

Name _____ Date _____

Distance on the Coordinate Plane

(Pages 410–413)

You can use what you know about right triangles to find the distance between two points on a coordinate grid.

Finding Distance on the Coordinate Plane

To find the distance between two points on the coordinate plane, draw the segment that joins the points. Then make that segment the hypotenuse of a right triangle. Use the Pythagorean Theorem to find the length of the hypotenuse, which is the distance between the two points.

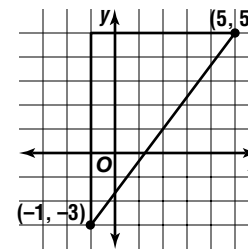
EXAMPLE

Find the distance between the points $(5, 5)$ and $(-1, -3)$.

First draw the segment that joins these two points. Then draw segments so that this segment is the hypotenuse of a right triangle. Count squares to find the lengths of the legs, 6 and 8. Since 6 and 8 are the first two parts of a Pythagorean triple, you know that the length of the hypotenuse is 10.

Check: Does $6^2 + 8^2 = 10^2$? Yes, because $36 + 64 = 100$.

The distance between the two points is 10 units.



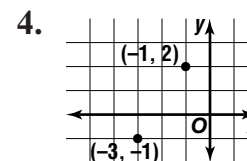
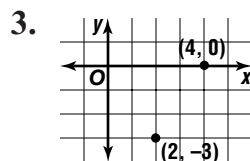
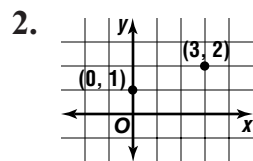
Try This Together

- Find the distance between $(7, 3)$ and $(2, -1)$. Round to the nearest tenth.

HINT: Graph the points and then draw segments down from $(7, 3)$ and to the right from $(2, -1)$.

PRACTICE

Find the distance between each pair of points whose coordinates are given. Round to the nearest tenth.



Find the distance between the points. Round to the nearest tenth.

5. $(-3, 3), (2, 0)$ 6. $(4, 4), (-1, -1)$ 7. $(0, 0), (-6, 2)$ 8. $(0, -3), (4, 3)$

9. **Geometry** A right triangle on the coordinate plane has vertices $A(3, 2)$, $B(-1, -2)$, and $C(3, -2)$. Find the length of the hypotenuse.



10. **Standardized Test Practice** Find the distance between $A(8, 4)$ and $B(0, -2)$.

A 48 units

B 100 units

C 10 units

D 64 units

Answers: 1. 6.4 units 2. 3.2 units 3. 3.6 units 4. 3.6 units 5. 5.8 units 6. 7.1 units 7. 6.3 units 8. 7.2 units 9. 5.7 units 10. C