Answer Key · Lesson 5.6: Parallel and Perpendicular Lines

School Launch · Algebra I · Unit 5 · Worksheet A · for the parent

Key

1. $y = -2x + 9$

Write the equation of the line through $(5, -1)$ that is perpendicular to $y = \frac{1}{2}x + 7$.

2. $y = -4x + 18$

Write the equation of the line through $(4, 2)$ that is parallel to $y = -4x$.

3. $y = x + 1$

Write the equation of the line through $(5, 6)$ that is parallel to $y = x - 1$.

4. $y = -\frac{4}{3}x + \frac{26}{3}$

1. Perpendicular: negative reciprocal, $m = -\dfrac{4}{3}$
2. Through $(5, 2)$: $2 = -\dfrac{4}{3}(5) + b \Rightarrow b = \dfrac{26}{3}$
3. $y = \dfrac{26}{3} - \dfrac{4x}{3}$

Write the equation of the line through $(5, 2)$ that is perpendicular to $y = \frac{3}{4}x$.

5. $y = -x + 1$

1. Parallel: same slope, $m = -1$
2. Through $(0, 1)$: $1 = -1(0) + b \Rightarrow b = 1$
3. $y = 1 - x$

Write the equation of the line through $(0, 1)$ that is parallel to $y = -x + 8$.

6. $y = \frac{2}{3}x - \frac{8}{3}$

1. Parallel: same slope, $m = \dfrac{2}{3}$
2. Through $(4, 0)$: $0 = \dfrac{2}{3}(4) + b \Rightarrow b = -\dfrac{8}{3}$
3. $y = \dfrac{2x}{3} - \dfrac{8}{3}$

Write the equation of the line through $(4, 0)$ that is parallel to $y = \frac{2}{3}x - 5$.

7. $y = -2x - 4$

1. Perpendicular: negative reciprocal, $m = -2$
2. Through $(-5, 6)$: $6 = -2(-5) + b \Rightarrow b = -4$
3. $y = -2x - 4$

Write the equation of the line through $(-5, 6)$ that is perpendicular to $y = \frac{1}{2}x - 8$.

8. $y = \frac{2}{3}x + \frac{2}{3}$

1. Perpendicular: negative reciprocal, $m = \dfrac{2}{3}$
2. Through $(-4, -2)$: $-2 = \dfrac{2}{3}(-4) + b \Rightarrow b = \dfrac{2}{3}$
3. $y = \dfrac{2x}{3} + \dfrac{2}{3}$

Write the equation of the line through $(-4, -2)$ that is perpendicular to $y = -\frac{3}{2}x + 2$.

9. $y = \frac{3}{2}x - 8$

1. Perpendicular: negative reciprocal, $m = \dfrac{3}{2}$
2. Through $(6, 1)$: $1 = \dfrac{3}{2}(6) + b \Rightarrow b = -8$
3. $y = \dfrac{3x}{2} - 8$

Write the equation of the line through $(6, 1)$ that is perpendicular to $y = -\frac{2}{3}x + 8$.

10. $y = \frac{1}{2}x - \frac{13}{2}$

1. Parallel: same slope, $m = \dfrac{1}{2}$
2. Through $(5, -4)$: $-4 = \dfrac{1}{2}(5) + b \Rightarrow b = -\dfrac{13}{2}$
3. $y = \dfrac{x}{2} - \dfrac{13}{2}$

Write the equation of the line through $(5, -4)$ that is parallel to $y = \frac{1}{2}x$.