

5-6

Practice

Form K

Parallel and Perpendicular Lines

Write an equation in slope-intercept form of the line that passes through the given point and is parallel to the graph of the given equation.

1. $(-1, 3)$; $y = 2x - 8$

2. $(2, 6)$; $y = -3x + 5$

3. $(-3, 12)$; $y = -\frac{1}{3}x + 7$

4. $(8, -10)$; $y = \frac{3}{4}x + 1$

Determine whether the graphs of the given equations are *parallel*, *perpendicular*, or *neither*. Explain.

5. $y = -5x + 9$
 $5x + y = -21$

6. $x = \frac{1}{10}$
 $y = \frac{1}{10}$

7. $y = -4x + 14$
 $-x + 4y = 14$

8. $y = \frac{6}{7}x + 4$
 $y = -\frac{6}{7}x - 5$

Determine whether each statement is *always*, *sometimes*, or *never* true. Explain.

9. Two lines with different slopes are parallel.

10. Two lines with the same y-intercept are perpendicular.

11. Two lines whose slopes are opposites of each other are perpendicular.

Write an equation of the line that passes through the given point and is perpendicular to the graph of the given equation.

12. $(6, -2); y = -3x + 4$

13. $(2, 7); y = \frac{1}{2}x - 11$

14. $(-5, -6); x + y = 6$

15. $(4, -5); 2x + 2y = 6$

16. **Open-Ended** Write the equations of three lines whose graphs are parallel to $y = 2x + 11$.

17. **Open-Ended** Write the equations of two lines whose graphs are perpendicular to $y = -\frac{1}{3}x - 9$.

18. What is the slope of a line that is parallel to $y = 2$?

19. What is the slope of a line that is perpendicular to $y = 2$?

20. What is the slope of a line that is parallel to $x = -4$?

21. What is the slope of a line that is perpendicular to $x = -4$?

22. On a map, Center St. passes through coordinates $(5, -3)$ and $(3, 7)$. Merrie Rd. intersects Center St. and passes through coordinates $(2, 6)$ and $(-3, 5)$. Are these streets perpendicular? Explain.