches the surface, where almost no light can reach.

direction of light

The way the light travels, from the light source toward the objects.

CORE IDEAS

A **cast shadow** is the shape an object throws onto the table, the ground or a wall by blocking the light. It is different from the **form shadow**, which is on the object itself. A ball has both: a dark side and a dark shape on the table beside it.

Rule one: **a cast shadow always points away from the light.** If the lamp is on the left, the shadow falls to the right. If the light is in front of you, the shadow comes toward you. If the light is behind the object, the shadow stretches toward you.

Rule two: **the lower the light, the longer the shadow.** At noon the sun is high and shadows are short, tucked under things. In the early morning and evening the sun is low and shadows stretch long across the ground.

Rule three: **a cast shadow is darkest and sharpest close to the object** and gets lighter and softer as it moves away. Right where the object touches the ground there is a thin, very dark line called the **occlusion shadow**. It makes the object sit firmly instead of floating.

Rule four: **all the objects in one picture share the same light**, so all their cast shadows point the same way. In sunlight, shadows are nearly parallel. Near a lamp or candle, they spread out from the light like spokes of a wheel.

PICTURE STUDY



A Philosopher Lecturing on the Orrery, Joseph Wright of Derby, about 1766 · Oil on canvas · Derby Museum and Art Gallery, England

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

Wright of Derby was an English painter who loved science and candlelight. This painting shows a teacher explaining an orrery, a clockwork model of the sun and planets. A lamp hidden behind a boy in front stands for the sun, and it lights the faces of the listeners like moons.

Look closely

- Find where the light is coming from, even though you cannot see the lamp.
- Look at the curved shadows of the metal rings falling on the model and the people. Which direction do they point?
- Notice how the children's faces are lit from below and in front.
- Find the darkest parts of the room. How far are they from the light?

Talk about it

1. Why do you think the painter hid the lamp?
2. How do the shadows show you where the light is, even without seeing it?
3. How do the people seem to feel about what they are learning?

STUDIO PROJECT

One Object, Three Lights

You will draw the same object three times with the lamp in three different places, showing how the cast shadow changes direction and length.

You will need

- Drawing paper folded into three panels
- HB, 2B and 4B pencils
- Kneaded eraser
- A simple object such as a mug, a block or a small vase
- A desk lamp or flashlight

Steps

1. Place the object on white paper in a dim room. In each panel, draw a small arrow showing where the light will come from.
2. Panel 1: put the lamp low on the left. Draw the object, then draw its long cast shadow stretching to the right.
3. Panel 2: put the lamp high above and slightly in front. Draw the short shadow tucked under and behind the object.
4. Panel 3: put the lamp behind the object. Draw the shadow coming toward you.
5. In each panel, shade the form shadow on the object's side away from the lamp.
6. Shade each cast shadow darkest near the object and lighter and softer at the far end.
7. Add a thin, very dark occlusion shadow where the object touches the table.
8. Label each panel: "low light, long shadow," "high light, short shadow," and "light behind."

Tips

- Trace the outer edge of the real cast shadow with your eyes before you draw it; its shape is often surprising.

- Keep the far end of the shadow soft by blending it with a tissue or your finger.

Check your work

- ☐ Every cast shadow points away from the light.
- ☐ The low light made the longest shadow.
- ☐ Each object sits on the table with a dark line where it touches.

SKETCHBOOK PRACTICE

1. Draw a fence post or tree outside at three times of day and record the shadow length.
2. Draw three objects lit by one candle-like lamp, with shadows spreading outward.
3. Draw your hand casting a shadow on the paper.

From history. Wright of Derby painted several scenes of scientific experiments and workshops lit by a single lamp or forge. People of his time were excited by new discoveries about the heavens, and his paintings show that wonder.

COMMON MISTAKES

- Cast shadows pointing toward the light.
- A gap between the object and its shadow, which makes it float.
- Shadows that are the same darkness all the way out.

Make it a game • Lamp Height Lab. Place a cup on a paper. Hold a lamp at three heights and trace and measure the shadow each time. A low light makes a long shadow, a high light makes a short one. Record the lengths. Then each guess the shadow length at a fourth height. Closest guess wins. Say which way it falls and why.

4.4 REFLECTED LIGHT

OBJECTIVES

- Explain what reflected light is and where it appears.
- Shade a sphere with highlight, light, halftone, core shadow, reflected light and cast shadow.
- See and draw colored reflected light.

Warm-up. Put a white egg on a white sheet of paper under a lamp. Look at the shadow side of the egg near the bottom. Is it as dark as the core shadow, or a little lighter? Now slide a red paper under the egg. What happens to the shadow side?

WATCH

How to Draw a 3D Sphere: Shading for Beginners

Circle Line Art School · 4:00

<https://www.youtube.com/watch?v=9r2SIYXQNgI>

WHEN TO WATCH

After the warm-up and core ideas. Point to the highlight, core shadow, reflected light and cast shadow as he draws them.

BACKUP VIDEO

How to Shade a Sphere with Graphite Pencils | Realistic Shading for Beginners

Jennifer Funnell · 11:36

<https://www.youtube.com/watch?v=GN4nFsR5MJU>

For a slower, more detailed sphere drawing in Session 2.

KEY TERMS

reflected light

Light that bounces off a nearby surface (like the table) back into the shadow side of a form, making it a little lighter.

core shadow

The darkest band of the form shadow, between the light side and the reflected light.

bounce light

Another name for reflected light.

the five parts of light

Highlight, light (with halftones), core shadow, reflected light and cast shadow.

CORE IDEAS

Light does not stop when it hits a surface. Some of it bounces off, like a ball bouncing off a wall. When light bounces off the table and back up into the shadow side of a ball, it makes a soft, lighter area near the edge. This is **reflected light**.

That is why the **core shadow** is not at the very edge of a ball. On the shadow side, from the light going outward, you see: the core shadow (darkest), then reflected light (a bit lighter) at the very edge. Now you have all **five parts of light**: highlight, light and halftones, core shadow, reflected light and cast shadow.

Here is the most important rule: **reflected light is always darker than any value on the light side**. It belongs to the shadow family. If you make it too bright, the ball will look like it has a second light shining on it, or like it is made of glass. Keep it subtle, about one step lighter than the core shadow.

Reflected light also carries color. A white egg on a red cloth will have a pinkish glow on its shadow side. A face near a green leaf may pick up a little green under the chin. Painters notice these color bounces and use them to tie objects together.

Shiny objects show reflected light more clearly than dull ones. A metal cup or a glazed pot can even show tiny reflections of objects next to it.

PICTURE STUDY



Still Life with Lemons, Oranges and a Rose, Francisco de Zurbarán, 1633 · Oil on canvas · Norton Simon Museum, Pasadena, California

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

Zurbarán was a Spanish painter, mostly of monks and saints. He painted only a few still lifes, and this is the most famous. It is very calm and orderly, with three groups lined up like an offering. Some people see it as a quiet picture of devotion.

Look closely

- Look at the white cup on the right. Find its highlight, its core shadow and the lighter reflected light near its shadow edge.
- Look at the silver plates. What colors do you see reflected in them?
- Find the lemons. Is the shadow side of each lemon the same darkness all the way to the edge?
- Find the cast shadows on the table.

Talk about it

1. Where is the light coming from?
2. Why do you think the white cup and rose are placed apart on their own plate?
3. How does the black background help you see the light on each object?

STUDIO PROJECT

An Egg with All Five Parts of Light

You will make a careful drawing of a white egg (or ball) showing all five parts of light, and then a color version on red or blue paper to show colored reflected light.

You will need

- Drawing paper
- HB, 2B, 4B pencils
- Kneaded eraser
- Colored pencils
- A white egg (hard-boiled is safest) or a white ball
- A sheet of white paper and a sheet of bright red or blue paper
- A desk lamp

Steps

1. Set the egg on white paper with the lamp to the upper left. Draw a light arrow on your paper.
2. Lightly draw the egg shape, about 3 inches tall, and the shape of its cast shadow.
3. Shade the whole shadow side with a middle value.
4. Darken the core shadow band, a little inside the edge.
5. Lift a little graphite with the kneaded eraser at the very edge of the shadow side to show reflected light. Keep it darker than the light side.
6. Blend the halftones on the light side, and leave or lift a small white highlight.
7. Shade the cast shadow, darkest under the egg, with an occlusion shadow where it touches.
8. Now set the egg on red (or blue) paper. Draw it again with colored pencils, adding a touch of red (or blue) into the reflected light and the cast shadow.

Tips

- Compare: put your fingertip on the reflected light and another on the halftone. The reflected light must be darker.
- Work slowly from light to dark; it is easier to add graphite than remove it.

Check your work

- ☐ My egg shows highlight, light, core shadow, reflected light and cast shadow.
- ☐ My reflected light is lighter than the core shadow but darker than the light side.
- ☐ My color drawing shows the paper's color bouncing into the shadow.

SKETCHBOOK PRACTICE

1. Draw a spoon or a shiny cup and look for reflections of nearby things.
2. Draw a ball resting near a white wall and look for extra bounce light.
3. Look at a family member's face near a window and notice reflected light under the chin.

From history. Leonardo da Vinci wrote about reflected light in his notebooks around 1500. He noticed that the shadow side of a face takes on color from nearby walls and clothing, and he told painters to watch for it.

COMMON MISTAKES

- Making reflected light as bright as the light side.
- Forgetting the core shadow, so the shadow side looks flat.
- Drawing a hard outline around the egg instead of letting values make the edge.

Make it a game • Teach the Egg. You are the art teacher and your parent is the student. Show the parts of light on an egg under a lamp: highlight, light, halftone, core shadow, reflected light and cast shadow. Hold white paper near the shadow side to show reflected light. Your parent sneaks in one wrong fact, and you catch it.

UNIT 4

VALUE AND LIGHT

Light is what lets us see anything at all. When light falls on a form, it makes a pattern of lights and darks that tells our eyes the form is round, flat, near or far. Artists call these lights and darks **value**. If you can see and draw values, you can make a flat piece of paper look like it holds a real, solid object.

In this unit you will make a seven-step value scale, learn the names of the parts of light and shadow on a form, discover which way cast shadows fall, and find the soft glow of reflected light. You will study three masters of light: Rembrandt, Vermeer and Joseph Wright of Derby.

PREREQUISITES

- Can shade with pencil and with hatching (Unit 1)
- Can draw spheres, cubes and cylinders (Unit 2)
- Has HB, 2B, 4B and 6B pencils, a kneaded eraser and a desk lamp

MASTERY CHECKLIST

- ☐ I can make a smooth seven-step value scale from white to black.
- ☐ I can find the light source and shade a form with highlight, light, halftone and form shadow.
- ☐ I can draw cast shadows that point away from the light and get longer when the light is low.
- ☐ I can show reflected light on the shadow side of a form without making it too bright.

LESSONS IN THIS UNIT

4.1 The Seven-Step Value Scale

2 sessions of 45 minutes

4.2 The Light Source and the Form Shadow

2 sessions of 45 minutes

4.3 Which Way Do Cast Shadows Fall?

2 sessions of 45 minutes

4.4 Reflected Light

2 sessions of 45 minutes

UNIT 4 REVIEW

Answer each question aloud or in writing. For drawing questions, draw in your sketchbook and show your parent. Total: 50 points.

1. (5 pts)

What is a value scale, and how many steps does ours have?

2. (5 pts)

Which pencil is softer and darker, an HB or a 6B?

3. (5 pts)

What is the first question you ask before you shade anything?

4. (5 pts)

Name the five parts of light on a sphere.

5. (5 pts)

Draw a cube lit from the upper left. Which side is lightest and which is darkest?

6. (5 pts)

Which way does a cast shadow point?

7. (5 pts)

When are shadows longer, at noon or in the evening? Why?

8. (5 pts)

What is reflected light, and why must it stay darker than the light side?

9. (5 pts)

In *The Milkmaid*, where does the light come from?

10. (5 pts)

How did Rembrandt use light in *The Return of the Prodigal Son* to show what matters most?

ANSWER KEY

1. A row of boxes that steps evenly from white to black. Ours has seven steps.
2. The 6B.
3. Where is the light coming from?
4. Highlight, light (with halftones), core shadow, reflected light and cast shadow.
5. The top is lightest, the left side is a middle value, and the right side (away from the light) is darkest.
6. Away from the light source.
7. In the evening, because the sun is low. A low light makes long shadows.
8. Light bouncing off a nearby surface into the shadow side. It belongs to the shadow family; if it is too bright the form looks like it has a second light or looks glassy.
9. From the window on the left.
10. He put the brightest light on the father's face and hands and the son, and let the rest fade into darkness.

PORTFOLIO PIECE: A STILL LIFE IN LIGHT AND SHADOW

Arrange three or four light-colored objects of different forms (for example an egg, a mug, a box and a lemon) on a cloth under a single lamp. Make a finished pencil drawing that uses the full seven-step range of values. Show every part of light: highlights, halftones, core shadows, reflected light, and cast shadows that all point away from the lamp.

LOOK FOR	WHAT IT MEANS
Light source	Highlights and shadows all agree on where the light comes from.
Value range	The drawing uses the full range from white paper to deep dark, with smooth gradations.
Form shadow and reflected light	Each form has a core shadow and subtle reflected light that stays darker than the light side.
Cast shadows	Cast shadows point away from the light, connect to the objects, and soften as they move away.
Craftsmanship	The drawing is clean, carefully observed, signed and dated.

UNIT 5

MATERIAL SCIENCE

What is paint, really? Why does watercolor glow while poster paint looks chalky? Why do some papers buckle and tear while others take a flood of water? In this unit you become an art scientist. You will learn that every paint is made of two things, **pigment** (the colored powder) and **binder** (the glue that holds it to the surface), and that every paper is a mat of tiny plant fibers.

You will test materials, keep careful notes, make your own egg paint the way icon painters did 600 years ago, and draw with a dip pen and ink like the monks who made the Lindisfarne Gospels. Knowing your materials is part of good craftsmanship: the right tool, used well, makes beautiful work last.

PREREQUISITES

- Can mix colors and keep a brush clean (Unit 3)
- Can shade with hatching and stippling (Unit 1)
- Has watercolor paints, tempera, a small set of acrylics, several kinds of paper and a dip pen with ink

MASTERY CHECKLIST

- ☐ I can explain that paint is pigment plus binder, and name the binder in watercolor, egg tempera, poster tempera and acrylic.
- ☐ I can glaze transparent watercolor layers so the colors mix on the paper.
- ☐ I can explain paper weight and why cotton paper is stronger than wood-pulp paper.
- ☐ I can draw with a dip pen, controlling thick and thin lines and keeping the ink neat.

LESSONS IN THIS UNIT

5.1 Watercolor: Transparent Layers and Glazing

2 sessions of 45 minutes

5.2 Tempera and Acrylic: What Holds the Color

2 sessions of 45 minutes

5.3 Paper: Fibers, Weight and Cotton

2 sessions of 45 minutes

5.4 Ink, Quill and Nib

2 sessions of 45 minutes

UNIT 5 REVIEW

Answer each question aloud or in writing. Total: 50 points.

1. 5 pts

What are the two main parts of every paint, and what does each one do?

2. 5 pts

What is the binder in watercolor, and where does it come from?

3. 5 pts

What is a glaze, and what must you do before painting one?

4. 5 pts

What was the binder in egg tempera? Name one famous artwork made with it.

5. 5 pts

Why does acrylic paint not wash off once it is dry?

6. 5 pts

What is paper made of?

7. 5 pts

Why is cotton paper stronger than wood-pulp paper for watercolor?

8. 5 pts

What does “140 lb” on a pad of watercolor paper tell you?

9. 5 pts

What were the two main kinds of black ink used by scribes, and what was each made from?

10. 5 pts

Name two rules for using a dip pen.

ANSWER KEY

1. Pigment gives the color; binder holds the pigment together and glues it to the surface.
2. Gum arabic, from the sap of the acacia tree.
3. A thin transparent layer of paint over another color. The first layer must be completely dry.
4. Egg yolk. For example Rublev's *Trinity* (or works by Giotto or Fra Angelico).
5. Its binder is an acrylic polymer, a kind of plastic, that dries into a waterproof film.
6. Plant fibers (from wood, cotton or other plants) mashed into pulp, spread thin, pressed and dried.
7. Cotton fibers are longer and stronger, so the paper can be soaked and scrubbed without pilling or tearing.
8. Its weight, which tells how thick and heavy it is. 140 lb is good watercolor paper that buckles less.
9. Carbon ink (soot and gum arabic) and iron gall ink (oak galls, iron salt and gum arabic).
10. Any two: dip only to the hole; touch off extra ink; pull the pen toward you, never push; press lightly for thin lines and harder for thick; keep the ink jar from tipping; clean the nib after.

PORTFOLIO PIECE: A NATURE PAGE IN INK AND WATERCOLOR

Choose a plant, flower, shell or bird feather and make a nature-journal page on good watercolor paper. Draw it with a dip pen and ink using contour lines and hatching. When the ink is completely dry, add color with transparent watercolor glazes. Label the page with the name of your subject, the date, and a short list of the materials you used and what each is made of.

LOOK FOR	WHAT IT MEANS
Pen work	Ink lines are controlled, with thick and thin lines and neat hatching, and no smears.
Watercolor glazes	Color is built in at least two transparent layers, with the white paper saved for lights.
Right paper	The student chose paper that holds both ink and watercolor without buckling badly or pilling.
Material notes	The labels correctly name the materials and their binders or fibers.
Craftsmanship	The page is clean, well arranged, signed and dated.

5.1 WATERCOLOR: TRANSPARENT LAYERS AND GLAZING

OBJECTIVES

- Explain what watercolor is made of and why it is transparent.
- Paint glazes, letting each layer dry before the next.
- Paint a plant study built up in transparent layers.

Warm-up. Paint a stripe of yellow watercolor and let it dry. Then paint a stripe of blue across it. While you wait for the yellow to dry, hold a piece of colored cellophane or a colored plastic folder over a white paper and see how the color shows through.

WATCH

Tips for Glazing and Layering Watercolor for BEGINNERS ★ Free Printable Color Chart

Sarah Burns · 9:01

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

WHEN TO WATCH

After the core ideas and before the glazing chart.

Note: She mentions a free printable chart on her website; you do not need it.

BACKUP VIDEO

How to Glaze over DRY PAINT in Watercolor

Liron Yanconsky · 5:22

<https://www.youtube.com/watch?v=EUSsmEfl2-0>

A short extra on glazing over dry paint.

KEY TERMS

pigment

A finely ground colored powder that gives paint its color. Pigments come from minerals, earth, plants and modern chemistry.

binder

The sticky part of paint that holds the pigment together and glues it to the surface.

gum arabic

The binder in watercolor: a natural gum from the sap of the acacia tree that dissolves in water.

transparent

Letting light pass through, like colored glass.

glaze

A thin, transparent layer of paint brushed over a dry layer, so the two colors mix on the paper.

CORE IDEAS

Every paint has two main parts. The **pigment** is the color: a powder ground so fine you cannot see the grains. The **binder** is a kind of glue that holds the pigment together and sticks it to the paper. Change the binder and you get a different kind of paint, even with the same pigment.

In watercolor the binder is **gum arabic**, a natural gum that oozes from the bark of the acacia tree, often with a little honey or glycerin to keep it moist. Gum arabic dissolves in water. That is why you can wet a dry watercolor pan and it comes back to life, and why you can lift paint off the paper with a damp brush.

Watercolor is **transparent**. A thin layer of it is like colored glass. Light passes through the paint, bounces off the white paper underneath and comes back through the color to your eye. That is why watercolor glows, and why painters use the white of the paper for their whites instead of white paint.

Because it is transparent, you can paint a **glaze**. Paint a layer of yellow. Wait until it is completely dry (the shine is gone and it feels cool but not damp). Then brush blue lightly over part of it. Where they overlap you see green, but a cleaner, glowing green than if you had mixed them in a puddle. Each glaze also makes the area a little darker, so you can build up shadows slowly.

Glazing needs a light touch. Load your brush, paint the glaze in one or two strokes and leave it alone. Scrubbing back and forth will dissolve the layer underneath and make mud. Patience is the whole secret: wait for dry.

PICTURE STUDY



Great Piece of Turf, Albrecht Dürer, 1503 · Watercolor and gouache on paper · Albertina, Vienna

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

More than five hundred years ago, Dürer did something new: he painted a patch of ordinary weeds and grasses as carefully as a portrait. He built it up with thin, transparent layers of watercolor, adding a little opaque paint for the brightest stems.

Look closely

- Find the lightest, yellowest grasses. Are they in front or behind?
- Look for places where green shows through other green, like layers of colored glass.
- Look at the dark spaces between the leaves near the bottom. How did Dürer make them so deep?
- Find a dandelion and its leaves.

Talk about it

1. Why do you think Dürer chose to paint weeds instead of a famous flower?
2. Which parts look like they were painted first, and which last?
3. Where do you see the white of the paper?

STUDIO PROJECT

A Glazing Chart and a Weed Study

You will make a glazing chart to see how transparent colors mix in layers, then paint a small piece of a garden or meadow the way Dürer did, building it up in glazes.

You will need

- Watercolor paper (140 lb / 300 gsm)
- Watercolor pans: yellow, red, blue (and a green if you have one)
- Round brushes (size 4 and 8)
- Two water jars (one for rinsing, one clean)
- Paper towels
- Pencil
- A real plant: a clump of grass, a dandelion, clover or a weed in a pot

Steps

1. Glazing chart: paint three short vertical stripes of yellow, red and blue. Let them dry completely.
2. Paint three horizontal stripes of the same colors across them. Do not scrub. Let them dry and look at the nine squares where they cross.
3. Now lightly draw your plant, about 5 inches tall, with very light pencil.
4. Layer 1: paint the whole plant with a pale yellow-green wash. Leave a few tiny spots of white paper for the brightest edges. Let it dry.
5. Layer 2: glaze a medium green over the leaves that are farther back or in shade. Let it dry.
6. Layer 3: glaze blue or blue-green into the darkest spaces between leaves and under the plant. Let it dry.
7. Use the small brush for a few final darker lines along leaf veins and stems.
8. Paint a little patch of earth at the bottom with a glaze of yellow, then a glaze of red, then a touch of blue for brown.

Tips

- Test if paint is dry by touching it with the back of your finger. If it feels cool, wait.
- Work on two paintings at once so you have something to do while one dries.

Check your work

- ☐ My glazing chart shows clean mixed colors where the stripes cross.
- ☐ My plant has at least three layers, from light to dark.
- ☐ I kept some white paper for the brightest spots.

SKETCHBOOK PRACTICE

1. Paint a five-step value scale in one color using glazes: one layer, two layers, three, four, five.
2. Paint a sky with a pale yellow glaze, then a blue glaze over the top half.
3. Record which of your watercolor pans are most transparent by painting each over a black marker line.

From history. People have painted with water-based paints bound with gum for thousands of years, from Egyptian papyrus scrolls to medieval manuscripts. But Dürer was one of the first European artists to make finished watercolor paintings of nature for their own sake.

COMMON MISTAKES

- Glazing before the first layer is dry, which makes blooms and mud.
- Scrubbing back and forth, which lifts the layer underneath.
- Painting white with white paint instead of saving the paper.

Make it a game • Dry-Time Quiz Show. Paint a glazing chart with four squares of one color, adding a layer to each square. Each layer must dry first. While each layer dries, your parent hosts a quiz: what is watercolor made of, what is the binder, why is it transparent? You answer without notes. One point per correct answer. Beat your total next time.

5.2 TEMPERA AND ACRYLIC: WHAT HOLDS THE COLOR

OBJECTIVES

- Name the binders in egg tempera, school tempera and acrylic paint.
- Make egg tempera paint and paint a small panel with it.
- Test how tempera and acrylic behave when dry and compare the results.

Warm-up. Paint one stripe of school tempera and one stripe of acrylic on a piece of cardstock. Write the time. You will test them at the end of the lesson once they are dry.

WATCH

Tempera vs. Acrylic

Deep Space Sparkle · 4:55

<https://www.youtube.com/watch?v=7ZqTjIWaF94>

WHEN TO WATCH

After the core ideas, before the paint test.

Note: This video was made for teachers comparing brands of paint for children's projects. Focus on how the two paints look and behave.

BACKUP VIDEO

So THAT'S How You Make Paint? Egg Tempera | #MetKids Microscope

The Met · 2:54

<https://www.youtube.com/watch?v=WeugO7rZZqQ>

Watch before making your own egg tempera, to learn why egg yolk is such a good binder.

KEY TERMS

egg tempera

Paint made of pigment mixed with egg yolk. It was the main painting medium in Europe for about 200 years before oil paint.

tempera paint (school)

Today's washable poster paint, made of pigment, chalk or clay fillers and a water-soluble glue such as starch or cellulose.

acrylic paint

Paint made of pigment in an acrylic polymer (a kind of plastic) that dries into a flexible, waterproof film.

opaque

Not letting light through; covering what is underneath.

gesso

A white primer of chalk and glue spread on wood or canvas so paint sticks well and stays bright.

CORE IDEAS

You learned that paint is pigment plus binder. Now let us meet three binders and see how they change the paint. The oldest is **egg yolk**. Medieval and early Renaissance painters ground pigments with water and mixed them with yolk to make **egg tempera**. It dries in minutes to a tough, satin film that lasts for centuries. Painters laid it on in many thin, crisscrossing strokes over a smooth white panel coated with **gesso**.

The **tempera paint** in your classroom has the same name but is quite different. It is made of pigment, a filler like chalk, and a water-soluble glue. It is cheap, safe, washable and **opaque**, so it covers well. But because its glue dissolves in water, it can be rewetted, and if painted thickly it can crack and flake when the paper bends.

Acrylic paint was invented in the 1900s. Its binder is an acrylic polymer, a kind of liquid plastic mixed with water. While it is wet you can thin it with water and wash it off brushes. As the water evaporates, the tiny plastic particles join into a flexible, waterproof film. Once dry, it will not wash off, not from paper, not from clothes and not from your brush!

So which paint is best? It depends on the job. Watercolor is transparent and glowing. School tempera is safe, bright and easy to clean up. Acrylic is tough and permanent. Egg tempera is luminous and lasts for centuries. Good craftsmen know their materials and choose them on purpose.

Safety: wear old clothes for acrylics and wash brushes right away. Wash your hands after handling raw egg.

PICTURE STUDY



The Trinity, Andrei Rublev, about 1411–1425 · Egg tempera on wood panel · Tretyakov Gallery, Moscow

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

Andrei Rublev was a Russian monk and icon painter. This icon shows the three angels who visited Abraham (Genesis 18), and it has long been understood as a picture of the Holy Trinity. It is painted in egg tempera on a wooden panel coated with gesso, and after 600 years its colors still glow.

Look closely

- Look at the soft blues and greens in the robes. The blue is believed to come from lapis lazuli, a precious blue stone ground into powder.
- Notice how the three angels form a circle. Trace it with your finger.
- Look closely at the folds of the robes. Egg tempera painters built them up with thin strokes and highlights.
- Find the cup on the table in the center.

Talk about it

1. Why do you think the painter arranged the three angels in a circle?
2. How has egg tempera helped this painting last so long?
3. How does this icon feel: noisy or peaceful? Why?

STUDIO PROJECT

Make Egg Tempera and Test Three Paints

You will become a paint maker. First you will make egg tempera and paint a small panel. Then you will test school tempera and acrylic to see how their binders behave.

You will need

- 1 egg
- Dry pigment: powdered tempera, or a stick of soft chalk pastel crushed fine in a plastic bag
- A small dish, a spoon and an eye dropper or teaspoon of water
- A piece of thick cardboard or a wood scrap coated with white acrylic gesso (or white acrylic paint)
- Your test card from the warm-up
- Small brushes
- Paper towels, a damp cloth

Steps

1. With an adult, crack the egg and separate the yolk. Roll the yolk gently on a paper towel to dry it, pinch the yolk skin and let the liquid yolk drip into a dish. Throw away the skin.
2. Add about a teaspoon of water to the yolk and stir. This is your binder, called the egg medium.
3. Put a small pile of powdered pigment on a plate. Add a few drops of egg medium and mix with a spoon until it is like smooth cream. Make two or three colors.
4. On your gessoed board, lightly draw a simple design: a flower, a cross, a bird or a small house.
5. Paint with thin strokes. Egg tempera dries fast, so build color with many small, crisscrossing strokes rather than one thick coat.
6. Now test the warm-up card. Wipe each dry stripe with a damp cloth. Which paint comes off? Then bend the card. Does either paint crack?

7. Write your results in your sketchbook in a chart: paint, binder, does it rewet, does it crack, how does it look.
8. Wash your hands, brushes and dishes well after using raw egg.

Tips

- If the egg paint looks grainy, grind the pigment longer with the back of the spoon.
- Make only a little egg paint at a time; it dries out quickly and does not keep.

Check your work

- ☐ I can name the binder in egg tempera, school tempera and acrylic.
- ☐ I painted a small panel with paint I made myself.
- ☐ I recorded what happened when I wiped and bent the test card.

SKETCHBOOK PRACTICE

1. Draw and label a diagram: pigment + binder = paint, with four kinds of binder.
2. Paint the same small apple in watercolor, tempera and acrylic, and write one sentence about how each looked.
3. Look at the paint labels in your home art supplies and list what you can learn from them.

From history. Giotto, Fra Angelico and the icon painters of Russia and Greece all painted in egg tempera. In the 1400s oil paint gradually took its place in Europe, but icon painters have kept the egg tempera tradition alive to this day.

COMMON MISTAKES

- Using too much yolk, which makes sticky, shiny paint. Use a little at a time.
- Letting acrylic dry on a brush. Rinse brushes right away.
- Painting school tempera so thick that it cracks.

Make it a game • Binder Match. Make cards that match three paints with their binders and opaque or transparent quality: egg tempera with egg yolk, school tempera and acrylic with the binders from your lesson. Place them face down and play Concentration. A match scores a point. Say the binder aloud when you make a match.

Scripture. “And I have filled him with the spirit of God, in wisdom, and in understanding, and in knowledge, and in all manner of workmanship, To devise cunning works, to work in gold, and in silver, and in brass,” (Exodus 31:3-4, KJV)

God filled Bezalel with skill for making beautiful things for worship. Knowing your materials is part of good workmanship, and it is a gift from God.

5.3 PAPER: FIBERS, WEIGHT AND COTTON

OBJECTIVES

- Explain how paper is made from plant fibers.
- Explain paper weight and the difference between cotton and wood-pulp paper.
- Test several papers and choose the right one for a watercolor sky.

Warm-up. Tear a paper towel, a sheet of copy paper and a scrap of watercolor paper slowly. Hold each torn edge up to the light. What do you see sticking out of the edges?

WATCH

How do they turn wood into paper?

[Mystery Science](#) · 4:36

<https://www.youtube.com/watch?v=0VEJCWvfhQg>

WHEN TO WATCH

After the warm-up, before the core ideas.

BACKUP VIDEO

Cotton vs cellulose watercolour paper | What's the difference and which one you should choose?

[Anastasiia Lebedieva](#) · 5:06

https://www.youtube.com/watch?v=826yX1_RM5M

Watch in Session 2 before your paper test. She shows the difference between cotton and wood-pulp watercolor paper.

KEY TERMS

fiber

A tiny thread from a plant, such as wood or cotton. Paper is a flat mat of fibers stuck together.

pulp

Fibers mashed up with lots of water, ready to be made into paper.

paper weight

How heavy and thick paper is, given in pounds (lb) or grams per square meter (gsm). Copy paper is about 20 lb; good watercolor paper is 140 lb (300 gsm).

sizing

A coating or additive, like a very thin glue, that keeps paper from soaking up water like a paper towel.

tooth

The roughness of a paper's surface, which grabs pencil and pastel.

CORE IDEAS

Look closely at a torn piece of paper and you see tiny hairs sticking out. Those are **fibers**, tiny threads from plants. To make paper, fibers are mashed with water into a soup called **pulp**. The pulp is spread thin on a screen, the water drains away, and the fibers are pressed and dried. As they dry, they cling tightly to each other and become a sheet of paper.

Most paper today is made from wood fibers. Fine art paper is often made from **cotton**, the same plant that makes your T-shirts. Cotton fibers are longer and stronger than wood fibers, so cotton paper can be soaked, scrubbed and lifted without falling apart. Cotton paper also stays white for a very long time. Wood-pulp paper is cheaper and fine for practice, but it pills and tears sooner when it is very wet.

Paper weight tells how thick and heavy it is. Copy paper is about 20 lb. Drawing paper is about 60–90 lb. Watercolor paper is usually 140 lb (300 gsm) or even 300 lb. Heavier paper buckles less when wet.

Paper also has **sizing**, a thin glue mixed in or brushed on. Without sizing, paper drinks water like a paper towel and paint spreads out fuzzy. With sizing, paint sits on top long enough for you to move it. Paper also has **tooth**: rough paper grabs charcoal and pastel; smooth paper is best for pen and fine detail.

Choosing the right paper is like a carpenter choosing the right wood. The same painting can fail on copy paper and succeed on watercolor paper. Use cheap paper for practice and save your best paper for finished work.

PICTURE STUDY



The Blue Rigi, Sunrise, J. M. W. Turner, 1842 · Watercolor on paper · Tate Britain, London

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

Turner was an English painter who loved light, weather and water. In his old age he painted the Rigi mountain in Switzerland at different times of day. This sunrise version was painted on good, strong paper, which let him float washes, lift out light and even scratch into the surface to make tiny sparkles.

Look closely

- Find places where the paint melts softly from one color into another. That needed paper that could stay wet.
- Look for tiny bright lights on the water. Turner sometimes scratched the paper to make them.
- Compare the sharp dark details near the bottom to the soft, misty mountain.
- Find the line where the mountain meets its reflection.

Talk about it

1. What time of day is it, and how do you know?
2. What might have happened if Turner had painted this on thin paper?
3. Why do you think this painting is called the “Blue” Rigi?

STUDIO PROJECT

The Paper Lab and a Turner Sky

You will test four or five kinds of paper like a scientist, record the results, and then paint a glowing sunrise sky on the paper that did best.

You will need

- 4–5 kinds of paper cut into 3×5 in pieces: copy paper, construction paper, drawing paper, cheap watercolor paper and (if possible) one piece of 100% cotton watercolor paper
- Pencil, eraser
- Watercolor paints, size 8 or 12 brush, water
- Paper towels
- A ruler and your sketchbook for a results chart

Steps

1. Make a chart in your sketchbook with a row for each paper and columns: weight, feel (tooth), pencil, eraser, wash, scrub, dries flat?
2. Write the weight if it is on the package. Rub each paper and describe its tooth.
3. Draw a dark pencil scribble on each and erase half of it. Does the paper rough up?
4. Paint a wet wash of blue across each paper. Watch how fast it soaks in and whether the paper buckles.
5. When dry, scrub a small spot with a wet brush and blot it. Does the paper pill or tear?
6. Fill in your chart and circle the winner.
7. On a larger piece of your best paper, wet the top half with clean water. Drop in yellow near the horizon, then pink and pale blue above it, and let them blend.
8. While the sky is still damp, paint a soft blue mountain shape. When dry, add a darker shoreline and a few tiny boats.

Tips

- Be a fair scientist: use the same amount of water and the same brush for each test.
- Tape the edges of your final paper to the table to help it dry flat.

Check your work

- ☐ I tested every paper in the same way and recorded results.
- ☐ I can explain which paper did best and why.
- ☐ My sky has soft, blended colors without tears or pills.

SKETCHBOOK PRACTICE

1. With an adult, make a small sheet of recycled paper by blending torn scrap paper with water and pressing it on a screen.
2. Collect and label ten kinds of paper you find at home (tissue, cardboard, envelope, paper bag) and rate their tooth.
3. Draw the same leaf on smooth paper and on rough paper and compare.

From history. Paper was invented in China about 2,000 years ago, made from tree bark, hemp and old rags. It reached Europe through the Islamic world by about 1100. For centuries European paper was made from old linen and cotton rags, which is why so many old drawings on paper still survive.

COMMON MISTAKES

- Using copy paper for watercolor and blaming yourself when it buckles.
- Scrubbing wet paper, which tears the fibers.
- Not taping down wet paper so it curls.

Make it a game • Paper Two Truths. Write three statements about paper: two true and one false. Use facts such as fibers, pulp, weight, cotton and sizing. Your parent finds the false one. Then your parent writes three and you guess. One point for each correct. Hold two sheets to the light and look at the fibers.

5.4 INK, QUILL AND NIB

OBJECTIVES

- Explain what ink is made of and the difference between carbon ink and iron gall ink.
- Use a dip pen to make thick and thin lines, hatching and stippling.
- Make a careful pen-and-ink drawing of a natural object.

Warm-up. With a regular pen, write your name slowly. Then try writing it with the side of a craft stick dipped in a little watered-down paint. How is the line different? Which tool gives you thick and thin lines?

WATCH

What I wish I had known about dip pens when I started

[Chloe Gendron](#) · 7:24

<https://www.youtube.com/watch?v=ZZKw9lnSlpg>

WHEN TO WATCH

After the core ideas. Learn how nibs, holders and inks work before you try your own dip pen.

BACKUP VIDEO

Quill Pen | How to Make Everything: Book

[How To Make Everything](#) · 7:25

<https://www.youtube.com/watch?v=eDbtJOjFv7s>

Watch in Session 1, after the core ideas, to see how a goose feather becomes a quill pen.

KEY TERMS

ink

A liquid of very fine pigment or dye with a binder, made for writing and drawing.

carbon ink

Black ink made from soot (lamp black) and a binder such as gum arabic. India ink is a waterproof carbon ink.

iron gall ink

Ink made from oak galls (round growths on oak trees) and iron, used in Europe for over a thousand years.

quill

A pen made from a large bird feather, cut to a point at the hollow end.

nib

The metal point of a dip pen, split down the middle so it holds ink and makes thicker lines when pressed.

CORE IDEAS

Ink is just another paint, made thin and smooth enough to flow from a pen. The oldest black ink is **carbon ink**: soot collected from burning oil or wood, ground very fine and mixed with gum arabic. It is deep black and does not fade. **India ink** is carbon ink with a binder that makes it waterproof once dry.

For more than a thousand years, European scribes also used **iron gall ink**. They crushed oak galls (hard, round lumps that grow on oak twigs when a tiny wasp lays its eggs there), soaked them, and mixed in iron salt and gum arabic. The ink goes on pale and darkens to black as it meets the air. Many old documents and drawings were written with it.

Before steel pens, writers used a **quill**, the long flight feather of a goose or swan. The hollow end was hardened, then cut with a small knife (a “penknife”) into a slanted point with a slit up the middle. The slit holds ink and lets the point spread a little when pressed. In the 1800s, factories began making steel **nibs**, which work the same way and stay sharp much longer.

To use a dip pen: dip the nib only up to the hole in the middle, then touch it on the rim of the jar to drop off extra ink. Hold it at a low angle. Pull the pen toward you; never push it forward, or it will catch and splatter. Press lightly for thin lines and a little harder for thicker lines. Re-dip often.

Ink cannot be erased, so start with a light pencil sketch. Work from thin, light lines to dark, heavy ones. Keep a paper towel handy, keep the ink jar in a heavy cup so it cannot tip, and cover the table. Wipe the nib clean when you finish.

PICTURE STUDY



Lindisfarne Gospels: opening page of Matthew, Eadfrith of Lindisfarne (traditionally named as the scribe), about 715–720 · Ink and pigments on vellum · British Library, London

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

On Lindisfarne, a small island off the coast of England, a monk spent years copying and decorating the four Gospels by hand. He wrote with quill pens on vellum (prepared calfskin), and made his inks and paints from soot, minerals and plants. This page begins the Gospel of Matthew.

Look closely

- Find the giant letters at the start of the page. How many can you read?
- Follow one woven ribbon of the knotwork with your finger. Where does it go?
- Look for the thousands of tiny red dots. Each one was put on by hand.
- Find places where thin black ink lines outline the colored shapes.

Talk about it

1. How long do you think it took to make this one page?
2. Why would a monk put so much work into copying a book of the Bible?
3. What tools and materials did the monk need to make this page?

STUDIO PROJECT

A Feather in Pen and Ink

You will practice dip pen marks, then make a careful pen-and-ink drawing of a feather (the very thing quills were made from), using contour lines and hatching.

You will need

- Dip pen holder and nib (a general-purpose drawing nib)
- Black ink (India ink or washable drawing ink) in a small jar set inside a heavy mug
- Smooth drawing paper (a heavier, smooth paper works best)
- Pencil and eraser
- Paper towels and newspaper to cover the table
- A real feather (or a clear photo of one)
- Old shirt or apron

Steps

1. Cover the table. Put the ink jar inside a heavy mug so it cannot tip over.
2. Practice page: make rows of thin lines, thick lines (press a little), lines that swell from thin to thick, hatching, cross-hatching and stippling. Remember to pull the pen toward you.
3. Lightly draw your feather with pencil, large on the page. Draw the central shaft first, then the outer contour of the vanes.
4. Ink the shaft with a smooth, steady line, a little thicker at the base.
5. Draw the vanes with many fine, curved lines going outward from the shaft, following the direction of the barbs. Leave some gaps where the feather splits.
6. Shade one side of the feather with closer lines or light cross-hatching to show it curves.
7. Let the ink dry completely (about 15 minutes), then erase the pencil gently.
8. Clean the nib with water and a paper towel and dry it so it does not rust.

Tips

- If the pen scratches or catches, you are probably pushing it. Turn your paper so you can pull every stroke.
- If you get a blot, do not wipe it. Let it dry and turn it into part of the drawing, or start again on fresh paper.

Check your work

- ☐ My practice page shows thin, thick and swelling lines, hatching and stippling.
- ☐ My feather drawing has a steady shaft line and fine, curved barbs.
- ☐ I kept the ink neat and cleaned my nib.

SKETCHBOOK PRACTICE

1. Write the first letter of your name in your best dip pen lettering, ten times, and circle the best one.
2. Draw a leaf with the dip pen using only stippling.
3. Draw three tools your family uses every day in pen and ink.

From history. Making a large Gospel book took many calfskins for the pages and years of careful work. Some scribes wrote little notes in the margins about cold fingers or tired eyes, reminding us they were real people doing patient work for the glory of God.

COMMON MISTAKES

- Dipping the whole nib into the ink, which causes blobs. Dip only to the hole.
- Pushing the pen forward, which makes it catch and spatter.
- Erasing pencil before the ink is dry, which smears it.

Make it a game • Pen Gauntlet. With a dip pen, a marker or a fine pen, race a sixty-second timer to make one thick line, one thin line, a hatched square and a stippled square. Your parent scores each from one to three. Then name the two inks: carbon ink and iron gall ink. Beat your best score. Draw a feather.

Scripture. “I wrote them with ink in the book.” (Jeremiah 36:18, KJV)

Baruch, the helper of the prophet Jeremiah, wrote down God’s words with ink, and scribes like the monks of Lindisfarne carried on that careful work, copying Scripture letter by letter so it could be passed on.

UNIT 5

MATERIAL SCIENCE

What is paint, really? Why does watercolor glow while poster paint looks chalky? Why do some papers buckle and tear while others take a flood of water? In this unit you become an art scientist. You will learn that every paint is made of two things, **pigment** (the colored powder) and **binder** (the glue that holds it to the surface), and that every paper is a mat of tiny plant fibers.

You will test materials, keep careful notes, make your own egg paint the way icon painters did 600 years ago, and draw with a dip pen and ink like the monks who made the Lindisfarne Gospels. Knowing your materials is part of good craftsmanship: the right tool, used well, makes beautiful work last.

PREREQUISITES

- Can mix colors and keep a brush clean (Unit 3)
- Can shade with hatching and stippling (Unit 1)
- Has watercolor paints, tempera, a small set of acrylics, several kinds of paper and a dip pen with ink

MASTERY CHECKLIST

- ☐ I can explain that paint is pigment plus binder, and name the binder in watercolor, egg tempera, poster tempera and acrylic.
- ☐ I can glaze transparent watercolor layers so the colors mix on the paper.
- ☐ I can explain paper weight and why cotton paper is stronger than wood-pulp paper.
- ☐ I can draw with a dip pen, controlling thick and thin lines and keeping the ink neat.

LESSONS IN THIS UNIT

5.1 Watercolor: Transparent Layers and Glazing

2 sessions of 45 minutes

5.2 Tempera and Acrylic: What Holds the Color

2 sessions of 45 minutes

5.3 Paper: Fibers, Weight and Cotton

2 sessions of 45 minutes

5.4 Ink, Quill and Nib

2 sessions of 45 minutes

UNIT 5 REVIEW

Answer each question aloud or in writing. Total: 50 points.

1. (5 pts)

What are the two main parts of every paint, and what does each one do?

2. (5 pts)

What is the binder in watercolor, and where does it come from?

3. (5 pts)

What is a glaze, and what must you do before painting one?

4. (5 pts)

What was the binder in egg tempera? Name one famous artwork made with it.

5. (5 pts)

Why does acrylic paint not wash off once it is dry?

6. (5 pts)

What is paper made of?

7. (5 pts)

Why is cotton paper stronger than wood-pulp paper for watercolor?

8. (5 pts)

What does “140 lb” on a pad of watercolor paper tell you?

9. (5 pts)

What were the two main kinds of black ink used by scribes, and what was each made from?

10. (5 pts)

Name two rules for using a dip pen.

ANSWER KEY

1. Pigment gives the color; binder holds the pigment together and glues it to the surface.
2. Gum arabic, from the sap of the acacia tree.
3. A thin transparent layer of paint over another color. The first layer must be completely dry.
4. Egg yolk. For example Rublev's *Trinity* (or works by Giotto or Fra Angelico).
5. Its binder is an acrylic polymer, a kind of plastic, that dries into a waterproof film.
6. Plant fibers (from wood, cotton or other plants) mashed into pulp, spread thin, pressed and dried.
7. Cotton fibers are longer and stronger, so the paper can be soaked and scrubbed without pilling or tearing.
8. Its weight, which tells how thick and heavy it is. 140 lb is good watercolor paper that buckles less.
9. Carbon ink (soot and gum arabic) and iron gall ink (oak galls, iron salt and gum arabic).
10. Any two: dip only to the hole; touch off extra ink; pull the pen toward you, never push; press lightly for thin lines and harder for thick; keep the ink jar from tipping; clean the nib after.

PORTFOLIO PIECE: A NATURE PAGE IN INK AND WATERCOLOR

Choose a plant, flower, shell or bird feather and make a nature-journal page on good watercolor paper. Draw it with a dip pen and ink using contour lines and hatching. When the ink is completely dry, add color with transparent watercolor glazes. Label the page with the name of your subject, the date, and a short list of the materials you used and what each is made of.

LOOK FOR	WHAT IT MEANS
Pen work	Ink lines are controlled, with thick and thin lines and neat hatching, and no smears.
Watercolor glazes	Color is built in at least two transparent layers, with the white paper saved for lights.
Right paper	The student chose paper that holds both ink and watercolor without buckling badly or pilling.
Material notes	The labels correctly name the materials and their binders or fibers.
Craftsmanship	The page is clean, well arranged, signed and dated.

UNIT 6

TEXTURE, PRINTMAKING AND SCULPTURE

Texture is how something feels, or how it looks like it would feel: soft fur, rough bark, smooth glass. In this unit you will learn to draw textures so well that people want to touch your paper. Then you will step away from drawing to make art in new ways: by printing, by carving and by building with clay.

Printmaking lets you make many copies of one picture. Sculpture lets you make art you can walk around. You will learn the two great ways of making sculpture, taking material away and adding it on, and you will finish the unit with a clay animal of your own design. Along the way you will meet Dürer's famous hare and rhinoceros, Michelangelo's *Moses* and the ancient bronze horses of Venice.

PREREQUISITES

- Can draw animals from simple shapes (Unit 2)
- Can shade with hatching and stippling (Unit 1)
- Has foam printing plates, printing ink or tempera, a brayer, a bar of soap and air-dry clay

MASTERY CHECKLIST

- ☐ I can draw at least six different textures with pencil or pen marks.
- ☐ I can make a relief print and explain why the picture prints backward.
- ☐ I can explain the difference between additive and subtractive sculpture and give an example of each.
- ☐ I can build a sturdy clay animal, join parts by scoring and slipping, and let it dry slowly.

LESSONS IN THIS UNIT

6.1 Drawing Texture

2 sessions of 45 minutes

6.2 Relief Printing with Foam

2 sessions of 45 minutes

6.3 Carving Away and Building Up

2 sessions of 45 minutes

6.4 A Clay Animal

2 sessions of 45 minutes

UNIT 6 REVIEW

Answer each question aloud or in writing. Total: 50 points.

1. 5 pts

What is the difference between actual texture and implied texture?

2. 5 pts

Describe the marks you would use to draw fur and to draw wood.

3. 5 pts

In a foam relief print, do the lines you press into the plate print dark or white? Why?

4. 5 pts

Why must words be drawn backward on a printing plate?

5. 5 pts

What is an edition, and how do printmakers number it?

6. 5 pts

What is the difference between additive and subtractive sculpture? Give one example of each.

7. 5 pts

Why should you carve from big shapes to small details?

8. 5 pts

What does “score and slip” mean, and why is it needed?

9. 5 pts

Why must clay dry slowly?

10. 5 pts

How did Dürer make his *Rhinoceros*, and why did so many people see it?

ANSWER KEY

1. Actual texture can really be touched; implied texture is drawn or painted to look like a texture on a flat surface.
2. Fur: many short strokes in the direction the hair grows, dark at the roots, light at the tips. Wood: long, wavy, mostly parallel lines with knots.
3. White, because the grooves are low and do not touch the ink on the brayer or the paper.
4. Because the print is a mirror image of the plate.
5. A set of matching prints from one plate. They are numbered like 1/4, 2/4, 3/4, 4/4 in pencil below the image.
6. Additive builds up material (clay modeling); subtractive takes material away (carving marble, wood or soap).
7. So you can get the overall shape right first and so small details do not break off while you work on other parts.
8. Scratch both pieces and add slip before joining them; otherwise the pieces will separate as the clay dries.
9. Clay shrinks as it dries. If some parts dry faster than others, it cracks.
10. He made a woodcut from a description and sketch; because it was a print, thousands of copies could be made and shared.

PORTFOLIO PIECE: AN ANIMAL THREE WAYS

Choose one animal and show it three ways: a drawing with at least three textures, a signed print from your foam plate (or a new plate), and your clay or soap sculpture. Mount the drawing and the print on one large sheet of paper and set the sculpture in front. Write a short label explaining which work is additive, which is subtractive, and which is a relief print.

LOOK FOR	WHAT IT MEANS
Texture drawing	The drawing shows at least three clear, observed textures with light and shadow.
Print	The print is clean and clear, with strong lines and textures, signed and numbered in pencil.
Sculpture	The sculpture is sturdy, well joined or carefully carved, and looks good from all sides.
Label	The label correctly uses the words additive, subtractive and relief print.
Craftsmanship	The display is neat and the works are finished with care.

6.1 DRAWING TEXTURE

OBJECTIVES

- Tell the difference between real (actual) texture and implied (drawn) texture.
- Invent marks to show fur, feathers, wood, stone, metal and water.
- Draw an animal or object with at least three convincing textures.

Warm-up. Close your eyes. Have a parent hand you five objects one at a time (a sponge, a coin, a pine cone, a piece of fabric, a leaf). Describe how each feels in two words before you open your eyes.

WATCH

Learn To Draw Texture! | Jump into Drawing for Kids

Craftsy · 4:56

<https://www.youtube.com/watch?v=7PuXjS43CEk>

WHEN TO WATCH

After the warm-up and core ideas. Draw each texture along with him.

Note: At the end the channel advertises a paid class; you can stop there.

BACKUP VIDEO

Texture Practice Tutorial

Rebekah Hower · 11:22

<https://www.youtube.com/watch?v=evP2Wtgpm0Q>

Use in Session 2 for more textures: wood grain, water drops, brick, grass, fur and rock.

KEY TERMS

texture

How a surface feels, or looks like it would feel.

actual texture

Texture you can really touch, like the bumps of thick paint or the grain of a carving.

implied texture

Texture that is drawn or painted to look real, though the paper is actually flat.

mark-making

The different kinds of lines, dots and strokes an artist uses to show texture and value.

CORE IDEAS

Rub your hand on your paper. It feels smooth. Yet artists can make that smooth paper look like fur, stone or rippling water. That is **implied texture**: a texture that is drawn, not real. **Actual texture** is one you can really feel, like the ridges on a clay pot.

Each texture needs its own kind of mark. **Fur** is many short strokes in the direction the hair grows, flicked from dark roots to light tips. **Wood** is long, wavy, mostly parallel lines with a few knots. **Stone** is irregular shapes with dark cracks and speckled stippling. **Metal** and glass are smooth, with sharp, bright highlights right next to strong darks. **Water** is wavy horizontal lines and reflections.

Texture is also shown by light and shadow. Every bump on bark has a light side and a shadow side. If you put tiny shadows under each scale on a pine cone, it looks bumpy. Smooth things have smooth gradations; rough things have many small, broken lights and darks.

Do not cover every inch with texture. Our eyes see texture most clearly where the light changes, at the edges and in the halftones. In the bright light and the deep shadow, details disappear. Leaving some areas simpler makes a drawing look more real, not less.

Texture invites people to look closer. When you draw the softness of a rabbit's fur or the roughness of a fence post, you are helping others notice the wonderful variety of the world.

PICTURE STUDY



Young Hare, Albrecht Dürer, 1502 · Watercolor and gouache on paper · Albertina, Vienna

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

This is one of the most famous animal paintings in the world. Dürer painted every hair of this young hare with a very fine brush. Many people say they feel they could stroke its fur.

Look closely

- Follow the direction of the hairs on the back, the sides and the ears. Do they all go the same way?
- Find the long whiskers. Are they painted light or dark?
- Look at the eye. Can you see a tiny window reflected in it?
- Find the soft shadow under the hare.

Talk about it

1. How did Dürer make the fur look soft?
2. Is this actual texture or implied texture?
3. Where are the hairs most detailed, and where are they simpler?

STUDIO PROJECT

A Texture Sampler and a Textured Animal

You will make a sampler of eight textures, then draw an animal in its setting using at least three textures.

You will need

- Drawing paper
- HB, 2B and 4B pencils (or a fine black pen)
- Kneaded eraser
- Real texture samples to look at: a piece of bark, a stone, a feather, a coin, fabric
- A photo of an animal such as a rabbit, owl, hedgehog or sheep

Steps

1. Draw a grid of eight 2-inch boxes. Label them fur, feathers, wood, stone, metal, water, grass and fabric.
2. Fill each box with that texture. Look at a real sample or photo for each one; do not just guess.
3. Underneath, write which marks you used for each (short strokes, wavy lines, stippling, sharp highlights).
4. On a new sheet, lightly construct your animal from simple shapes, as you learned in Lesson 2.4.
5. Add a setting with at least two other textures: the animal might sit on a stone, beside a wooden post, or in grass.
6. Decide where the light comes from. Shade the big lights and darks first.
7. Add texture marks, most clearly in the halftones and at edges, and less in the brightest light and darkest shadow.
8. Darken a few accents (the eye, the deepest shadows) last.

Tips

- Turn your paper so your hand moves in the direction of the fur or grain.

- Lift out a few light hairs or highlights with a sharp edge of your kneaded eraser.

Check your work

- ☐ My sampler shows eight different textures that are easy to tell apart.
- ☐ My animal drawing has at least three textures.
- ☐ My textures follow the light, with simpler areas in bright light and deep shadow.

SKETCHBOOK PRACTICE

1. Take a texture walk outside and draw five small textures you find.
2. Draw a shoe, a sweater and a wooden spoon on one page, showing how each surface is different.
3. Draw a bird and its feathers using only pen marks.

From history. Dürer's nature studies were so admired that other artists copied them for generations, sometimes even trying to pass the copies off as his. The original *Young Hare* is so delicate that the museum shows it only for short periods to protect its colors from light.

COMMON MISTAKES

- Using the same scribble for every texture. Look closely at the real thing.
- Drawing fur as outlines of hair instead of short strokes.
- Covering every inch with texture so the drawing looks busy and flat.

Make it a game • Texture Duel. Your parent picks a word from a hat: wood, stone, metal, water, fur or feathers. Both of you draw a texture patch for twenty seconds. Swap papers. Guess which texture the other drew. One point for each correct guess. Do six rounds. Then draw a textured animal.

6.2 RELIEF PRINTING WITH FOAM

OBJECTIVES

- Explain how a relief print works.
- Design and press a picture into a foam printing plate, remembering that it prints in reverse.
- Pull a small edition of clean prints and sign them like a printmaker.

Warm-up. Write your name on a piece of paper in marker, then hold it up to a mirror. Now try to write your name backward so it reads correctly in the mirror. This is the printmaker's puzzle.

WATCH

Foam Relief Printmaking Art Tutorial - Art With Trista

Art With Trista • 8:05

<https://www.youtube.com/watch?v=2F32VQJIm4g>

WHEN TO WATCH

Before the studio project. Watch how the design is pressed into the foam and how the ink is rolled and the paper is rubbed.

BACKUP VIDEO

How to do Foam Printmaking

TheLoganSchoolArt • 5:10

<https://www.youtube.com/watch?v=4fs4XJ9heDo>

A second demonstration of foam printing from start to finish.

KEY TERMS

relief print

A print made from a surface where the raised parts take the ink and the cut-away or pressed-down parts stay white.

printing plate

The block or sheet that carries the design, such as wood, linoleum or foam.

brayer

A small rubber roller used to spread ink evenly on a plate.

edition

A set of matching prints from the same plate, each numbered, such as 1/4, 2/4, 3/4, 4/4.

woodcut

A relief print made by carving a design into a block of wood.

CORE IDEAS

Have you ever used a rubber stamp? Then you have made a **relief print**. The raised parts of the stamp touch the ink and print. The low parts stay clean and print white. Woodcuts, linocuts and foam prints all work this way.

On a foam plate, you press your design in with a dull pencil. Every line you press becomes a low groove. When you roll ink over the plate, the grooves stay empty. So your lines print **white** on a colored background. Big areas you press down completely will also print white.

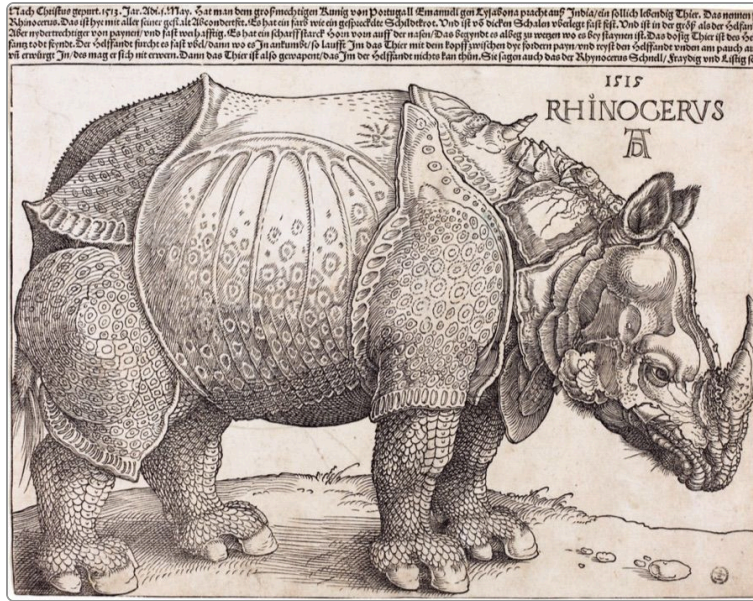
Printing has one big puzzle: **the print comes out backward**, like a mirror image. A bird facing left on the plate will face right on the paper. Letters and numbers must be drawn backward on the plate to print correctly. Many beginners forget this, so plan ahead, or simply avoid words.

To print: squeeze a little ink onto a tray and roll the brayer until it makes a soft, even hiss. Roll the ink over the plate in several directions. Lay paper on top, rub firmly all over with your hand or the back of a spoon, and peel it off. This is called “pulling” a print. Each print will be a little different, and that is part of its charm.

Because you can pull many prints from one plate, printmaking let people share pictures widely long before cameras. A set of matching prints is an **edition**.

Printmakers sign each one in pencil below the image, with the number, the title and their name.

PICTURE STUDY



Dürer's Rhinoceros, Albrecht Dürer, 1515 · Woodcut on paper · Prints in many museums, including the British Museum, London, and the National Gallery of Art, Washington

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

In 1515 a living rhinoceros arrived in Portugal as a gift for the king. Dürer never saw it. He made this woodcut from a written description and a quick sketch someone sent him. It was printed thousands of times, and for over two hundred years many Europeans believed rhinoceroses really looked like this.

Look closely

- Find the different textures Dürer carved: scales, wrinkles, plates and patterns.
- Look at how he used lines to show the rhino is round, not flat.
- Find the strange small horn on the rhino's back. A real rhinoceros does not have one.
- Look at the words at the top. In a woodcut, how would Dürer have carved them?

Talk about it

1. Why do you think Dürer drew the skin like armor?
2. Why could so many people see this picture, when only a few people saw the real rhinoceros?

3. What does this teach us about drawing from life instead of from someone else's description?

STUDIO PROJECT

A Printed Animal Edition

You will design an animal print with strong textures, press it into a foam plate and pull an edition of four prints.

You will need

- Foam printing plate (or a clean, flat foam tray with the edges cut off), about 4×6 in
- Dull pencil or ballpoint pen with no ink
- Water-based block printing ink or thick tempera
- Soft rubber brayer and a tray or cookie sheet for rolling ink
- Paper slightly bigger than the plate (6–8 sheets)
- A large spoon
- Newspaper, paper towels, apron

Steps

1. Draw your animal design on scrap paper the same size as the plate. Make it big and add at least two textures (scales, fur, feathers, grass). No words unless you write them backward.
2. Tape the drawing on top of the foam plate and trace it with a pencil, pressing firmly. Remove the paper.
3. Go over all the lines again on the foam itself, pressing deeper. Do not poke through.
4. Add textures: rows of short lines, dots pressed with a pencil point, or areas pressed flat.
5. Squeeze a line of ink on the tray and roll the brayer until it is evenly coated. Roll ink across the plate in two or three directions.
6. Place the plate ink-side up on clean newspaper. Lay a sheet of paper on top and rub all over firmly with your palm and the back of the spoon.
7. Peel the paper off slowly from one corner. Lay it flat to dry. Re-ink and print three or four more.

8. When dry, choose your best four. Below each image, write in pencil: the number (1/4, 2/4...) on the left, the title in the middle and your name on the right.

Tips

- If the print is blotchy, you used too little ink. If the lines fill in, you used too much or pressed too lightly.
- Try printing one copy on colored paper or with a different color ink.

Check your work

- ☐ My lines and textures printed white and clear.
- ☐ I remembered that the print would be backward.
- ☐ I have an edition of four prints, numbered and signed in pencil.

SKETCHBOOK PRACTICE

1. Draw three ideas for future prints and mark which parts will print white.
2. Collect objects with interesting textures (a leaf, lace, a button) and press them into scrap foam to see what prints.
3. Copy a small part of an old woodcut from a book and notice how all the shading is made of lines.

From history. Woodcuts were the first way Europeans printed pictures in large numbers. Dürer made woodcuts of Bible scenes, such as his series on the life of the Virgin Mary and the Passion of Christ, which spread his fame across Europe.

COMMON MISTAKES

- Pressing too lightly, so the lines fill with ink and disappear.
- Writing words forward, so they print backward.
- Rolling too much ink. A thin, even coat makes the clearest print.

Make it a game • Backward Secret Message. Write a secret word on a foam plate or foam sheet, reversed so that it prints correctly. Ink it with a roller or paint, press it on paper and show your parent. Can they read it? One point if they can. Then print a small edition of three, numbered 1/3, 2/3 and 3/3.

6.3 CARVING AWAY AND BUILDING UP

OBJECTIVES

- Explain additive and subtractive sculpture and give examples of each.
- Plan a carving by drawing on all sides of a block.
- Carve a simple animal from a bar of soap, working slowly from big to small.

Warm-up. Take a lump of clay or playdough. First, add small pieces to build a little snail. Then, take a new lump, squeeze it into a block, and use a spoon to scoop away pieces until a snail appears. Which way felt easier? Which could you fix if you made a mistake?

WATCH

How to Carve Soap into a Sculpture

Bethany Thiele, Art Teacher · 6:36

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

WHEN TO WATCH

Before you carve. Pause after each step to look at how she plans the shape on every side.

Note: She uses ceramic carving tools with older students. A plastic knife, a spoon, a craft stick and a toothpick work well for this age.

BACKUP VIDEO

#MetKids—How to Make a Soap Carving

The Met · 2:33

<https://www.youtube.com/watch?v=Y17RweezGi8>

A short museum video for children showing a simple soap carving from start to finish.

KEY TERMS

sculpture

Art made in three dimensions, which you can walk around or view from more than one side.

subtractive sculpture

Sculpture made by taking material away, such as carving stone, wood or soap.

additive sculpture

Sculpture made by adding or building up material, such as modeling clay or welding metal.

in the round

A sculpture meant to be seen from every side.

marble

A hard, often white stone that sculptors have carved for thousands of years.

CORE IDEAS

There are two great ways to make a sculpture. In **subtractive** sculpture you start with a block and take away everything that is not your sculpture. Carving marble, wood or soap is subtractive. In **additive** sculpture you start with nothing and build up, adding clay, wax, paper or metal piece by piece.

Subtractive sculpture needs careful planning, because you cannot put back what you have cut away. Michelangelo said he saw the figure inside the block and only freed it. Sculptors draw their design on the front, the sides and the top of the block before they start. Then they rough out the big shape first and slowly work toward details.

Always carve from big to small. Take off the corners and large chunks first, turning the block often to check every side. Then carve the medium shapes, like a head or a tail. Save small details, like eyes and scales, for last. If you carve details too early, they may break off as you work on other parts.

Soap is a good carving material for beginners. It is soft, cheap and safe, and it behaves a little like stone: it chips, it has a grain, and thin parts break easily. So design a compact animal, like a fish, a turtle, a seal or a sleeping cat, with no thin legs or tails sticking out.

Safety: carve with a plastic knife or a spoon, always moving the tool away from your hand and body. Work over a tray to catch the shavings. Wash your hands after carving and do not rub your eyes.

PICTURE STUDY



Moses, Michelangelo, about 1513–1515 · Marble · San Pietro in Vincoli, Rome

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

Michelangelo carved this statue of Moses for the tomb of Pope Julius II. It shows Moses holding the tablets of the Ten Commandments. Michelangelo carved it out of a single block of marble, removing stone with chisels and files until the figure appeared. The two small horns on his head come from an old way of translating the Bible's words about Moses' shining face.

Look closely

- Look at the long, rippling beard. How do you think Michelangelo carved such deep curls out of solid stone?
- Find the tablets of the Law under his arm.
- Notice how the cloth folds over his knees. Does it look heavy or light?
- Look at the direction he is turning his head. What might he be looking at?

Talk about it

1. Is this additive or subtractive sculpture? How do you know?
2. What would happen if Michelangelo carved too much away from the nose?
3. How does the sculptor make hard marble look like soft hair and cloth?

STUDIO PROJECT

A Soap Carving

You will design and carve a small animal from a bar of soap, planning it on all sides and working from big shapes to small details.

You will need

- A bar of plain, rectangular soap (a softer white soap works best)
- A plastic knife, a spoon, a craft stick, a toothpick or paper clip
- A pencil and paper
- A tray or newspaper to catch shavings
- A soft damp cloth

Steps

1. Trace around the bar of soap on paper three times: front view, side view and top view.
2. Draw your animal in each traced shape. Make it fill the shape and keep it compact, with no thin parts sticking out.
3. Use a toothpick to scratch your side-view design onto one large face of the soap, and the top view onto the top.
4. Rough out: carve away the big areas outside your design with the plastic knife, taking thin slices. Turn the bar often.
5. Round the corners into curves with the spoon or knife so the animal looks soft and solid.
6. Carve medium shapes: the head, a fin or flipper, folded legs.
7. Add small details last with the toothpick: eyes, scales, feathers or fur lines.
8. Smooth the surface gently by rubbing it with a slightly damp cloth or your fingertip.

Tips

- Take thin slices. If you dig deep, the soap may crack.
- Save the shavings in a jar and use them for washing hands; nothing is wasted.

Check your work

- ☐ I planned my animal on the front, side and top.
- ☐ I carved from big shapes to small details.
- ☐ My animal looks good from every side.

SKETCHBOOK PRACTICE

1. Draw an object from the front, side and top, like an architect's plan.
2. List five sculptures or objects around you and decide if each was made by adding or taking away.
3. Draw the *Moses* or another statue, noticing how the cloth folds.

From history. Michelangelo grew up near the marble quarries of Carrara, Italy, and went there himself to choose his blocks. He began as a boy carving stone and spent his whole life sculpting, painting and designing buildings, including the great dome of St. Peter's Basilica in Rome.

COMMON MISTAKES

- Carving the details of the face first, then breaking them off later.
- Choosing a design with thin legs or a long tail that snaps.
- Carving only from the front and forgetting the sides and back.

Make it a game • Add or Carve Jump. Mark two spots on the floor: ADD and CARVE. Your parent calls a sculpture action, such as carving marble, whittling soap, pinching clay, adding coils, chipping stone or building up wax. Jump to the right spot. Say additive or subtractive. One point for each correct. Twelve calls. Then plan your soap carving.

6.4 A CLAY ANIMAL

OBJECTIVES

- Explain what clay is and why it must dry slowly.
- Build a sturdy clay animal using additive methods.
- Join clay pieces securely by scoring and slipping and add texture with tools.

Warm-up. Roll a small ball of clay into a long snake and bend it into a U. Does it crack? Now dip your finger in water, smooth the clay, and try again. Notice how water changes the clay.

WATCH

Create air dry clay animals, easy step by step

Mont Marte Art • 8:38

<https://www.youtube.com/watch?v=dT6q2Vwei30>

WHEN TO WATCH

Before you build. Watch how each animal starts from a simple ball or egg shape.

Note: The video makes four small animals. Use their method, but make your own animal a little bigger and with more detail.

KEY TERMS

clay

A soft earth made of tiny flat particles of weathered rock. With water it is moldable; when dry it is hard.

slip

Clay thinned with water to a mud like thick yogurt, used as glue between clay pieces.

score and slip

Scratching crisscross lines on two pieces of clay and adding slip (clay mixed with water) before pressing them together, so they hold.

armature

An inside support, like a ball of foil, that helps a sculpture keep its shape and saves clay.

bronze

A metal made mostly of copper and tin,
used for casting sculptures.

CORE IDEAS

Clay is earth: rock that has been worn down by water and weather into tiny, flat particles, so small you cannot see them. When they are wet, water lets the flat particles slide over each other, so clay bends and stretches. When the water leaves, they lock together and the clay becomes hard. Air-dry clay also has added fibers and binders to make it stronger without a kiln.

As clay dries, it **shrinks**. If one part dries faster than another, for example a thin leg drying faster than a thick body, the clay pulls apart and cracks. That is why clay should dry **slowly and evenly**: loosely covered with a plastic bag for a day or two, then uncovered, away from heaters and sunny windows.

Pieces of clay do not stick together just by pressing. You must **score and slip**: scratch crisscross marks on both surfaces, brush on a little slip, press them together firmly and smooth the seam with your finger or a tool so you cannot see it. Joints that are not scored and slipped will fall apart when the clay dries.

Plan for strength. Heavy bodies on thin legs will sag or crack, so choose a pose where the animal is lying down, sitting, or curled up, with its legs tucked under. If the body is thick, build it around a ball of crumpled foil (an **armature**) so it dries evenly and is lighter.

Clay is additive sculpture, but you can still carve and press it. Add texture with a fork, a toothpick, a pencil or a comb: fur, feathers, scales or shell patterns. Ancient sculptors often modeled their figures in clay or wax first and then cast them in **bronze**.

PICTURE STUDY



The Horses of Saint Mark, Unknown ancient sculptor, Probably 2nd–3rd century AD (dates are uncertain) · Gilded copper alloy (cast metal) · St Mark's Basilica, Venice (the originals are inside; copies stand on the front)

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

These four horses are among the oldest and most traveled sculptures in the world. They were made in ancient times, carried to Constantinople, brought to Venice in 1204, taken to Paris by Napoleon, and returned to Venice. They were first modeled, probably in clay or wax, and then cast in metal and covered with gold.

Look closely

- Look at the lifted front leg on each horse. How does it make them seem to walk?
- Find the arched necks and the folds of skin. What texture did the sculptor give the manes?
- Notice the four horses are almost alike but turned slightly differently. Why might that be?
- Look at the thick, strong legs. How do they hold up such heavy bodies?

Talk about it

1. Are these horses additive or subtractive sculpture? (Think about how they were first modeled.)

2. Why do you think people have wanted to own these horses for so many centuries?
3. Which pose would be easier to make in clay: a galloping horse or a horse lying down? Why?

STUDIO PROJECT

My Clay Animal

You will design and build a clay animal about the size of your fist, using simple forms, scoring and slipping, and texture tools.

You will need

- Air-dry clay (about 1 lb per student)
- A small cup of water and a cup of slip (clay mashed with water)
- Tools: craft stick, toothpick, fork, plastic knife, old toothbrush or paintbrush for slip
- Aluminum foil
- A placemat, board or canvas cloth to work on (keep clay off carpets)
- A plastic bag for slow drying
- Tempera or acrylic paint for later (optional)

Steps

1. Sketch your animal in a sturdy pose (lying down, sitting or curled up) from the front and side.
2. Crumple a small ball of foil for the body core. Flatten a slab of clay and wrap it around the foil, smoothing it into the body shape.
3. Roll a ball or egg for the head. Score and slip both the head and the neck area, press them together, and smooth the seam.
4. Make legs as short, thick coils, tucked under or beside the body. Score, slip and attach each one firmly.
5. Add ears, tail, wings or fins the same way. Keep every part thick and close to the body.
6. Smooth the whole animal with a damp finger. Check it from all sides and fix the shape.
7. Add texture with tools: fork lines for fur, pressed toothpick dots for scales, carved lines for feathers. Press in eyes with a pencil tip.
8. Write your initials under the base. Cover loosely with a plastic bag for one or two days, then uncover to finish drying. Paint it when completely dry, if you

like.

Tips

- If the clay gets dry and cracky while you work, dip your finger in water and smooth it, but do not make it soupy.
- Wipe tools and table with a damp cloth, and pour slip water outside or in the trash, not down the sink.

Check your work

- ☐ Every part is scored, slipped and smoothed, with no cracks at the joins.
- ☐ My animal is sturdy, with no thin parts that might break.
- ☐ I added at least two textures with tools.

SKETCHBOOK PRACTICE

1. Draw your clay animal from three sides after it dries.
2. Draw three animals in sturdy, compact poses you could make in clay.
3. Draw one of the Horses of Saint Mark using the construction shapes from Unit 2.

From history. People have made clay figures since the earliest times. Clay is mentioned many times in the Bible: Adam was formed from the dust of the ground, and the prophet Jeremiah watched a potter at his wheel. Fired clay pots and figures are some of the oldest human-made objects found by archaeologists.

COMMON MISTAKES

- Pressing pieces together without scoring and slipping.
- Making legs long and thin, so they bend or crack.
- Drying the animal quickly in the sun or near a heater.

Make it a game • Shake Table Test. Build a clay or dough animal in five minutes. Score yourself: legs thick enough to stand, joints joined by score and slip, even thickness for drying, and a steady stance. Tap the table gently to test whether it stays up. Your parent adds points. Then explain why clay must dry slowly.

Scripture. “And the vessel that he made of clay was marred in the hand of the potter: so he made it again another vessel, as seemed good to the potter to make it.” (Jeremiah 18:4, KJV)

When the potter’s clay went wrong, he did not throw it away; he reshaped it. God is patient with us like that, and we can be patient with our own clay.

UNIT 6

TEXTURE, PRINTMAKING AND SCULPTURE

Texture is how something feels, or how it looks like it would feel: soft fur, rough bark, smooth glass. In this unit you will learn to draw textures so well that people want to touch your paper. Then you will step away from drawing to make art in new ways: by printing, by carving and by building with clay.

Printmaking lets you make many copies of one picture. Sculpture lets you make art you can walk around. You will learn the two great ways of making sculpture, taking material away and adding it on, and you will finish the unit with a clay animal of your own design. Along the way you will meet Dürer's famous hare and rhinoceros, Michelangelo's *Moses* and the ancient bronze horses of Venice.

PREREQUISITES

- Can draw animals from simple shapes (Unit 2)
- Can shade with hatching and stippling (Unit 1)
- Has foam printing plates, printing ink or tempera, a brayer, a bar of soap and air-dry clay

MASTERY CHECKLIST

- ☐ I can draw at least six different textures with pencil or pen marks.
- ☐ I can make a relief print and explain why the picture prints backward.
- ☐ I can explain the difference between additive and subtractive sculpture and give an example of each.
- ☐ I can build a sturdy clay animal, join parts by scoring and slipping, and let it dry slowly.

LESSONS IN THIS UNIT

6.1 Drawing Texture

2 sessions of 45 minutes

6.2 Relief Printing with Foam

2 sessions of 45 minutes

6.3 Carving Away and Building Up

2 sessions of 45 minutes

6.4 A Clay Animal

2 sessions of 45 minutes

UNIT 6 REVIEW

Answer each question aloud or in writing. Total: 50 points.

1. 5 pts

What is the difference between actual texture and implied texture?

2. 5 pts

Describe the marks you would use to draw fur and to draw wood.

3. 5 pts

In a foam relief print, do the lines you press into the plate print dark or white? Why?

4. 5 pts

Why must words be drawn backward on a printing plate?

5. 5 pts

What is an edition, and how do printmakers number it?

6. 5 pts

What is the difference between additive and subtractive sculpture? Give one example of each.

7. 5 pts

Why should you carve from big shapes to small details?

8. 5 pts

What does “score and slip” mean, and why is it needed?

9. 5 pts

Why must clay dry slowly?

10. 5 pts

How did Dürer make his *Rhinoceros*, and why did so many people see it?

ANSWER KEY

1. Actual texture can really be touched; implied texture is drawn or painted to look like a texture on a flat surface.
2. Fur: many short strokes in the direction the hair grows, dark at the roots, light at the tips. Wood: long, wavy, mostly parallel lines with knots.
3. White, because the grooves are low and do not touch the ink on the brayer or the paper.
4. Because the print is a mirror image of the plate.
5. A set of matching prints from one plate. They are numbered like 1/4, 2/4, 3/4, 4/4 in pencil below the image.
6. Additive builds up material (clay modeling); subtractive takes material away (carving marble, wood or soap).
7. So you can get the overall shape right first and so small details do not break off while you work on other parts.
8. Scratch both pieces and add slip before joining them; otherwise the pieces will separate as the clay dries.
9. Clay shrinks as it dries. If some parts dry faster than others, it cracks.
10. He made a woodcut from a description and sketch; because it was a print, thousands of copies could be made and shared.

PORTFOLIO PIECE: AN ANIMAL THREE WAYS

Choose one animal and show it three ways: a drawing with at least three textures, a signed print from your foam plate (or a new plate), and your clay or soap sculpture. Mount the drawing and the print on one large sheet of paper and set the sculpture in front. Write a short label explaining which work is additive, which is subtractive, and which is a relief print.

LOOK FOR	WHAT IT MEANS
Texture drawing	The drawing shows at least three clear, observed textures with light and shadow.
Print	The print is clean and clear, with strong lines and textures, signed and numbered in pencil.
Sculpture	The sculpture is sturdy, well joined or carefully carved, and looks good from all sides.
Label	The label correctly uses the words additive, subtractive and relief print.
Craftsmanship	The display is neat and the works are finished with care.

UNIT 7

SPACE AND PERSPECTIVE

A piece of paper is flat, but the world is deep. How do artists make a flat picture look like you could walk into it? In this unit you will learn two powerful tools. **Linear perspective** uses straight lines that meet at a vanishing point to make rooms, roads and buildings go back into space. **Atmospheric perspective** uses color and value to make faraway hills fade into the air.

Renaissance painters in Italy worked out the rules of linear perspective about 600 years ago, and landscape painters like Bierstadt and Constable mastered the look of air and distance. By the end of this unit you will draw a room, a street and a landscape that seem to go on and on.

PREREQUISITES

- Can use a ruler to draw straight lines
- Can mix tints and dull colors (Unit 3)
- Knows overlap and size as ways to show depth (earlier grades)

MASTERY CHECKLIST

- ☐ I can draw a horizon line, a vanishing point and orthogonal lines.
- ☐ I can draw a room in one-point perspective with a floor, walls, a ceiling and furniture.
- ☐ I can paint distant things lighter, bluer, duller and less detailed.
- ☐ I can paint a landscape with a clear foreground, middle ground and background.

LESSONS IN THIS UNIT

7.1 A Room in One-Point Perspective

2 sessions of 45 minutes

7.2 Vanishing Point and Orthogonals

2 sessions of 45 minutes

7.3 Atmospheric Perspective

2 sessions of 45 minutes

7.4 Painting a Landscape with Depth

2 sessions of 45 minutes

UNIT 7 REVIEW

Answer each question aloud or in writing. For drawing questions, draw in your sketchbook and show your parent. Total: 50 points.

1. (5 pts)

What is the horizon line, and where does it sit in a picture?

2. (5 pts)

What is a vanishing point?

3. (5 pts)

In one-point perspective, what are the only three directions a line can go?

4. (5 pts)

Draw a box below the horizon in one-point perspective. Which sides can you see?

5. (5 pts)

Why should the rows of a tiled floor get closer together as they go back?

6. (5 pts)

Name the four signs of atmospheric perspective.

7. (5 pts)

Where should you put the strongest contrast and most detail in a landscape?

8. (5 pts)

Name four ways to show depth in a picture.

9. (5 pts)

In *Delivery of the Keys*, how did Perugino use perspective to lead your eye?

10. (5 pts)

How did Bierstadt make the mountains in *Among the Sierra Nevada* look far away?

ANSWER KEY

1. A level line at the viewer's eye level; it is where the vanishing point sits.
2. The point on the horizon line where parallel lines going away from the viewer seem to meet.
3. Horizontal, vertical, or toward the vanishing point.
4. The front and the top (and possibly one side, depending on where it is compared with the vanishing point).
5. Because of foreshortening; things farther away look smaller. Even spacing makes the floor look like a wall.
6. Faraway things are lighter, bluer, duller (less intense) and less detailed with softer edges.
7. In the foreground.
8. Any four: overlap, size, placement, linear perspective, atmospheric perspective, detail.
9. The lines of the pavement all lead to a vanishing point at the doorway of the temple in the center, right above the main event.
10. He painted them pale, misty, bluish or golden, with few details, while the foreground is dark and detailed.

PORTFOLIO PIECE: THE ROAD HOME

Paint or draw a landscape with a road, path, river or fence that goes back to a vanishing point on the horizon, with a house, church or barn somewhere along the way. Use linear perspective for the road and buildings and atmospheric perspective for the distance. Include a clear foreground, middle ground and background.

LOOK FOR	WHAT IT MEANS
Linear perspective	The road and buildings use a vanishing point on the horizon line correctly.
Atmospheric perspective	Distant things are lighter, cooler, duller and less detailed.
Three zones	Foreground, middle ground and background are clear, with overlap and change in size.
Composition	The horizon is not in the middle and the path leads the eye into the picture.
Craftsmanship	Guidelines are removed, color is neat, and the work is signed and dated.

7.1 A ROOM IN ONE-POINT PERSPECTIVE

OBJECTIVES

- Find the horizon line and vanishing point in a picture of a room.
- Draw the back wall, side walls, floor and ceiling of a room with one vanishing point.
- Add a door, a window and a piece of furniture in perspective.

Warm-up. Stand at the doorway of a long room or hallway. Hold a ruler at arm's length along the line where the wall meets the ceiling. Is it level, or does it slant? Now try the line where the wall meets the floor. Which way do they point?

WATCH

How to Draw a Room in 1-Point Perspective for Beginners

Circle Line Art School • 10:03

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

WHEN TO WATCH

After the core ideas. Draw the room along with him, pausing after each step.

BACKUP VIDEO

6th Grade Art: One-Point Perspective Room Drawing

K Art Studio • 7:55

<https://www.youtube.com/watch?v=zL9mldeNdBc>

A second room demonstration made for middle-grade students, useful if you want to add more furniture.

KEY TERMS

perspective

A way of drawing that makes a flat picture look deep, with things farther away looking smaller.

horizon line

A level line across the picture at the viewer's eye level. In a room, it is the height of your eyes.

vanishing point

The point on the horizon line where parallel lines going away from you seem to meet.

orthogonal lines

Lines that go back into space and meet at the vanishing point, like the edges of a hallway floor.

one-point perspective

Perspective with a single vanishing point, used when you look straight at a wall or straight down a road.

CORE IDEAS

Stand in a long hallway. The walls are parallel, the same distance apart all the way down. Yet in your eyes they seem to come closer together the farther away they are, as if they would meet at a point. Artists call that spot the **vanishing point**, and they use it to draw space.

The vanishing point always sits on the **horizon line**, which is a level line at the height of your eyes. If you sit, it is low. If you stand on a chair, it is high. Everything above your eye level, like a ceiling, slants *down* toward it. Everything below, like a floor, slants *up* toward it.

To draw a room: draw a rectangle in the middle of the page for the back wall. Put a dot inside it on the horizon line for the vanishing point. Then draw lines from the four corners of the rectangle out to the four corners of the paper, lined up with the vanishing point. Those are **orthogonal lines**. You now have a floor, a ceiling and two side walls.

Add objects with the same rule. Every line going back into space aims at the vanishing point. Lines across, from side to side, stay **horizontal**. Lines up and down stay **vertical**. A door on a side wall has vertical sides, and its top and bottom edges aim at the vanishing point. A bed is a box: draw its front rectangle, then pull its side edges back toward the vanishing point and cut them off with a horizontal line.

Use a ruler and draw lightly. Perspective lines are guidelines. When the room is built, darken only the edges that are real and erase the rest.

PICTURE STUDY



Bedroom in Arles, Vincent van Gogh, 1888 · Oil on canvas · Van Gogh Museum, Amsterdam

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

Van Gogh painted his own small bedroom in the yellow house he rented in Arles, France. He wanted it to look restful and simple. He painted three versions. You can see that he used perspective, but also that he bent some lines on purpose.

Look closely

- Follow the lines of the floorboards. Where do they seem to go?
- Follow the side of the bed and the top edge of the right wall. Do they all aim at the same point?
- Look at the back wall. Is it a rectangle?
- Notice the strong colors: blue walls, a red cover, a yellow bed and chairs.

Talk about it

1. Where would the vanishing point be, if you extended the floor lines?
2. Some lines in this painting do not follow the rules exactly. How does that make the room feel?
3. Does this room look restful to you? Why or why not?

STUDIO PROJECT

My Room in One-Point Perspective

You will draw a bedroom (yours or one you imagine) in one-point perspective, with a window, a door, a bed and at least one more piece of furniture.

You will need

- Drawing paper (9×12 in or larger)
- Ruler
- HB pencil and eraser
- Fine black pen
- Colored pencils

Steps

1. Draw a rectangle in the middle of the page, about one third the width of the paper. This is the back wall.
2. Draw a light horizon line across the page about halfway up the back wall. Put a dot on it near the middle of the wall: the vanishing point.
3. With the ruler, draw lines from the vanishing point through each corner of the back wall and out to the edge of the paper. Now you have a floor, ceiling and side walls.
4. Draw a window on the back wall as a simple rectangle.
5. Draw a door on a side wall: two vertical lines, with the top and bottom edges aiming at the vanishing point.
6. Draw a bed as a box: start with its front rectangle, pull its back edges toward the vanishing point, and stop them with horizontal and vertical lines.
7. Add another object: a rug (a flat rectangle on the floor), a bookshelf, a desk or a picture frame, using the same rules.
8. Go over the real edges in pen, erase the guidelines, add floorboards aimed at the vanishing point, and color your room.

Tips

- Check every line: is it horizontal, vertical, or aimed at the vanishing point? There are no other choices in one-point perspective.
- Keep your pencil sharp and your guidelines light.

Check your work

- ☐ My room has one vanishing point on the horizon line.
- ☐ All lines going back into space aim at the vanishing point.
- ☐ My door, bed and window look like they belong in the room.

SKETCHBOOK PRACTICE

1. Draw a hallway in your home from one end, with doors on both sides.
2. Draw a box floating above the horizon, one below it and one on it. What do you see of each?
3. Draw your favorite room again with the vanishing point moved to the far left. How does the view change?

From history. Van Gogh wrote to his brother that looking at this painting should rest the mind. When the room flooded while he was away, the first painting was damaged, so he painted copies of it, which is why three versions exist today.

COMMON MISTAKES

- Placing the vanishing point off the horizon line.
- Tilting lines that should be vertical or horizontal.
- Forgetting that furniture edges must also aim at the vanishing point.

Make it a game • Room Detective. Your parent draws a back-wall rectangle with orthogonal lines for the floor and ceiling but leaves out the vanishing point. Extend the lines with a ruler to find it, then add a table to the room. One point for each line that meets. Then you draw a puzzle room for your parent.

7.2 VANISHING POINT AND ORTHOGONALS

OBJECTIVES

- Find the vanishing point in a Renaissance painting by extending its orthogonal lines.
- Draw a tiled floor or piazza that goes back into space.
- Draw a street with buildings on both sides in one-point perspective.

Warm-up. Lay a long piece of string or two yardsticks parallel on the floor going away from you. Kneel at one end and look down them with one eye. Draw what you see: two lines that seem to meet.

WATCH

How To Draw Using 1-Point Perspective

Circle Line Art School · 9:26

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

WHEN TO WATCH

After the core ideas. Draw along and notice how every orthogonal line runs to the one vanishing point.

BACKUP VIDEO

Linear Perspective: Brunelleschi's Experiment

Smarthistory · 4:16

<https://www.youtube.com/watch?v=bkNMM8uiMww>

To see how Brunelleschi discovered one-point perspective. Look for Perugino's *Delivery of the Keys* near the end.

KEY TERMS

orthogonal lines

Lines that go back into space and meet at the vanishing point.

transversal lines

Horizontal lines that cross the orthogonals, like the lines between rows of floor tiles.

foreshortening

The way things look shorter and squashed when they go back into space.

piazza

An Italian word for a large public square, often paved with stone.

linear perspective

A system of drawing space with lines that meet at vanishing points.

CORE IDEAS

Around 1420 in Florence, an architect named Filippo Brunelleschi worked out the geometry of **linear perspective**. Painters quickly took it up. Suddenly floors, streets and buildings in paintings went back into space as they do in real life. Perugino's fresco in the Sistine Chapel shows the new idea beautifully.

The lines that go back toward the vanishing point are called **orthogonals**. The lines that run across, side to side, are **transversals**. Together they make a grid, like the tiles of a floor. The orthogonals all meet at one point; the transversals stay horizontal but get closer and closer together as they go back.

That squeezing together is **foreshortening**. Each row of tiles looks a little shorter than the one before it. If you space the tile rows evenly on your paper, the floor will look like it is standing up like a wall. Let them shrink gradually as they near the horizon.

Buildings along a street work the same way. The tops of the buildings, the bottoms, the windows and doorways all have edges that aim at the vanishing point.

Their up-and-down edges stay vertical. A building near you looks tall; the same building far down the street looks short, but its top and bottom still meet the same orthogonal lines.

Perspective is a tool, not a rule for its own sake. Painters used it to lead your eye to the most important part of the picture, often placing the vanishing point right behind the main figure or event.

PICTURE STUDY



Delivery of the Keys, Pietro Perugino, 1481–1482 · Fresco · Sistine Chapel, Vatican City

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

This fresco on the wall of the Sistine Chapel shows Jesus giving Peter the keys of the kingdom of heaven (Matthew 16:19). Perugino set the scene in a huge piazza paved with stone, drawn in perfect one-point perspective.

Look closely

- Follow the lines of the pavement with your finger. Where do they all lead?
- Find the vanishing point. What building is it in front of?
- Notice the people in the middle distance. How big are they compared to the people in front?
- Find the two arches on each side. Do they look the same size?

Talk about it

1. Why do you think Perugino placed the vanishing point at the doorway of the temple?
2. How does the paved square make the picture feel big and calm?
3. Where are the keys? How does the artist help you find them?

STUDIO PROJECT

A Street to the Vanishing Point

You will draw a street or town square in one-point perspective, with a paved or tiled ground and buildings on both sides, leading to a church or tower at the end.

You will need

- Drawing paper (9×12 in or larger, used sideways)
- Ruler
- HB pencil and eraser
- Fine black pen
- Colored pencils or watercolor

Steps

1. Draw a horizon line about one third of the way up the page. Put a vanishing point in the middle.
2. Draw two orthogonal lines from the bottom corners of the page to the vanishing point. This is your street.
3. Draw a few more orthogonals in the street for paving stones, all aiming at the vanishing point.
4. Add transversal lines across the street. Start with wide spaces at the bottom and make them gradually closer as you go back.
5. On each side, draw the front edge of a building as a vertical line. Draw its roofline as an orthogonal to the vanishing point. Stop it with a vertical line.
6. Add more buildings farther back, smaller and closer to the horizon. Add doors and windows with vertical sides and tops aimed at the vanishing point.
7. At the end of the street, near the vanishing point, draw a small church, tower or gate facing you as a flat front (rectangles and a triangle roof).
8. Ink the real lines, erase guidelines, and add color. Make the far buildings a little lighter.

Tips

- Use a long ruler and line it up with the vanishing point every single time.
- Add a few small people or trees, and make the far ones smaller.

Check your work

- ☐ All my orthogonals meet at one vanishing point.
- ☐ My paving rows get closer together as they go back.
- ☐ My buildings get smaller in the distance and lead to the building at the end.

SKETCHBOOK PRACTICE

1. Draw a checkerboard floor in perspective and shade every other tile.
2. Draw railroad tracks going to the horizon, with ties that get closer together.
3. Find a photo of a long street or hallway and draw its orthogonals with a ruler on tracing paper to find the vanishing point.

From history. Brunelleschi showed his discovery with a painted panel of the Florence Baptistery. Viewers looked through a small hole in the back of the panel at a mirror, and the painting matched the real building exactly. Painters like Masaccio and later Perugino and his student Raphael used his system.

COMMON MISTAKES

- Spacing floor rows evenly, which makes the floor look like a wall.
- Letting building tops slant at different angles instead of all aiming at the vanishing point.
- Making far buildings as big as near ones.

Make it a game • Pavement Race. Draw a horizon line and a vanishing point. Race a three-minute timer to draw a tiled floor receding into space: orthogonals to the point and transversals across. Your parent scores for straight, evenly spaced lines. Name the two kinds of lines as you draw. Try again and beat your time.

7.3 ATMOSPHERIC PERSPECTIVE

OBJECTIVES

- Explain why faraway things look lighter, bluer and less detailed.
- Mix a series of colors that fade back into the distance.
- Paint a layered mountain landscape using atmospheric perspective.

Warm-up. Look out the window at something close (a bush), something in the middle (a house down the street) and something far away (trees or hills on the horizon). Compare: which is darkest? Which has the sharpest details? Which is bluest?

WATCH

How to Draw a Landscape using Atmospheric Perspective

Circle Line Art School · 6:27

https://www.youtube.com/watch?v=M_HG8yn7KJ8

WHEN TO WATCH

After the core ideas. Watch how the far hills get lighter, cooler and simpler.

BACKUP VIDEO

What is ATMOSPHERIC PERSPECTIVE? | Albert Bierstadt's Rocky Mountains, Lander's Peak

ARTSQ · 2:48

<https://www.youtube.com/watch?v=hWhL8lpzWvc>

After the picture study. It looks at another of Bierstadt's mountain paintings.

KEY TERMS

atmospheric perspective

Showing distance by making faraway things lighter, bluer, duller and less detailed. Also called aerial perspective.

atmosphere

The layer of air around the earth, with its tiny bits of water, dust and haze.

foreground

The part of a picture that seems closest to the viewer.

middle ground

The part of a picture between the foreground and the background.

background

The part of a picture that seems farthest away.

CORE IDEAS

Air looks clear, but it is full of tiny drops of water and specks of dust. When you look far away, you are looking through a thick layer of air, and it softens everything like a thin veil. Painters use this to show distance. It is called **atmospheric perspective**.

There are four signs of distance. Faraway things are **lighter** in value: dark trees on a far hill look pale gray. They are **bluer** (or the color of the sky): the air scatters blue light. They are **duller** in intensity: bright red barns turn soft and grayish. And they have **fewer details and softer edges**: you cannot see single leaves on a faraway forest.

Close things are the opposite: darker darks, warmer and brighter colors, sharp edges and lots of detail. So in a painting, put your strongest contrasts and brightest colors in the **foreground**, middle values in the **middle ground**, and pale, cool, simple shapes in the **background**.

To paint it, mix a color for the farthest hills by adding white and a little blue to your mountain color. Then for each nearer layer, use less white and more of the true color, and add more detail. If you paint in layers from back to front, the picture builds itself.

Leonardo da Vinci studied this carefully and called it the “perspective of disappearance.” He painted soft, blue hills behind many of his figures.

PICTURE STUDY



Among the Sierra Nevada, California, Albert Bierstadt, 1868 · Oil on canvas · Smithsonian American Art Museum, Washington, D.C.

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

Albert Bierstadt traveled across America in the 1860s to paint the great mountains of the West. Back in his studio he painted huge canvases like this one, full of glowing light. He was a master of making mountains seem miles away.

Look closely

- Find the darkest, most detailed things. Are they in the front or the back?
- Look at the farthest mountains. What color are they? Can you see any details on them?
- Find the deer by the lake. How do they help you feel the size of the mountains?
- Trace the edges of a near tree and a far peak. Which edge is sharper?

Talk about it

1. How many layers of distance can you count from front to back?
2. Why do the far mountains look bluer and paler?
3. How does this painting make you feel about the size of creation?

STUDIO PROJECT

Five Layers of Mountains

You will paint a landscape of mountain ridges in five layers, from pale and blue in the distance to dark and detailed in front.

You will need

- Watercolor paper or heavy paper
- Tempera or watercolor: blue, red, yellow, white (for tempera)
- Flat and round brushes
- Palette, water jar, paper towels
- Pencil

Steps

1. Paint the sky with a soft wash: pale yellow near the horizon blending to pale blue at the top. Let it dry.
2. Lightly draw five wavy ridge lines across the page, from high and small (back) to lower and bigger (front).
3. Mix a blue-violet and add lots of white (or lots of water for watercolor). Paint the farthest ridge with it. Let it dry.
4. Add a little more blue-violet to your mix and paint the second ridge. Let it dry.
5. For the third ridge, add a little green. For the fourth, a stronger green. Each layer is a little darker and less blue.
6. Paint the front ridge in a dark green or brown. Add details only here: pine trees, rocks, grasses.
7. In the middle ground, add a few tiny trees or a small lake as simple shapes, with no fine details.
8. Look at your painting from across the room. Do the ridges step back into space?

Tips

- Always mix the next color from the last one, so the layers belong together.

- Let each layer dry so the edges stay crisp; or paint them damp for a misty look.

Check your work

- ☐ My farthest mountains are the lightest, bluest and simplest.
- ☐ Each nearer layer is darker and warmer.
- ☐ Details are only in the foreground.

SKETCHBOOK PRACTICE

1. Draw a row of five trees going back into the distance with pencil, each one lighter and simpler.
2. Paint three swatches: near green, middle green, far green.
3. Go outside on a misty or hazy day and paint what you see in three quick layers.

From history. Bierstadt belonged to a group of American painters later called the Hudson River School, who painted the American wilderness as a place of wonder. Many of them saw the grand landscapes of America as a sign of God's greatness.

COMMON MISTAKES

- Putting dark outlines around faraway mountains.
- Adding detail to the background.
- Making all the layers the same value.

Make it a game • Rank the Far Hills. Mix five bluish-gray swatches from dark to pale. Your parent mixes them up. Put them in order from the nearest hill to the farthest and say the rule: faraway things look lighter, bluer and less detailed. One point for each correct swap. Then paint the five layers of mountains.

7.4 PAINTING A LANDSCAPE WITH DEPTH

OBJECTIVES

- Plan a landscape with foreground, middle ground and background.
- Combine overlap, size, placement, linear perspective and atmospheric perspective.
- Paint a landscape of a place you know.

Warm-up. Make three tiny thumbnail sketches (2×3 in) of the view from a window or a photo: one with the horizon high, one in the middle and one low. Which makes the most interesting picture?

WATCH

How to paint a simple landscape in watercolor

Mr. Otter Art Studio • 4:13

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

WHEN TO WATCH

Before painting. Watch how the far mountains are painted pale first and each nearer layer is darker and more detailed.

BACKUP VIDEO

LANDSCAPE PAINTING | Foreground, Middle Ground, and Background

Lolly Arroco • 5:02

<https://www.youtube.com/watch?v=OjmOc1Hme74>

Another landscape demonstration with a clear foreground, middle ground and background.

KEY TERMS

landscape

A picture of natural scenery such as fields, hills, trees, rivers and sky.

overlap

When a nearer object covers part of a farther one.

placement

Where an object sits on the page. Things lower on the page usually look closer; things higher up look farther away.

plein air

A French phrase meaning “open air”: painting outdoors, looking at the real scene.

CORE IDEAS

You now know many ways to show depth. **Overlap:** near things cover far things. **Size:** near things are bigger. **Placement:** near things are lower on the page, far things higher, closer to the horizon. **Linear perspective:** roads, rivers, fences and rows of trees narrow toward a vanishing point. **Atmospheric perspective:** far things are lighter, bluer and simpler.

A good landscape uses several of these at once. Plan three zones. The **foreground** is close: a fence, a rock, flowers or a tree you can see in detail. The **middle ground** is where the main subject often sits: a house, a cart, a stream. The **background** is the far hills and the sky.

Do not put the horizon right in the middle of your page. A low horizon gives a big, dramatic sky. A high horizon shows lots of land. A path, river or fence that winds back into the picture is a wonderful way to lead the viewer’s eye into the distance.

Paint from back to front. Start with the sky, then the far hills, then the middle ground, then the foreground. This way the near things naturally overlap the far ones, and you can put your darkest darks and brightest colors on top in the front.

John Constable painted the fields, rivers and skies near his childhood home over and over. He made many small oil sketches outdoors to study clouds and light. You can do the same with the places you love.

PICTURE STUDY



The Hay Wain, John Constable, 1821 · Oil on canvas · The National Gallery, London

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

Constable painted this scene near Flatford Mill in Suffolk, England, where his father owned a mill. A farm cart, called a wain, crosses the shallow river. It is one of the most loved English paintings, full of the fresh air and light of the countryside.

Look closely

- Find the foreground, middle ground and background.
- Look at the far meadow on the right. Is it as sharp and dark as the trees on the left?
- Find the little dog on the riverbank and the people in the far field. How big are they?
- Look at the sky. How much of the painting is clouds?

Talk about it

1. How did Constable lead your eye from the front of the painting to the far fields?
2. Which ways of showing depth can you find in this painting?
3. What do you think the weather is about to do?

STUDIO PROJECT

A Place I Love

You will paint a landscape of a real place you know (your yard, a farm, a park, a lake), using at least four ways of showing depth.

You will need

- Watercolor paper or heavy paper (9×12 in or larger)
- Tempera or watercolor paints
- Brushes (a large flat or round, a small round)
- Pencil
- A photo of the place, or sit outdoors and look at it

Steps

1. Make two thumbnail sketches to plan where the horizon, the main subject and a path or river will go. Choose the better one.
2. Lightly draw the plan on your paper: horizon, far hills, middle ground subject, foreground objects, and a path or river narrowing toward the distance.
3. Paint the sky first. Leave white paper or add white for clouds.
4. Paint the far hills pale, cool and simple.
5. Paint the middle ground: fields, a house, trees as simple shapes, a little brighter and darker than the hills.
6. Paint the path or river, wide at the bottom and narrow in the distance.
7. Paint the foreground last with your darkest darks, brightest colors and the most detail: grass blades, flowers, a fence post with wood texture.
8. Step back, look, and add a few final accents. Sign your name in a lower corner.

Tips

- Squint to check: are your values lightest in the distance and strongest in front?
- If it is a nice day, try painting outdoors like Constable.

Check your work

- ☐ My painting has a clear foreground, middle ground and background.
- ☐ I used at least four ways of showing depth.
- ☐ The farthest things are lightest and simplest, and the nearest are boldest and most detailed.

SKETCHBOOK PRACTICE

1. Make a cloud study: paint or draw the sky every day for three days.
2. Draw a winding path or river through a landscape in pencil.
3. Draw your house or church from across the street, with something in the foreground overlapping it.

From history. When *The Hay Wain* was shown at the Paris Salon of 1824, it won a gold medal, and French painters were amazed by its freshness. Constable's way of painting light and weather helped inspire the French landscape painters who came after him.

COMMON MISTAKES

- Putting the horizon exactly in the middle.
- Making everything the same size and detail.
- Painting the foreground first and then trying to fit the sky around it.

Make it a game • Depth Bingo. Make a bingo card with five squares: overlap, size, placement, linear perspective and atmospheric perspective. Study your landscape and point to evidence of each. Your parent decides if you can mark each square. Score one point for each. Get all five for bingo. Then fix the weakest one.

Scripture. "The heavens declare the glory of God; and the firmament sheweth his handywork." (Psalms 19:1, KJV)

Constable spent a lifetime painting skies. When you paint a landscape, you are copying the handiwork of the greatest Artist.

UNIT 7

SPACE AND PERSPECTIVE

A piece of paper is flat, but the world is deep. How do artists make a flat picture look like you could walk into it? In this unit you will learn two powerful tools. **Linear perspective** uses straight lines that meet at a vanishing point to make rooms, roads and buildings go back into space. **Atmospheric perspective** uses color and value to make faraway hills fade into the air.

Renaissance painters in Italy worked out the rules of linear perspective about 600 years ago, and landscape painters like Bierstadt and Constable mastered the look of air and distance. By the end of this unit you will draw a room, a street and a landscape that seem to go on and on.

PREREQUISITES

- Can use a ruler to draw straight lines
- Can mix tints and dull colors (Unit 3)
- Knows overlap and size as ways to show depth (earlier grades)

MASTERY CHECKLIST

- ☐ I can draw a horizon line, a vanishing point and orthogonal lines.
- ☐ I can draw a room in one-point perspective with a floor, walls, a ceiling and furniture.
- ☐ I can paint distant things lighter, bluer, duller and less detailed.
- ☐ I can paint a landscape with a clear foreground, middle ground and background.

LESSONS IN THIS UNIT

7.1 A Room in One-Point Perspective

2 sessions of 45 minutes

7.2 Vanishing Point and Orthogonals

2 sessions of 45 minutes

7.3 Atmospheric Perspective

2 sessions of 45 minutes

7.4 Painting a Landscape with Depth

2 sessions of 45 minutes

UNIT 7 REVIEW

Answer each question aloud or in writing. For drawing questions, draw in your sketchbook and show your parent. Total: 50 points.

1. (5 pts)

What is the horizon line, and where does it sit in a picture?

2. (5 pts)

What is a vanishing point?

3. (5 pts)

In one-point perspective, what are the only three directions a line can go?

4. (5 pts)

Draw a box below the horizon in one-point perspective. Which sides can you see?

5. (5 pts)

Why should the rows of a tiled floor get closer together as they go back?

6. (5 pts)

Name the four signs of atmospheric perspective.

7. (5 pts)

Where should you put the strongest contrast and most detail in a landscape?

8. (5 pts)

Name four ways to show depth in a picture.

9. (5 pts)

In *Delivery of the Keys*, how did Perugino use perspective to lead your eye?

10. (5 pts)

How did Bierstadt make the mountains in *Among the Sierra Nevada* look far away?

ANSWER KEY

1. A level line at the viewer's eye level; it is where the vanishing point sits.
2. The point on the horizon line where parallel lines going away from the viewer seem to meet.
3. Horizontal, vertical, or toward the vanishing point.
4. The front and the top (and possibly one side, depending on where it is compared with the vanishing point).
5. Because of foreshortening; things farther away look smaller. Even spacing makes the floor look like a wall.
6. Faraway things are lighter, bluer, duller (less intense) and less detailed with softer edges.
7. In the foreground.
8. Any four: overlap, size, placement, linear perspective, atmospheric perspective, detail.
9. The lines of the pavement all lead to a vanishing point at the doorway of the temple in the center, right above the main event.
10. He painted them pale, misty, bluish or golden, with few details, while the foreground is dark and detailed.

PORTFOLIO PIECE: THE ROAD HOME

Paint or draw a landscape with a road, path, river or fence that goes back to a vanishing point on the horizon, with a house, church or barn somewhere along the way. Use linear perspective for the road and buildings and atmospheric perspective for the distance. Include a clear foreground, middle ground and background.

LOOK FOR	WHAT IT MEANS
Linear perspective	The road and buildings use a vanishing point on the horizon line correctly.
Atmospheric perspective	Distant things are lighter, cooler, duller and less detailed.
Three zones	Foreground, middle ground and background are clear, with overlap and change in size.
Composition	The horizon is not in the middle and the path leads the eye into the picture.
Craftsmanship	Guidelines are removed, color is neat, and the work is signed and dated.

COMPOSITION AND ART HISTORY

Composition is the way an artist arranges everything in a picture: where things go, what is big or small, and what you look at first. A good composition is like a good sentence: every part is in the right place. In the first half of this unit you will learn two of the most useful composition tools, the **rule of thirds** and **emphasis**.

In the second half you will travel back in time. You will see how monks in the Middle Ages made shining handwritten Bibles, and how, around the year 1300, a painter named Giotto began to paint people who looked solid and real, opening the door to the Renaissance. Your final project brings together everything you have learned this year.

PREREQUISITES

- Can draw figures, forms and animals with good proportion (Unit 2)
- Can shade with one light source (Unit 4)
- Can draw one-point perspective (Unit 7)

MASTERY CHECKLIST

- ☐ I can use a thirds grid to place a horizon and a focal point.
- ☐ I can create emphasis with contrast, color, placement and leading lines.
- ☐ I can design an illuminated letter with border patterns and explain how manuscripts were made.
- ☐ I can describe how Giotto's painting is different from earlier medieval painting and use Renaissance tools in my own work.

LESSONS IN THIS UNIT

8.1 The Rule of Thirds

2 sessions of 45 minutes

8.2 Emphasis: Where the Eye Goes First

2 sessions of 45 minutes

8.3 Illuminated Manuscripts

2 sessions of 45 minutes

8.4 From Medieval to Renaissance: Giotto

2 sessions of 45 minutes

UNIT 8 REVIEW

Answer each question aloud or in writing. Total: 50 points.

1. 5 pts

What is the rule of thirds?

2. 5 pts

Where should the horizon go if the sky is the most interesting part of your picture?

3. 5 pts

Why do artists make thumbnail sketches?

4. 5 pts

Name four ways to create emphasis.

5. 5 pts

How did Velázquez make the princess stand out in *Las Meninas*?

6. 5 pts

What is an illuminated manuscript?

7. 5 pts

What was vellum, and what did monks write with?

8. 5 pts

What does “Renaissance” mean, and about when did it begin?

9. 5 pts

Name two ways Giotto’s paintings were different from earlier Byzantine-style paintings.

10. 5 pts

Which skills from this year did you use in your masterwork?

ANSWER KEY

1. Dividing a picture into thirds across and down, and placing important things along the lines or where they cross (the sweet spots).
2. On the lower third line, so the sky fills two thirds of the picture.
3. To quickly try different compositions and choose the best before starting the big picture.
4. Any four: value contrast, bright or warm color, isolation, placement, detail, leading lines.
5. He put her in the brightest light near the center, in a pale gown against darker surroundings, with figures around her turned toward her.
6. A handwritten book decorated with bright colors and often gold, so the pages seem to light up.
7. Vellum was thin, scraped calfskin. They wrote with quill pens and ink.
8. It means “rebirth.” It began around 1300 in Italy.
9. Any two: figures look solid and heavy; light and shadow make robes round; thrones and buildings have depth; faces show real feeling.
10. Answers will vary; for example proportion, shading with one light source, perspective, color scheme and emphasis.

PORTFOLIO PIECE: MY MASTERWORK AND ART SHOW

Your masterwork from Lesson 8.4 is this unit's portfolio piece. Mount it on a larger sheet of colored paper and write a short museum label for it: title, your name, the date, the materials, and two sentences about the Bible scene and the skills you used. Then choose your best piece from each unit and hang them all for a family art show, where you tell guests about at least one of them.

LOOK FOR	WHAT IT MEANS
Figures and form	Figures are well proportioned and look solid, with clothing that folds naturally.
Light	Highlights, form shadows and cast shadows all agree with one light source.
Space	Overlap, size, perspective and atmospheric effects make the scene deep.
Composition and emphasis	The focal point is clear and the composition was planned with thumbnails.
Craftsmanship and presentation	The work is finished with care, mounted, labeled, signed and dated.

8.1 THE RULE OF THIRDS

OBJECTIVES

- Divide a picture into thirds and find the four “sweet spots.”
- Use a viewfinder to plan a composition.
- Make a picture with the horizon on a third line and the focal point near a sweet spot.

Warm-up. Cut a small window, about 2×3 in, in a piece of cardstock. This is a viewfinder. Hold it up and look at the room through it. Move it closer and farther, left and right, until you find a view that looks like a good picture.

WATCH

The Rule of Thirds in Landscape Painting by Will Kemp

[willkempartschool](https://www.youtube.com/watch?v=CMPQ7InmM7o) · 2:36

<https://www.youtube.com/watch?v=CMPQ7InmM7o>

WHEN TO WATCH

After the core ideas. Watch where the artist places the horizon and the focal point on the thirds lines.

BACKUP VIDEO

The Rule of Thirds in Art

[Drawing & Painting - The Virtual Instructor](https://www.youtube.com/watch?v=sQyquPmATww) · 12:41

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

More examples of the rule of thirds in landscapes, portraits and animal pictures.

KEY TERMS

composition

The arrangement of everything in a picture.

rule of thirds

Dividing a picture into three equal parts across and three equal parts down, and placing important things along those lines or where they cross.

focal point

The place in a picture the eye goes to first and returns to most.

thumbnail sketch

A tiny, quick drawing used to plan a composition.

viewfinder

A small frame you look through to choose a view.

CORE IDEAS

When beginners draw, they often put the most important thing right in the middle of the page and the horizon straight across the center. This can look stiff and dull, like a target. Artists have found that pictures feel more alive when things are placed a little off-center.

The **rule of thirds** is a simple way to do this. Imagine two lines dividing your page into three equal columns, and two lines dividing it into three equal rows, like a tic-tac-toe board. The four places where the lines cross are the **sweet spots**. Put your **focal point** near one of them.

Put the horizon on one of the two horizontal lines, not in the middle. If the sky is the exciting part, put the horizon on the lower line, so the sky fills two thirds. If the land or sea is more interesting, put the horizon on the upper line.

Before you start a big picture, make several **thumbnail sketches**, tiny drawings only a few inches wide. Try the subject in different places. Thumbnails take one minute each and can save you hours. Choose the best one, then draw it big.

The rule of thirds is a helpful guide, not a law. Many great paintings, especially sacred paintings like Giotto's, put the most important figure right in the center on purpose, to show calm, order and honor. Learn the rule so you can choose when to use it.

PICTURE STUDY



Breezing Up (A Fair Wind), Winslow Homer, 1873–1876 · Oil on canvas · National Gallery of Art, Washington, D.C.

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

Winslow Homer was an American painter who loved the sea. In this painting a fisherman and three boys sail home in a brisk wind. You can almost feel the spray. Notice how Homer placed the boat and the horizon.

Look closely

- Imagine the thirds grid on this painting. Where does the horizon fall?
- Where is the boat? Is it in the center?
- Find the faraway schooner on the horizon. Which way is it sailing compared with the small boat?
- Look at the angle of the sail and the leaning boys. Which way is the wind blowing?

Talk about it

1. Why do you think Homer did not put the boat in the exact center?
2. Is there more sky or more sea? Why might he have chosen that?
3. How does the composition make the boat feel like it is moving?

STUDIO PROJECT

A Picture on the Thirds

You will plan a scene with thumbnails and a viewfinder, then make a finished picture where the horizon sits on a third line and the main subject sits near a sweet spot.

You will need

- Cardstock viewfinder from the warm-up
- Sketchbook
- Drawing or watercolor paper (9×12 in)
- Ruler and pencil
- Oil pastels, colored pencils or paint

Steps

1. Choose a subject: a sailboat on the sea, a lighthouse, a tree in a field, a barn, a bird on a branch.
2. In your sketchbook, draw four small rectangles, each 2×3 in. Draw a light thirds grid in each.
3. Make four thumbnails, each with the subject in a different sweet spot and the horizon on a different third line.
4. Choose the best thumbnail and circle it. Write one sentence about why.
5. On your large paper, draw a very light thirds grid with a ruler.
6. Draw your chosen composition large, placing the horizon on a third line and the subject near a sweet spot.
7. Add color. Make the focal point the most detailed or most contrasting part.
8. Erase the grid lines that still show.

Tips

- Leave more empty space in front of a moving subject (a boat or bird) than behind it, so it has room to go.
- Check your finished picture by turning it upside down. Does it still feel balanced?

Check your work

- ☐ I made at least four thumbnails and chose the best.
- ☐ My horizon sits on a third line, not in the middle.
- ☐ My focal point is near a sweet spot.

SKETCHBOOK PRACTICE

1. Look through your family photos and find three that follow the rule of thirds.
2. Draw a thirds grid over a copy of a famous landscape and mark its focal point.
3. Make six thumbnails of the view from your window.

From history. The phrase “rule of thirds” was first written down by an English painter and engraver, John Thomas Smith, in 1797, in a book about painting landscapes. But painters had been placing things off-center for a long time before anyone named the idea.

COMMON MISTAKES

- Placing the horizon right in the middle.
- Skipping thumbnails and starting big.
- Putting the subject so close to the edge that it seems to fall off.

Make it a game • Sweet Spot Toss. Draw a tic-tac-toe grid on a large paper to divide it into thirds. The four crossing points are sweet spots. Toss a bean bag or button onto the grid from a short distance, trying to land near a sweet spot. A point for each hit. Then draw a thumbnail with the focal point on one.

8.2 EMPHASIS: WHERE THE EYE GOES FIRST

OBJECTIVES

- Name five ways artists create emphasis.
- Find the focal point in a crowded painting and explain how it was made.
- Make a picture that clearly leads the eye to one focal point.

Warm-up. Look at a page in a picture book for five seconds, then close it. What did you see first? Look again. Why do you think your eyes went there?

WATCH

Art Education - Principles of Design - Emphasis - Getting Back to the Basics - Art Lesson

Paint It Kids · 4:15

<https://www.youtube.com/watch?v=I9tvLdNTRJI>

WHEN TO WATCH

After the warm-up, before the core ideas.

BACKUP VIDEO

How to Create Focal Points in Art

Drawing & Painting - The Virtual Instructor · 2:02

https://www.youtube.com/watch?v=bFEC9v4_TUM

A short summary of the ways to make a focal point.

KEY TERMS

emphasis

Making one part of a picture stand out, so the eye goes there first.

contrast

A strong difference, such as light against dark, bright against dull, or big against small.

isolation

Setting something apart by itself, with space around it.

leading lines

Lines in a picture, such as a road, an arm or a gaze, that guide the eye toward the focal point.

subordinate

Less important parts of a picture, kept quieter so they do not compete with the focal point.

CORE IDEAS

Every good picture answers the question: **what should I look at first?** Making one part stand out is called **emphasis**. Without it, the eye wanders everywhere and nothing feels important.

Artists create emphasis in several ways. **Value contrast:** the lightest light next to the darkest dark grabs the eye. **Color:** one bright or warm color among dull or cool ones. **Isolation:** one thing set apart with space around it. **Placement:** near a sweet spot, or right in the center for a formal picture. **Detail:** the most carefully finished area draws attention.

Leading lines also guide the eye. A road, a river, the edge of a table, a pointing arm, even the direction people are looking can all lead the viewer to the focal point. In a crowded painting, look where the figures are looking.

Just as important is keeping other parts **subordinate**, or quieter. If everything is bright, detailed and high in contrast, nothing stands out. Painters soften the edges, dull the colors and simplify the details of less important areas, so the main subject can shine.

Usually you want one main focal point and maybe one or two smaller accents. Think of a choir: one soloist sings the melody while the others support.

PICTURE STUDY



Las Meninas, Diego Velázquez, 1656 · Oil on canvas · Museo del Prado, Madrid

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

Las Meninas means “the ladies-in-waiting.” Velázquez, the court painter of King Philip IV of Spain, painted the little princess Margarita with her maids, her companions and a large dog, and he put himself in the picture too, standing at his easel. It is full of people, yet your eye knows exactly where to go.

Look closely

- Where does your eye land first? Why?
- Find the brightest light in the painting. Who is standing in it?
- Find the second bright spot: the doorway at the back with a man in it.
- Find the mirror. Who is reflected in it? Where would they be standing?

Talk about it

1. How did Velázquez make the princess stand out among so many people?
2. Which ways of creating emphasis can you find?
3. Many figures are looking out at us. Who do you think they are looking at?

STUDIO PROJECT

One Bright Spot

You will make a picture of a scene with several people or things in it, using at least three ways of creating emphasis so that the viewer's eye goes to one focal point.

You will need

- Drawing paper (9×12 in)
- Pencils
- Colored pencils or oil pastels, including grays and browns
- Black fine pen (optional)

Steps

1. Choose a scene with one main subject: a family at a table with a birthday cake, a shepherd among sheep, a lamp in a dark room, a red barn among green hills.
2. Make two thumbnails. In each, decide where the focal point will go and how lines will lead to it.
3. Draw your chosen plan large and lightly.
4. Emphasis by value: make the focal point the place of greatest light-dark contrast.
5. Emphasis by color: color the focal point with your brightest, warmest color, and color the rest of the picture in duller, cooler or neutral colors.
6. Emphasis by leading lines: add a road, a table edge or figures looking toward the focal point.
7. Keep the other parts subordinate: simpler, softer and less detailed.
8. On the back, list the ways you created emphasis.

Tips

- Squint at your picture. The focal point should still pop out when everything is blurry.
- If two things compete, dull one of them.

Check your work

- ☐ Someone looking at my picture can point to the focal point right away.
- ☐ I used at least three ways of creating emphasis.
- ☐ The other parts of my picture are quieter.

SKETCHBOOK PRACTICE

1. Draw a row of ten identical circles and make one stand out in five different ways (five rows).
2. Find a book illustration and write how the artist created emphasis.
3. Draw a room lit by one candle or lamp, with the light as the focal point.

From history. Velázquez was given the job of court painter when he was only 24 and served the king for the rest of his life. Later painters, from Goya to Manet, called *Las Meninas* one of the greatest paintings ever made.

COMMON MISTAKES

- Making everything bright and detailed, so nothing stands out.
- Having two equally strong focal points that fight each other.
- Forgetting leading lines that point away from the subject.

Make it a game • Two-Second Glance. Look at a crowded painting for just two seconds. Cover it. Say what your eye went to first and why: contrast, isolation or a leading line. Your parent decides if you are right. One point each. Do three paintings. Then name the five ways artists create emphasis.

8.3 ILLUMINATED MANUSCRIPTS

OBJECTIVES

- Explain how and why monks made illuminated manuscripts.
- Recognize knotwork, spirals and decorated initials.
- Design and paint an illuminated initial with a border.

Warm-up. Draw a simple over-under knot: two ribbons that cross four times, with one ribbon going over, then under, then over, then under. Erase the bits where a ribbon passes under.

WATCH

How to Draw Illuminated Letters

Sakura of America · 7:27

<https://www.youtube.com/watch?v=TMi5g3OPO-Q>

WHEN TO WATCH

Before the project. Draw along to design your letter.

Note: This video is from a pen and marker company; use whatever markers or pencils you have.

BACKUP VIDEO

The astonishing Book of Kells

Smarthistory · 6:36

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

After the picture study, to look more closely at the pages of the Book of Kells.

KEY TERMS

manuscript

A book or document written by hand.
The word means “written by hand” in Latin.

illumination

Decoration in a manuscript with bright colors and often real gold, which seems to light up the page.

initial

A large, decorated first letter at the beginning of a book, chapter or paragraph.

vellum

Fine writing material made from calfskin, scraped thin and smooth.

knotwork

A design of ribbons that weave over and under each other without end.

scriptorium

The room in a monastery where monks copied books.

CORE IDEAS

Before the printing press, every book was copied by hand. In monasteries, monks worked in a **scriptorium**, copying the Bible letter by letter. The most important books were also **illuminated**: decorated with bright colors and gold leaf that seemed to light up the page.

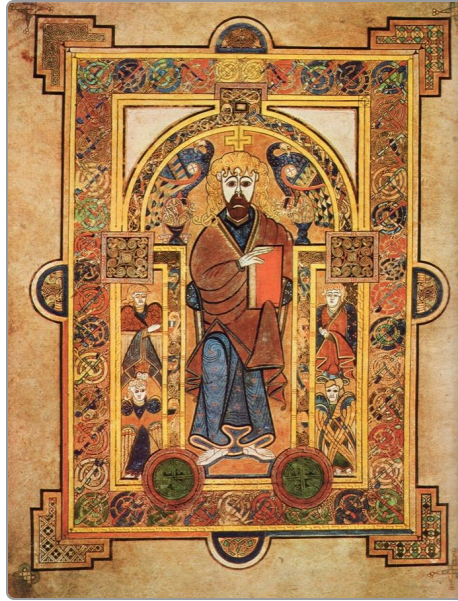
The pages were made of **vellum**, calfskin soaked, stretched, scraped thin and smoothed. Scribes wrote with quill pens and the inks you learned about in Lesson 5.4. Painters ground minerals and plants into pigments and bound them with egg white or gum. Gold was beaten into leaf thinner than tissue and laid on a sticky base, then polished until it gleamed.

Illuminators loved the first letter of a page, the **initial**. Sometimes it was so large it filled the whole page. They filled the letter with **knotwork** (ribbons weaving over and under without end), spirals, step patterns, and little animals and birds whose bodies twisted into the design.

The Book of Kells and the Lindisfarne Gospels were made in the British Isles about 1,200 to 1,300 years ago. Their makers spent years on them because they believed the words of the Gospels deserved the most beautiful setting they could give.

When you design an illuminated letter, start with the letter shape so it is still readable. Then plan the decoration: a border, a pattern inside the letter, and a few flourishes. Use the brightest colors and gold sparingly, so they shine.

PICTURE STUDY



Book of Kells: Christ Enthroned, Monks of Iona and Kells (unknown), about 800 · Ink and pigments on vellum · Trinity College Library, Dublin, Ireland

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

The Book of Kells contains the four Gospels in Latin and is one of the most beautiful books ever made. It was probably begun by monks on the island of Iona off Scotland and finished at the monastery of Kells in Ireland. This page shows Christ seated in glory, holding the Gospel book.

Look closely

- Find the border around the page. Follow a pattern with your finger.
- Look for animals and birds hidden in the design. Can you find the peacocks?
- Is the figure of Christ solid and rounded, or flat and patterned?
- Find the small angels near the edges.

Talk about it

1. Why do you think the monks made the figures flat and patterned rather than realistic?
2. How long do you think it took to make one page?
3. What does this book tell you about how much the monks loved Scripture?

STUDIO PROJECT

My Illuminated Initial

You will design and paint the first letter of your name (or the first letter of a favorite Bible verse) as an illuminated initial with a knotwork border, and write a short verse beneath it.

You will need

- Heavy drawing or mixed-media paper (6×9 in or larger)
- Pencil, ruler and eraser
- Fine black pen
- Colored pencils, markers or watercolor
- A gold paint pen, gold marker or yellow ochre and yellow paint
- A sample alphabet (Uncial or simple Roman letters), printed or from a book

Steps

1. Draw a rectangle about 4×4 in near the top of your page. Inside it, draw your letter large, with thick strokes so there is room inside for patterns.
2. Draw a border around the rectangle about ½ in wide.
3. Fill the border with a simple knotwork or a repeating pattern of dots, zigzags or spirals.
4. Decorate inside the letter: a pattern, a vine with leaves, or a small animal or bird whose tail curls into the letter.
5. Go over the final lines with a fine black pen and erase the pencil.
6. Color with a limited palette: three or four rich colors (such as red, blue and green) plus gold.
7. Add gold to the letter or the border, but not everywhere, so it shines.
8. Under the initial, lightly rule lines and write a short Bible verse in your neatest hand, such as Psalm 119:105. Add tiny red dots around the letter, as the Lindisfarne monks did.

Tips

- For knotwork, draw the path as a single line first, then draw a second line beside it to make a ribbon, and erase where it goes under.
- Keep your letter readable; the decoration should serve the letter.

Check your work

- ☐ My letter is large, readable and decorated inside.
- ☐ My border has a pattern that repeats all the way around.
- ☐ I used a limited palette with gold as an accent.

SKETCHBOOK PRACTICE

1. Practice three kinds of knotwork borders.
2. Design an animal whose body curls into a letter of the alphabet.
3. Write a favorite verse in Uncial-style letters.

From history. Once printing with movable type spread in Europe after about 1450, hand-copied books slowly became rare. Yet early printed books often left space for an illuminator to paint in the large initials by hand, keeping the old craft alive.

COMMON MISTAKES

- Drawing the letter too thin, leaving no room for decoration.
- Using every color and gold everywhere, so nothing shines.
- Forgetting to plan the over-under pattern of the knot.

Make it a game · Scriptorium Story Chain. Take turns adding one sentence to a story about a day in a monk's scriptorium. Each sentence must use a word from the list: vellum, initial, knotwork, illumination, manuscript or scriptorium. A point for each term used correctly. Keep going until all six are used. Then draw a knotwork initial.

Scripture. “Thy word is a lamp unto my feet, and a light unto my path.” (Psalms 119:105, KJV)

Illuminated means “lit up.” The monks lit up the pages of Scripture with gold and color because they believed God’s Word gives light to our lives.

8.4 FROM MEDIEVAL TO RENAISSANCE: GIOTTO

OBJECTIVES

- Describe how Giotto's figures differ from earlier medieval figures.
- Explain the main ideas of Renaissance painting: solid forms, light and shadow, real space and real feeling.
- Make a final masterwork of a Bible scene that uses the skills of the whole year.

Warm-up. Look again at the Book of Kells page from Lesson 8.3, then at today's Giotto painting. Make two lists side by side: "Book of Kells" and "Giotto." Write three differences you notice in two minutes.

WATCH

Giotto, Virgin and Child enthroned (Ognissanti Madonna)

Smarthistory · 4:28

<https://www.youtube.com/watch?v=0CWpG3GVtA8>

WHEN TO WATCH

Before the picture study. Notice how Giotto's Madonna sits on a real throne in real space, compared with the flatter paintings before him.

Note: Made for older students; watch with a parent and pause to talk.

KEY TERMS

Middle Ages

The time in Europe from about AD 500 to 1400, also called the medieval period.

Byzantine style

A style of sacred art from the Eastern Roman Empire, with flat, gold backgrounds and graceful, patterned figures.

Renaissance

A French word meaning "rebirth." The period from about 1300 to 1600 when artists rediscovered the study of nature, the human figure and space.

altarpiece

A painting made to stand above or behind the altar of a church.

naturalism

Showing things as they really look in nature, with real weight, light and space.

CORE IDEAS

For hundreds of years, much sacred art in Europe followed the **Byzantine style**. Figures were tall, flat and graceful, set against shining gold backgrounds. They were not meant to look like ordinary people in an ordinary room; they pointed beyond this world to heaven. This art was beautiful and full of meaning.

Around 1300, a painter from Florence named **Giotto di Bondone** began to paint differently. His figures look heavy and solid, like they could stand up and walk. He used light and shadow to make their bodies and robes round. He built thrones and buildings that seem to have real depth. And he painted faces that show real feelings.

This was the start of the **Renaissance**. Over the next 300 years, artists like Fra Angelico, Raphael and Leonardo would add the tools you learned this year: proportion, light and shadow, linear and atmospheric perspective, and careful study of nature. Giotto was the first big step.

Look at what you have learned: you can draw forms that look solid (Unit 2), shade with one light source (Unit 4), make space with perspective (Unit 7) and lead the eye with composition (Unit 8). These are the tools of the Renaissance masters. You are learning from them just as young painters in their workshops did.

Your final project is a masterwork, like the piece a young craftsman made to show he had learned his trade. Work patiently and do your best, for the glory of God and the joy of making.

PICTURE STUDY



Ognissanti Madonna, Giotto di Bondone, about 1306–1310 · Tempera and gold on wood panel · Uffizi Gallery, Florence

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

This large altarpiece was painted for the Church of All Saints (Ognissanti) in Florence. It shows Mary enthroned, holding the Christ Child, surrounded by angels and saints. It hangs in the Uffizi Gallery near earlier paintings of the same subject, so visitors can see how much Giotto changed.

Look closely

- Look at Mary's knees under her robe. Do they look flat or like real knees with weight?
- Find the shading on the robes. Where does the light seem to come from?
- Look at the throne. Does it have depth? Can you see its sides and the space inside it?
- Look at the angels kneeling in front. Do they overlap?

Talk about it

1. What did Giotto keep from the older Byzantine style? (Hint: look at the background.)
2. What new things did he add?
3. Which skills that you learned this year do you see in this painting?

STUDIO PROJECT

My Masterwork: A Bible Scene

For your final project, you will make a picture of a Bible scene using the tools of the Renaissance: solid figures, one light source, a setting with depth and a clear focal point. This is your masterwork for the year.

You will need

- Good drawing or watercolor paper (11×14 in or larger)
- Pencils (HB, 2B, 4B), eraser and ruler
- Your choice of color: watercolor, colored pencils, tempera or oil pastels
- Your sketchbook for planning
- A Bible

Steps

1. Choose a peaceful scene, such as the shepherds in the field, Jesus blessing the children, Jesus calling the fishermen, Ruth in the field of Boaz, Noah's family building the ark, or the boy Jesus in the temple. Read the passage.
2. Make three thumbnails. Decide where the focal point will be and how leading lines will guide the eye to it.
3. Draw your chosen plan large and light. If there is a building or road, use one-point perspective.
4. Draw your figures using head-measured proportions and simple forms. Overlap them and make the farther figures smaller.
5. Choose one light source and mark it with an arrow. Shade the figures and objects with highlights, form shadows and cast shadows that agree with it.
6. Add a background with atmospheric perspective if your scene is outdoors.
7. Add color with a planned color scheme. Give the focal point the strongest contrast or brightest color.
8. Finish the details, sign and date your work, and write the Bible reference on the back. Present it at your family art show.

Tips

- This project may take two or three sessions. Plan well and do not rush the shading.
- Look at Giotto, Fra Angelico or Raphael for ideas about how to arrange figures.

Check your work

- ☐ My figures look solid and are well proportioned.
- ☐ All my shadows agree with one light source.
- ☐ My picture has depth and a clear focal point.

SKETCHBOOK PRACTICE

1. Copy one figure from a Giotto painting, focusing on the folds of the robe.
2. Make a two-column chart comparing a Byzantine icon and a Renaissance painting.
3. Write a short paragraph about the piece of art from this year that you are most thankful you made, and why.

From history. Giotto also painted the walls of the Scrovegni Chapel in Padua with scenes from the lives of Mary and Jesus, and designed the bell tower of Florence Cathedral. A later writer, Giorgio Vasari, said Giotto brought painting back to life after centuries.

COMMON MISTAKES

- Trying too many figures. Three to five figures is plenty.
- Shading each figure from a different direction.
- Running out of time. Plan your sessions.

Make it a game • Byzantine or Giotto Statues. Your parent calls 'Byzantine' and you freeze in a flat, stiff, front-facing pose. They call 'Giotto' and you freeze in a solid pose with real feeling and weight. Then name the Renaissance ideas: solid forms, light and shadow, real space and real feeling. Ten rounds. Point for each right pose.

Scripture. “And whatsoever ye do, do it heartily, as to the Lord, and not unto men;” (Colossians 3:23, KJV)

A masterwork is done with all your heart. Whether or not anyone praises it, you can offer your best work to the Lord.

COMPOSITION AND ART HISTORY

Composition is the way an artist arranges everything in a picture: where things go, what is big or small, and what you look at first. A good composition is like a good sentence: every part is in the right place. In the first half of this unit you will learn two of the most useful composition tools, the **rule of thirds** and **emphasis**.

In the second half you will travel back in time. You will see how monks in the Middle Ages made shining handwritten Bibles, and how, around the year 1300, a painter named Giotto began to paint people who looked solid and real, opening the door to the Renaissance. Your final project brings together everything you have learned this year.

PREREQUISITES

- Can draw figures, forms and animals with good proportion (Unit 2)
- Can shade with one light source (Unit 4)
- Can draw one-point perspective (Unit 7)

MASTERY CHECKLIST

- ☐ I can use a thirds grid to place a horizon and a focal point.
- ☐ I can create emphasis with contrast, color, placement and leading lines.
- ☐ I can design an illuminated letter with border patterns and explain how manuscripts were made.
- ☐ I can describe how Giotto's painting is different from earlier medieval painting and use Renaissance tools in my own work.

LESSONS IN THIS UNIT

8.1 The Rule of Thirds

2 sessions of 45 minutes

8.2 Emphasis: Where the Eye Goes First

2 sessions of 45 minutes

8.3 Illuminated Manuscripts

2 sessions of 45 minutes

8.4 From Medieval to Renaissance: Giotto

2 sessions of 45 minutes

UNIT 8 REVIEW

Answer each question aloud or in writing. Total: 50 points.

1. 5 pts

What is the rule of thirds?

2. 5 pts

Where should the horizon go if the sky is the most interesting part of your picture?

3. 5 pts

Why do artists make thumbnail sketches?

4. 5 pts

Name four ways to create emphasis.

5. 5 pts

How did Velázquez make the princess stand out in *Las Meninas*?

6. 5 pts

What is an illuminated manuscript?

7. 5 pts

What was vellum, and what did monks write with?

8. 5 pts

What does “Renaissance” mean, and about when did it begin?

9. 5 pts

Name two ways Giotto’s paintings were different from earlier Byzantine-style paintings.

10. 5 pts

Which skills from this year did you use in your masterwork?

ANSWER KEY

1. Dividing a picture into thirds across and down, and placing important things along the lines or where they cross (the sweet spots).
2. On the lower third line, so the sky fills two thirds of the picture.
3. To quickly try different compositions and choose the best before starting the big picture.
4. Any four: value contrast, bright or warm color, isolation, placement, detail, leading lines.
5. He put her in the brightest light near the center, in a pale gown against darker surroundings, with figures around her turned toward her.
6. A handwritten book decorated with bright colors and often gold, so the pages seem to light up.
7. Vellum was thin, scraped calfskin. They wrote with quill pens and ink.
8. It means “rebirth.” It began around 1300 in Italy.
9. Any two: figures look solid and heavy; light and shadow make robes round; thrones and buildings have depth; faces show real feeling.
10. Answers will vary; for example proportion, shading with one light source, perspective, color scheme and emphasis.

PORTFOLIO PIECE: MY MASTERWORK AND ART SHOW

Your masterwork from Lesson 8.4 is this unit's portfolio piece. Mount it on a larger sheet of colored paper and write a short museum label for it: title, your name, the date, the materials, and two sentences about the Bible scene and the skills you used. Then choose your best piece from each unit and hang them all for a family art show, where you tell guests about at least one of them.

LOOK FOR	WHAT IT MEANS
Figures and form	Figures are well proportioned and look solid, with clothing that folds naturally.
Light	Highlights, form shadows and cast shadows all agree with one light source.
Space	Overlap, size, perspective and atmospheric effects make the scene deep.
Composition and emphasis	The focal point is clear and the composition was planned with thumbnails.
Craftsmanship and presentation	The work is finished with care, mounted, labeled, signed and dated.