

# REVIEW: Parallel and Perpendicular Lines

Name \_\_\_\_\_

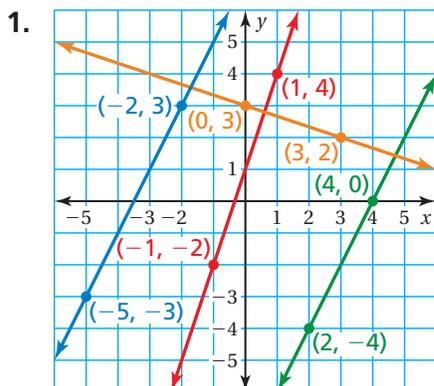
## Key Concept and Vocabulary

Lines in the same plane that do not intersect are called **parallel lines**. Two lines are parallel if they have the same slope.



Lines in the same plane that intersect at right angles are called **perpendicular lines**. Two lines are perpendicular if and only if the product of their slopes is  $-1$ .

## Skill Example



**Blue line:** slope =  $\frac{y_2 - y_1}{x_2 - x_1} = \frac{3 - (-3)}{-2 - (-5)} = \frac{6}{3} = 2$

**Red line:** slope =  $\frac{y_2 - y_1}{x_2 - x_1} = \frac{4 - (-2)}{1 - (-1)} = \frac{6}{2} = 3$

**Green line:** slope =  $\frac{y_2 - y_1}{x_2 - x_1} = \frac{0 - (-4)}{4 - 2} = \frac{4}{2} = 2$

**Orange line:** slope =  $\frac{y_2 - y_1}{x_2 - x_1} = \frac{2 - 3}{3 - 0} = -\frac{1}{3}$

The blue and green lines are parallel because they have the same slope.

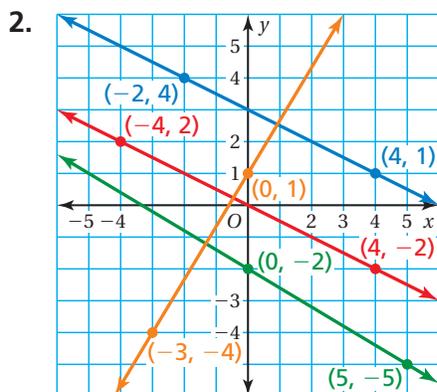
The red and orange lines are perpendicular because  $3 \cdot \left(-\frac{1}{3}\right) = -1$ .



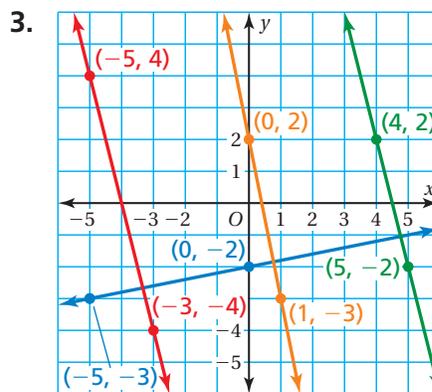
## PRACTICE MAKES PURR-FECT™

Check your answers at [BigIdeasMath.com](http://BigIdeasMath.com).

Determine which lines are parallel and which lines are perpendicular. Explain.



parallel: blue and red; same slope  
perpendicular: green and orange;  
product of slopes is  $-1$



parallel: red and green; same slope  
perpendicular: blue and orange;  
product of slopes is  $-1$