Name_____ Date _____

4.4 Practice A

In Exercises 1 and 2, determine which of the lines, if any, are parallel. Explain.

1. Line a passes through $(-1, 1)$ and $(1, 3)$.
   Line b passes through $(3, 4)$ and $(0, 2)$.
   Line c passes through $(0, 1)$ and $(3, 3)$.

2. Line a: $2y = x + 12$
   Line b: $2y - x = 5$
   Line c: $2y + x = 4$

In Exercises 3 and 4, write an equation of the line that passes through the given point and is parallel to the given line.

3. $(1, 3); y = 2x - 5$

4. $(-2, 1); y = -4x + 3$

In Exercises 5 and 6, determine which of the lines, if any, are parallel or perpendicular. Explain.

5. Line a passes through $(-2, 3)$ and $(1, -1)$.
   Line b passes through $(-3, 1)$ and $(1, 4)$.
   Line c passes through $(0, 2)$ and $(3, -2)$.

6. Line a: $y = -4x + 7$
   Line b: $x = 4y + 2$
   Line c: $-4y + x = 3$

In Exercises 7 and 8, write an equation of the line that passes through the given point and is perpendicular to the given line.

7. $(2, -3); y = \frac{1}{3}x - 5$

8. $(6, 1); y = -\frac{3}{5}x - 5$

In Exercises 9 and 10, write an equation of a line that is (a) parallel to the given line and (b) perpendicular to the given line.

9. $y = 7$

10. $x = 12$

11. The vertices of a triangle are $A(1, 1)$, $B(0, 2)$, and $C(2, 4)$. Is triangle ABC a right triangle? Explain.

In Exercises 12–14, determine whether the statement is *sometimes*, *always*, or *never* true. Explain your reasoning.

12. A line with a positive slope and a line with a negative slope are parallel.

13. A vertical line is perpendicular to the x-axis.

14. Two lines with the same x-intercept are perpendicular.

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4.4 Practice B

In Exercises 1 and 2, determine which of the lines, if any, are parallel. Explain.

1. Line a passes through $(-1, 4)$ and $(1, 5)$.
   Line b passes through $(-2, 7)$ and $(0, 4)$.
   Line c passes through $(0, 4)$ and $(2, 5)$.

2. Line a: $6y = -x + 12$
   Line b: $x = 6y + 5$
   Line c: $-6y + x = 5$

In Exercises 3 and 4, write an equation of the line that passes through the given point and is parallel to the given line.

3. $(14, 3)$; $2y - x = 8$

4. $(3, -5)$; $3y = 2x - 1$

In Exercises 5 and 6, determine which of the lines, if any, are parallel or perpendicular. Explain.

5. Line a passes through $(-5, -2)$ and $(1, -1)$.
   Line b passes through $(-3, 5)$ and $(3, 6)$.
   Line c passes through $(0, 7)$ and $(1, 1)$.

6. Line a: $-x + 2y = 3$
   Line b: $-6x = 3y - 1$
   Line c: $4x - 8y = 5$

In Exercises 7 and 8, write an equation of the line that passes through the given point and is perpendicular to the given line.

7. $(-3, 1)$; $y = -5x + 2$

8. $(8, -5)$; $y = 2x + 3$

In Exercises 9 and 10, write an equation of a line that is (a) parallel to the given line and (b) perpendicular to the given line.

9. $y = -5$

10. $x = 6$

11. For what value of a are the graphs of $3y = 6x - 5$ and $9y = ax + 2$ parallel? perpendicular?

In Exercises 12–14, determine whether the statement is *sometimes*, *always*, or *never* true. Explain your reasoning.

12. A line with a positive slope and a line with a negative slope are perpendicular.

13. A vertical line and a horizontal line are perpendicular.

14. Two horizontal lines are perpendicular.