

LESSON **Practice B**
5-8 *Slopes of Parallel and Perpendicular Lines*

Identify which lines are parallel.

1. $y = 3x + 4$; $y = 4$; $y = 3x$; $y = 3$

2. $y = \frac{1}{2}x + 4$; $x = \frac{1}{2}$; $2x + y = 1$; $y = \frac{1}{2}x + 1$

3. Find the slope of each segment.

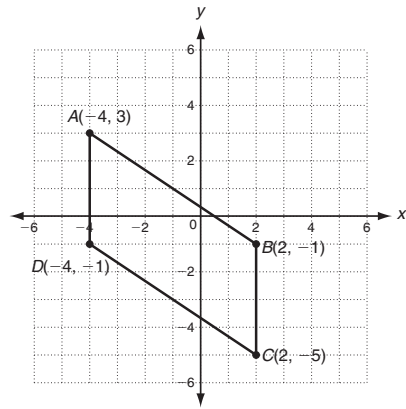
slope of \overline{AB} : _____

slope of \overline{AD} : _____

slope of \overline{DC} : _____

slope of \overline{BC} : _____

Explain why $ABCD$ is a parallelogram.

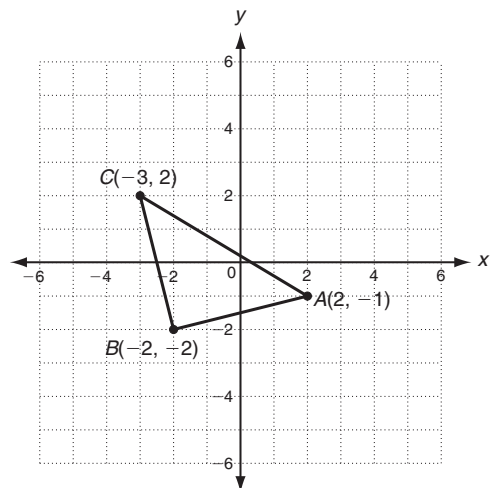


Identify which lines are perpendicular.

4. $y = 5$; $y = \frac{1}{8}x$; $x = 2$; $y = 8x - 5$

5. $y = -2$; $y = -\frac{1}{2}x - 4$; $y - 4 = 2(x + 3)$; $y = -2x$

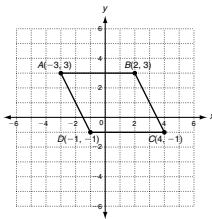
6. Show that ABC is a right triangle.



LESSON **Practice A**
5-3 Slopes of Parallel and Perpendicular Lines

Circle the equations whose lines are parallel.

- $y = 4$; $y = \frac{1}{2}x + 3$; $y = \frac{1}{2}x$; $y = 2x$
- $y - 5 = 6(x + 2)$; $y = -6x$; $6x + y = 4$; $y = 6$
- Find the slope of each segment.
 slope of \overline{AB} : 0
 slope of \overline{AD} : -2
 slope of \overline{DC} : 0
 slope of \overline{BC} : -2

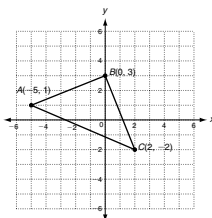


Explain why $ABCD$ is a parallelogram.
The opposite sides have the same slope which means they are parallel.
 $ABCD$ is a parallelogram because both pairs of opposite sides are parallel.

Circle the equations whose lines are perpendicular.

- $y = x - 4$; $y = 3$; $y = -x$; $y = -3$
- $y = 5x + 1$; $y = 3$; $y = \frac{1}{5}x$; $y = 5$
- $y = \frac{1}{3}x - 2$; $x = 2$; $y - 4 = 3(x + 3)$; $y = -3x + 9$

- Find the slope of each segment.
 slope of \overline{AB} : $\frac{2}{5}$
 slope of \overline{BC} : $-\frac{5}{2}$
 slope of \overline{AC} : $-\frac{3}{7}$



Explain why ABC is a right triangle.
 $\frac{2}{5}(-\frac{5}{2}) = -1$ so \overline{AB} is perpendicular to \overline{BC} . ABC is a right triangle because it contains a right angle.

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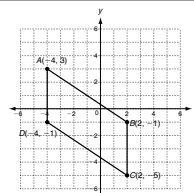
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LESSON **Practice B**
5-3 Slopes of Parallel and Perpendicular Lines

Identify which lines are parallel.

- $y = 3x + 4$; $y = 4$; $y = 3x$; $y = 3$
 $y = 3x + 4$ and $y = 3x$; $y = 4$ and $y = 3$
- $y = \frac{1}{2}x + 4$; $x = \frac{1}{2}$; $2x + y = 1$; $y = \frac{1}{2}x + 1$
 $y = \frac{1}{2}x + 4$ and $y = \frac{1}{2}x + 1$

- Find the slope of each segment.
 slope of \overline{AB} : $-\frac{2}{3}$
 slope of \overline{AD} : undefined
 slope of \overline{DC} : $-\frac{2}{3}$
 slope of \overline{BC} : undefined

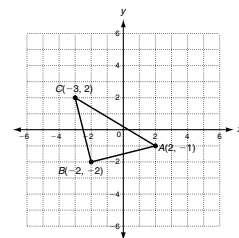


Explain why $ABCD$ is a parallelogram.
The opposite sides have the same slope which means they are parallel.
A quadrilateral is a parallelogram if the opposite sides are parallel.

Identify which lines are perpendicular.

- $y = 5$; $y = \frac{1}{8}x$; $x = 2$; $y = 8x - 5$
 $y = 5$ and $x = 2$
- $y = -2$; $y = -\frac{1}{2}x - 4$; $y - 4 = 2(x + 3)$; $y = -2x$
 $y = -\frac{1}{2}x - 4$ and $y - 4 = 2(x + 3)$

- Show that ABC is a right triangle.
 slope of $\overline{AB} = \frac{1}{4}$; slope of $\overline{BC} = -4$; \overline{AB} is perpendicular to \overline{BC} because $\frac{1}{4}(-4) = -1$.
 ABC is a right triangle because it contains a right angle.



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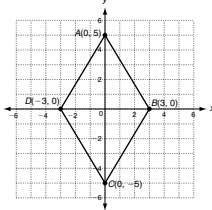
LESSON **Practice C**
5-3 Slopes of Parallel and Perpendicular Lines

Identify which lines are parallel.

- $y = \frac{1}{4}x + 2$; $y = 4$; $y = 4x$; $y = \frac{1}{4}$
 $y = \frac{1}{4}x + 2$ and $y = \frac{1}{4}x + 2$
- $y - 1 = -(x + 7)$; $y = -x$; $x + y = 3$; $y = 3x$
 $y - 1 = -(x + 7)$ and $y = -x$ and $x + y = 3$

3. Show that $ABCD$ is a parallelogram.

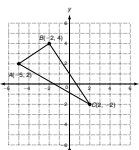
- slope of $\overline{AB} = -\frac{5}{3}$
 slope of $\overline{CD} = -\frac{5}{3}$
 slope of $\overline{BC} = \frac{5}{3}$
 slope of $\overline{AD} = \frac{5}{3}$



The opposite sides have the same slope which means they are parallel.
 $ABCD$ is a parallelogram because both pairs of opposite sides are parallel.

Identify which lines are perpendicular.

- $y = 3x - 1$; $y = 3$; $x - 3y = 6$; $x = 6$
 $y = 3$ and $x = 6$
- $y = \frac{1}{2}x + 2$; $y + 1 = -2x$; $y = \frac{1}{2}$; $2x - y = 1$
 $y = \frac{1}{2}x + 2$ and $y + 1 = -2x$
- Show that ABC is a right triangle.
 slope of $\overline{AB} = \frac{2}{3}$
 slope of $\overline{BC} = -\frac{3}{2}$
 \overline{AB} is perpendicular to \overline{BC} because $\frac{2}{3}(-\frac{3}{2}) = -1$.
 ABC is a right triangle because it contains a right angle.



- Line m contains $(6, 8)$ and $(-1, 2)$. Line n contains $(-1, 5)$ and $(5, y)$.
 What is the value of y if line m is perpendicular to line n ? -2

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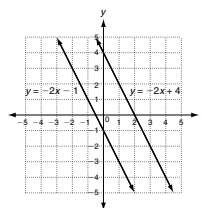
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LESSON **Reteach**
5-3 Slopes of Parallel and Perpendicular Lines

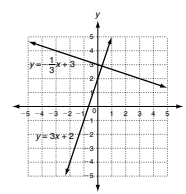
Two lines are **parallel** if they lie in the same plane and have no points in common. The lines will never intersect.

- Identify which lines are parallel.
 $y = -2x + 4$; $y = 3x + 4$; $y = -2x - 1$
 $y = -2x + 4$; $y = 3x + 4$; $y = -2x - 1$
 $m = -2$, $m = 3$, $m = -2$
 $b = 4$, $b = 4$, $b = -1$
 $y = -2x + 4$ and $y = -2x - 1$ are parallel.



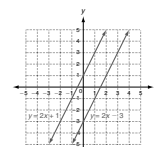
Two lines are **perpendicular** if they intersect to form right angles.

- Identify which lines are perpendicular.
 If the product of the slopes of two lines is -1 , the two lines are perpendicular.
 $y = -3x + 1$; $y = 3x + 2$; $y = -\frac{1}{3}x + 3$
 $m = -3$, $m = 3$, $m = -\frac{1}{3}$
 Because $3(-\frac{1}{3}) = -1$, $y = 3x + 2$ and $y = -\frac{1}{3}x + 3$ are perpendicular.



Identify which two lines are parallel. Then graph the parallel lines.

- $y = 4x + 2$; $y = 2x + 1$; $y = 2x - 3$
 $y = 2x + 1$; $y = 2x - 3$



Identify which two lines are perpendicular. Then graph the perpendicular lines.

- $y = -\frac{2}{3}x + 2$; $y = \frac{3}{2}x + 1$; $y = \frac{2}{3}x - 3$
 $y = -\frac{2}{3}x + 2$; $y = \frac{3}{2}x + 1$

