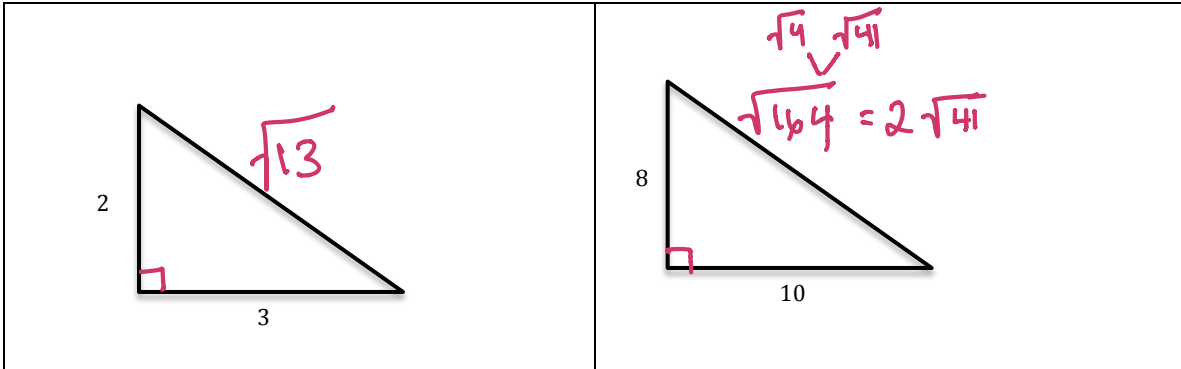


**LEARNING OBJECTIVE:** We will use the Pythagorean Theorem to determine the distance between two points on the coordinate plane. (G8M7L11)

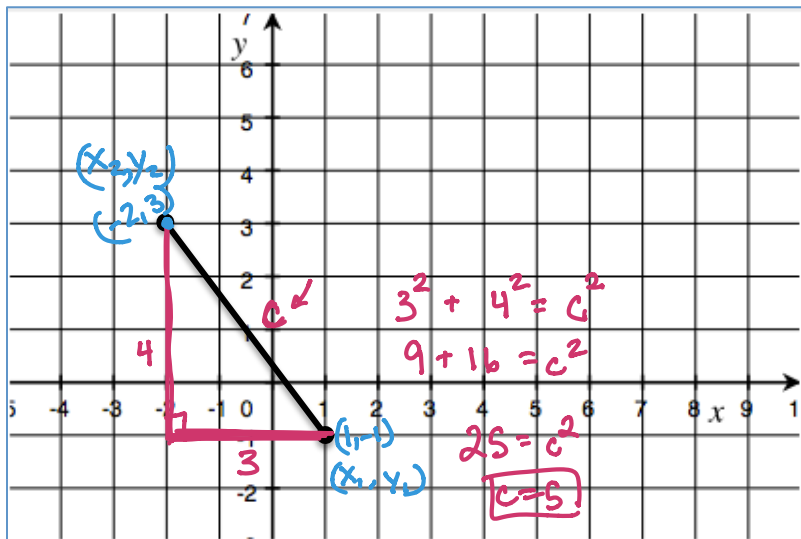
**ACTIVATING PRIOR KNOWLEDGE:**

We can use the Pythagorean Theorem to find the length of missing sides of a right triangle.



**CONCEPT DEVELOPMENT:**

If we had a coordinate plane, could we use the Pythagorean Theorem somehow to help us find the distance of the hypotenuse of a right triangle? How??



**The Distance Formula:**

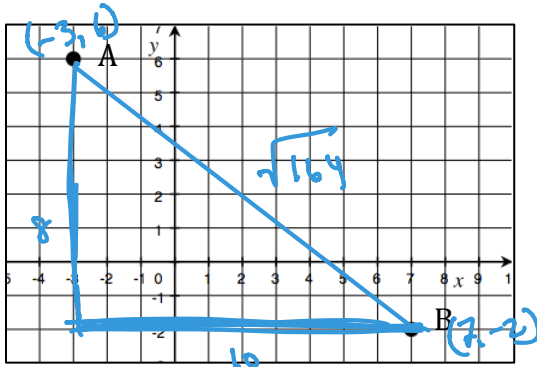
$$\sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2} = c$$

**GUIDED PRACTICE:**

**Steps for Finding the Distance Between 2 Points on the Coordinate Plane**

1. Draw a right triangle, using the given diagonal length as your hypotenuse.
2. Use the Pythagorean Theorem ( $a^2 + b^2 = c^2$ ) to determine the length of the hypotenuse.
3. Estimate the hypotenuse to the nearest tenth of a unit.

Find the distance between A and B.

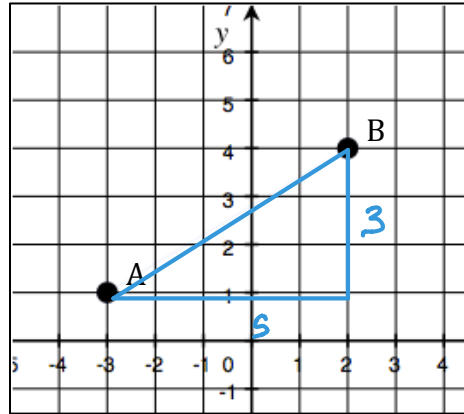


$$\begin{array}{r} 12.8 \\ \times 12.8 \\ \hline 163.84 \end{array}$$

$$\begin{aligned} \overline{AB} &= \sqrt{(7-(-3))^2 + (-2-6)^2} \\ \overline{AB} &= \sqrt{100+64} \\ &= \sqrt{164} \end{aligned}$$

12.8

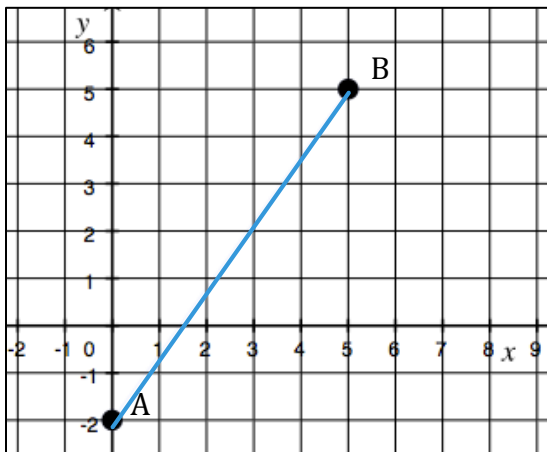
Find the distance between A and B.



$$\begin{aligned} \overline{AB} &= \sqrt{34} \\ \overline{AB} &\approx 5.8 \end{aligned}$$

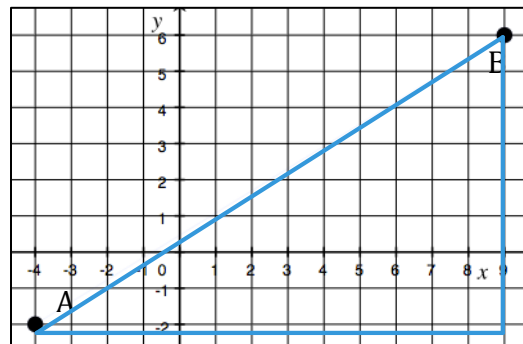
$$\begin{array}{r} 5.8 \\ \times 5.8 \\ \hline 46.4 \\ 290.0 \\ \hline 33.64 \end{array}$$

Find the distance between A and B.



$$\begin{aligned} \overline{AB} &= \sqrt{74} \\ \overline{AB} &\approx 8.6 \end{aligned}$$

Find the distance between A and B.



$$\begin{aligned} 8^2 + 13^2 &= \overline{AB}^2 \\ \overline{AB}^2 &= 233 \\ \overline{AB} &= \sqrt{233} \\ \overline{AB} &\approx 15.3 \end{aligned}$$

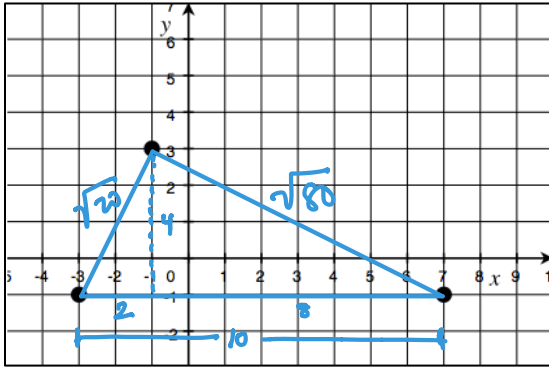
Name: \_\_\_\_\_

Math \_\_\_\_\_, Period \_\_\_\_\_

Mr. Rogove

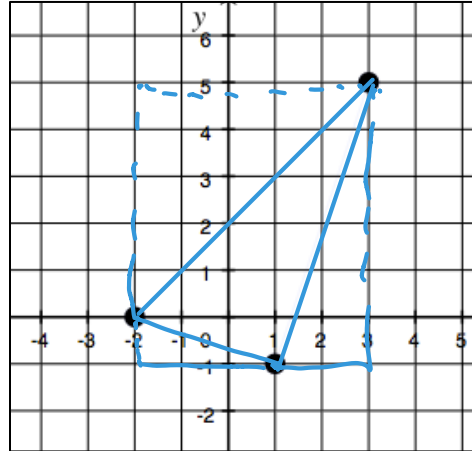
Date: \_\_\_\_\_

Is the triangle formed by the 3 points a right triangle? Prove with Pythagorean Theorem.



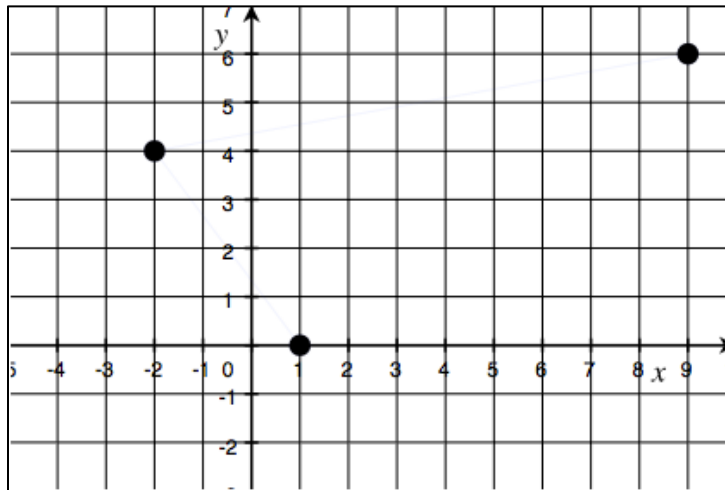
$$(\sqrt{20})^2 + (\sqrt{80})^2 = (10)^2$$

Is the triangle formed by the 3 points a right triangle? Prove with the Pythagorean Theorem.



**CLOSURE:**

IS this a right triangle? How do you know?



Name: \_\_\_\_\_

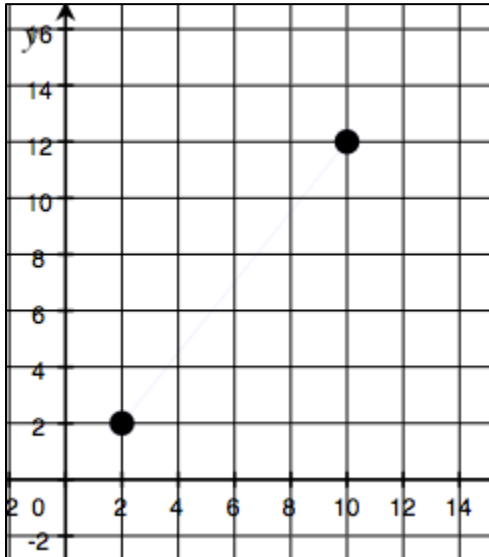
Math \_\_\_\_\_, Period \_\_\_\_\_

Mr. Rogove

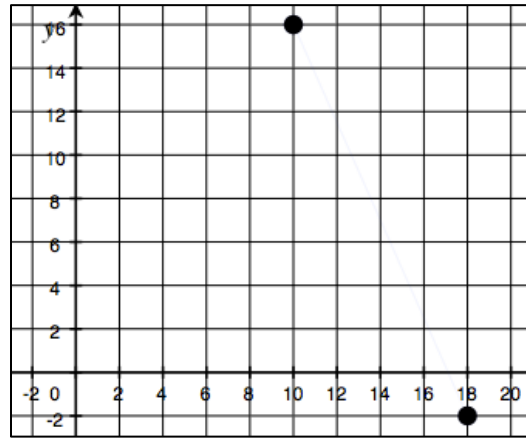
Date: \_\_\_\_\_

### INDEPENDENT PRACTICE:

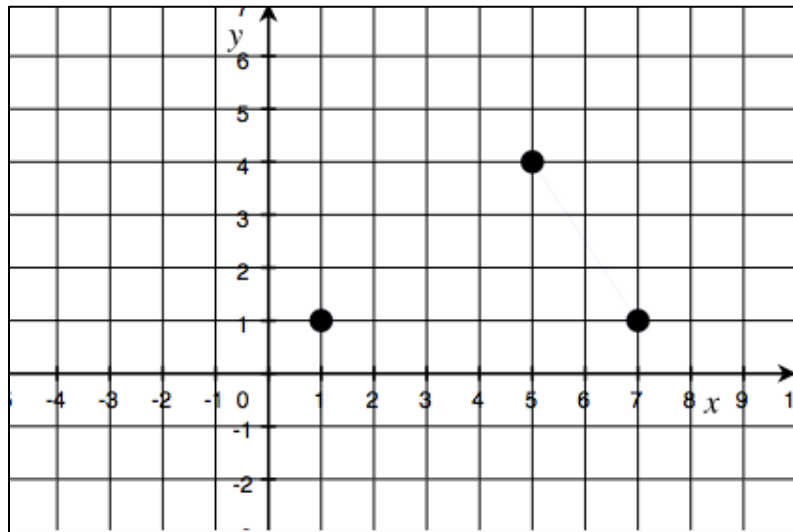
Find the Distance between the two points.



Find the distance between the two points.



Is this a right triangle? Why or why not? Prove with Pythagorean Theorem.



Name: \_\_\_\_\_

Math \_\_\_\_\_, Period \_\_\_\_\_

Mr. Rogove

Date: \_\_\_\_\_

**NOTES:** Lesson 17, Module 7 Grade 8