

SKILL

76

Skills Readiness***Slopes of Parallel and Perpendicular Lines***

Parallel Lines	Perpendicular Lines
If two lines are parallel, they have equal slopes. So, if two lines have equal slopes, they are parallel.	If two lines are perpendicular, they have slopes that are negative reciprocals. So, if two lines have slopes that are negative reciprocals, they are perpendicular.
<p>Example 1: $y = 7x - 5$ $y = 7x + 9$</p> <p>Remember, when an equation is written in the form $y = mx + b$, the coefficient of x is the slope.</p> <p>Since the slope of both lines is 7, the lines are parallel.</p>	<p>Example 2: $y = 3x - 5$ $x + 3y = 8$</p> <p>First, rewrite the second equation in slope-intercept form: $y = -\frac{1}{3}x + \frac{8}{3}$. The slope of the first line is 3 and the slope of the second line is $-\frac{1}{3}$. Since 3 and $-\frac{1}{3}$ are negative reciprocals, the lines are perpendicular.</p>

Practice on Your Own

State whether the linear equations in each pair are parallel, perpendicular, or neither.

1. $y = 6x - 3$
 $y = -\frac{1}{6}x + 7$

2. $y = 3x + 2$
 $2y = 6x - 6$

3. $8x - 2y = 3$
 $x + 4y = -1$

4. $3x + 2y = 5$
 $3y + 2x = -3$

5. $y - 5 = 6x$
 $y - 6x = -1$

6. $y = 3x + 9$
 $y = \frac{1}{3}x - 4$

7. $y = x + 3$
 $y = -x - 5$

8. $y = 6$
 $x = -2$

9. $3y = -x$
 $3x = y$

Check

State whether the linear equations in each pair are parallel, perpendicular, or neither.

10. $y = 5 + 7x$
 $y = -\frac{1}{7}x - 2$

11. $2x + y = 5$
 $2y = -4x + 3$

12. $x = \frac{1}{3}y - 1$
 $2y = 6x$

13. $y = 2$
 $y - 7 = 0$

14. $y = \frac{1}{4}x + 3$
 $2y - 8x = 1$

15. $x - 2y = 0$
 $y + 1 = -2x$
