

# Challenge Problems

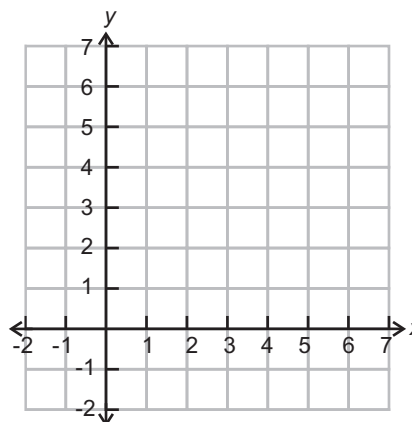
## 10.3

NAME \_\_\_\_\_

Module 10 Coordinate Geometry and Spatial Visualization  
Lesson 3 Coordinate Geometry

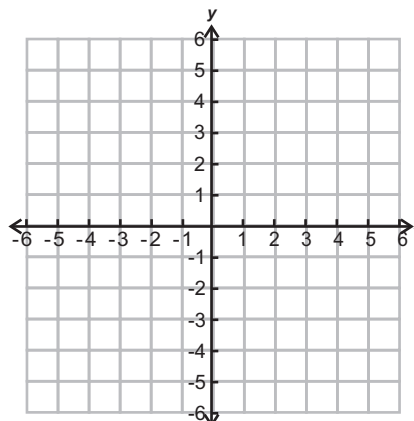
### Set 1

- 1 Use the Pythagorean Theorem to find the distance from the origin to  $(4, 6)$ . Give the answer in both exact form and approximate form.

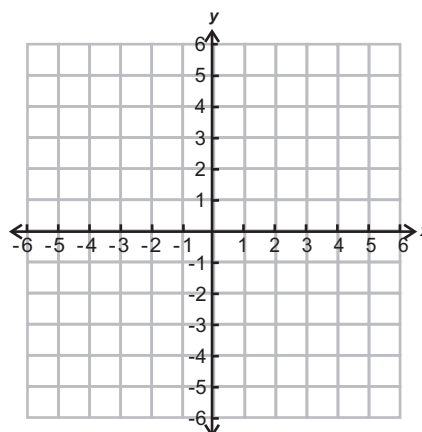


### Set 2

- 1 A line with a slope of zero passes through  $(4, -2)$  and  $(4, y)$ . What is the value of  $y$ ? Explain how you know.



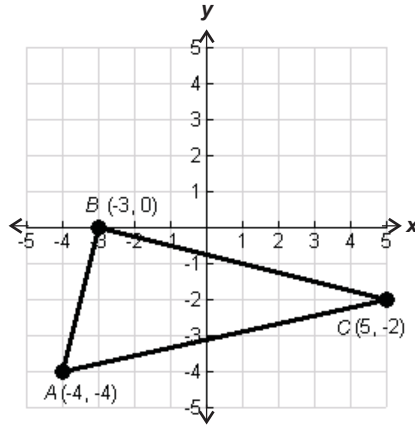
- 2 A line passes through the point  $(-2, -3)$  and has a slope of one. Name two other points on the line. Explain how you found them.



Set 3



Use slope to show that triangle  $ABC$  is a right triangle.



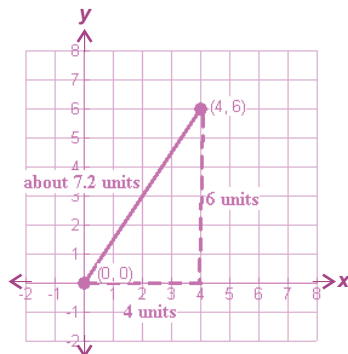
NAME \_\_\_\_\_

**Module 10**    **Coordinate Geometry and Spatial Visualization**  
**Lesson 3**     **Coordinate Geometry**

**Possible Answers**

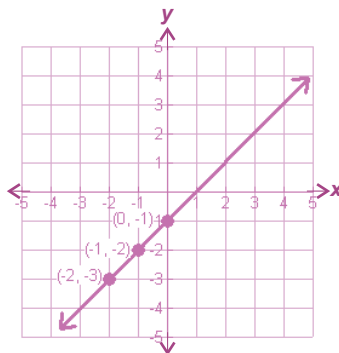
**Set 1**

- $a^2 + b^2 = c^2$   
 $4^2 + 6^2 = c^2$   
 $16 + 36 = c^2$   
 $52 = c^2$   
 $\sqrt{52} = c$   
 $7.2 \approx c$



**Set 2**

- If the slope is zero, the line must be horizontal; and therefore, the  $y$ -coordinates must be the same. Since the  $x$ -coordinates are identical (four) and the  $y$ -coordinates are also the same, the coordinate points define not a line but a single point. So,  $y$  must be  $-2$ .
- A slope of one is the same as the fraction  $\frac{1}{1}$ . To get other points on the line, start at  $(-2, -3)$  and then rise one and run one. Two other points on the line are  $(-1, -2)$  and  $(0, -1)$ .



**Set 3**

- The slope of  $\overline{AB}$  is four. The slope of  $\overline{BC}$  is  $-\frac{1}{4}$ . The slope of  $\overline{AC}$  is  $\frac{2}{9}$ . A right triangle has one right angle, which is formed by perpendicular line segments.  $\overline{AB}$  and  $\overline{BC}$  are perpendicular because their slopes are opposite reciprocals. So,  $\triangle ABC$  is a right triangle.

