

Name: _____

Math _____, Period _____

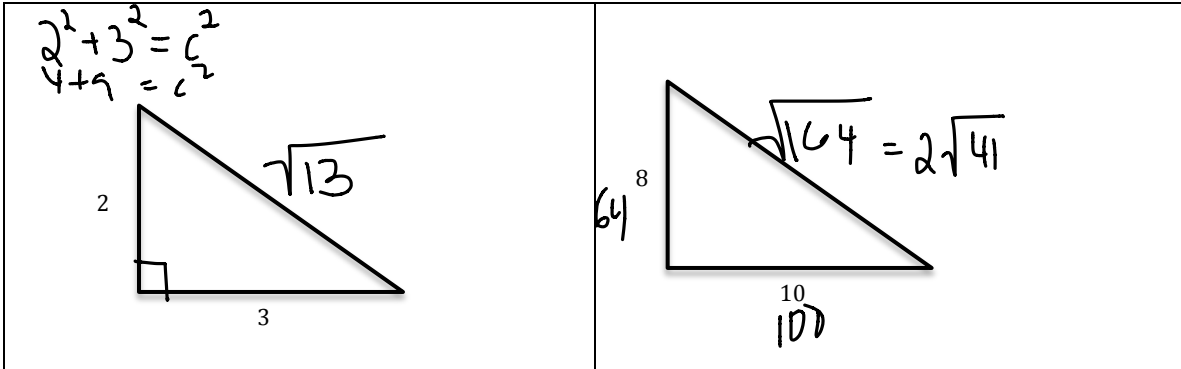
Mr. Rogove

Date: _____

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

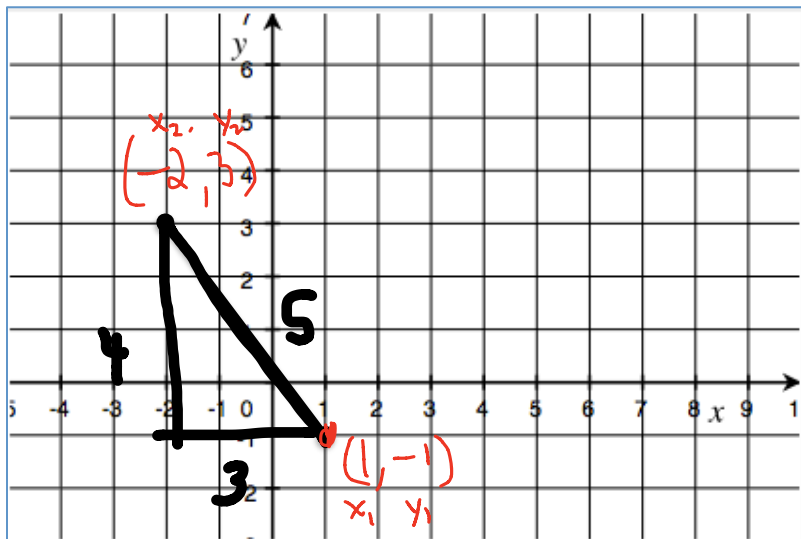
ACTIVATING PRIOR KNOWLEDGE:

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:

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

$$\sqrt{(1 - (-2))^2 + (-1 - 3)^2} = c$$

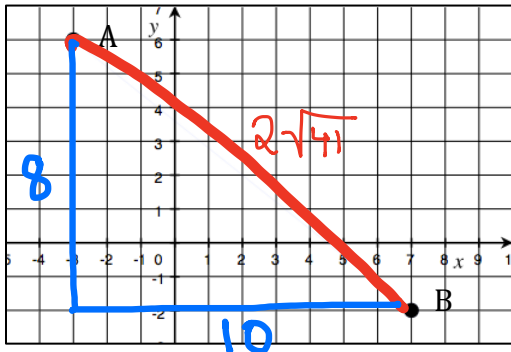
$$\sqrt{3^2 + (-4)^2} = c$$

$$\sqrt{9+16} = c \quad \sqrt{25} = c \quad \boxed{c=5}$$

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.



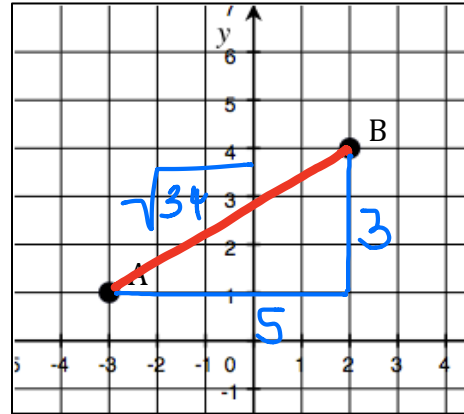
$$8^2 + 10^2 = c^2$$

$$64 + 100 = c^2$$

$$164 = c^2$$

$$c = 2\sqrt{41}$$

Find the distance between A and B.

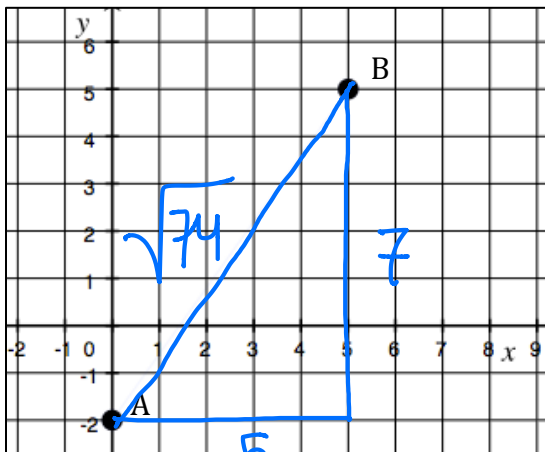


$$3^2 + 5^2 = c^2$$

$$9 + 25 = c^2$$

$$34 = c^2$$

Find the distance between A and B.

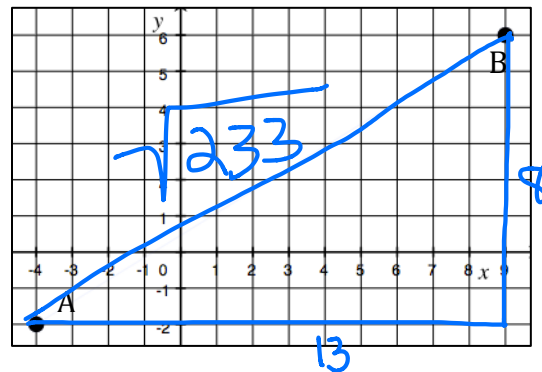


$$5^2 + 7^2 = c^2$$

$$25 + 49 = c^2$$

$$74 = c^2$$

Find the distance between A and B.

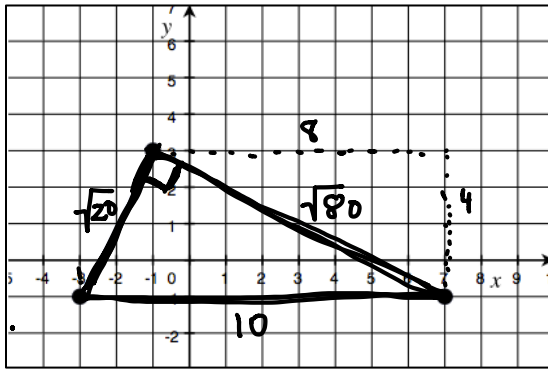


$$8^2 + 13^2 = c^2$$

$$64 + 169 = c^2$$

$$233 = c^2$$

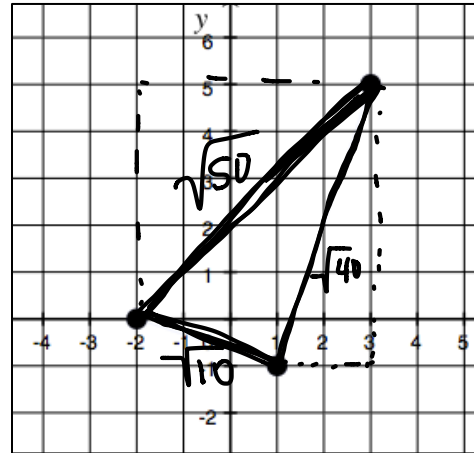
Is the triangle formed by the 3 points a right triangle? Prove with Pythagorean Theorem.



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

$$20 + 80 \neq 100$$

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

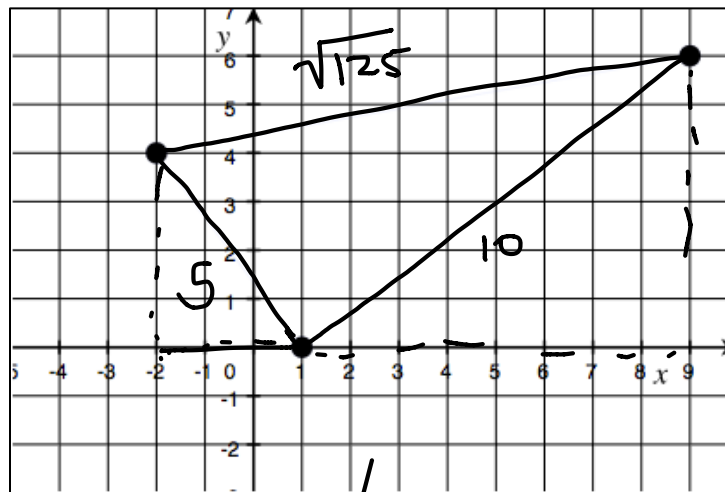


$$(\sqrt{10})^2 + (\sqrt{40})^2 = (\sqrt{50})^2$$

$$10 + 40 = 50$$

CLOSURE:

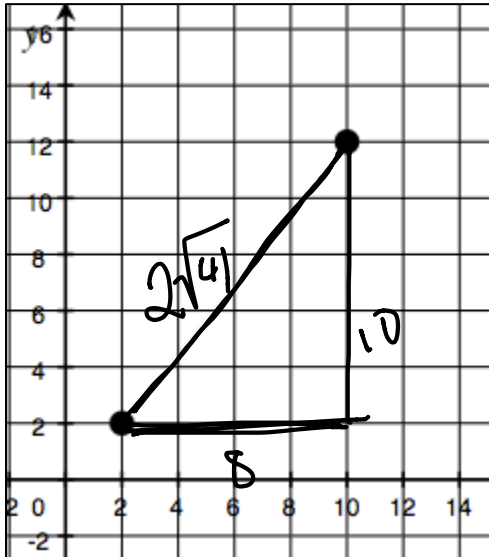
IS this a right triangle? How do you know?



$$5^2 + 10^2 = (\sqrt{125})^2$$

INDEPENDENT PRACTICE:

Find the Distance between the two points.

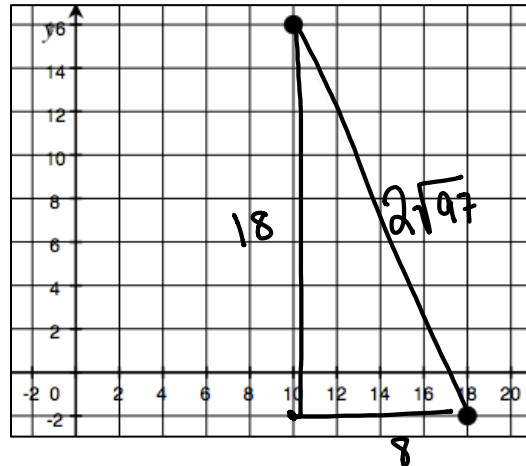


$$8^2 + 10^2 = c^2$$

$$164 = c^2$$

$$c = \sqrt{164}$$

Find the distance between the two points.

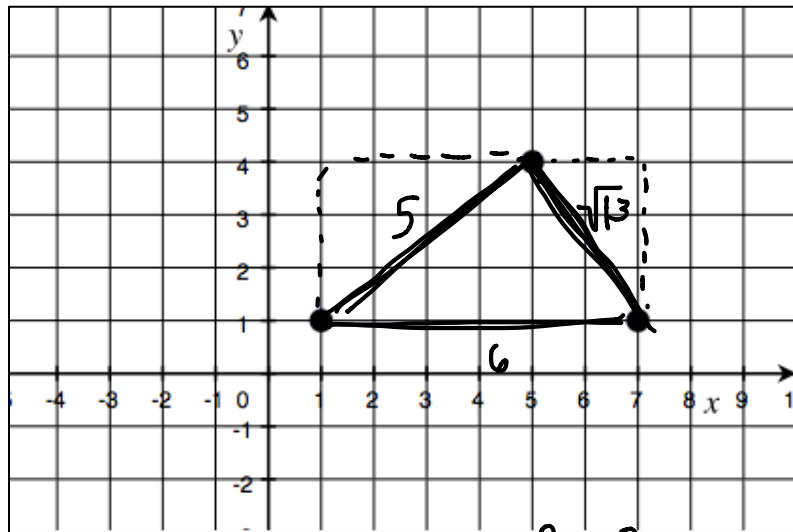


$$18^2 + 8^2$$

$$324 + 64 = 388$$

$$\sqrt{388} = \sqrt{4 \cdot 97}$$

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



No.

$$5^2 + (\sqrt{13})^2 = 6^2$$

$$25 + 13 \neq 36$$

$$a^2 + b^2 \neq c^2$$

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NOTES: Lesson 17, Module 7 Grade 8