

NEED TEXTBOOK

**(For Power Up, for the
homework)**

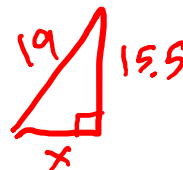
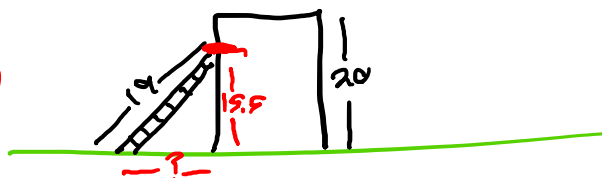
Warmup 3/(Mr. Lischwe's mom's birthday)

Draw a picture to help you solve each problem.

COMPARE PICTURES AT YOUR TABLE!!!

1. A 19-foot ladder is leaning against a 20-foot building. How far away from the building do you need to place the ladder to reach a windowsill that is 15.5 feet above the ground?

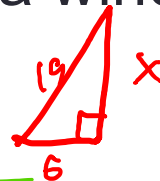
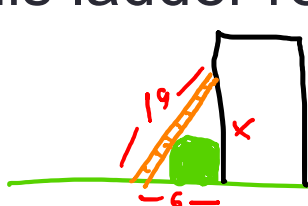
≈ 11 feet away



$$x^2 + 15.5^2 = 19^2$$

$$x \approx 11.0$$

2. (Same building, same ladder as #1) Suppose there is a bush in the way that prevents the bottom of the ladder from getting any closer than 6 feet from the building. Can this ladder reach a windowsill that is 18 feet high?



$$6^2 + x^2 = 19^2$$

$$x \approx 18.0$$

Yes, it can reach the 18-foot window.

Turn in “Measuring your TV” Sheets

Who got theirs to be exact?

PYTHAGOREAN THEOREM QUIZ

- Most likely on Friday

QUESTION....

- How many miles is it DIRECTLY from Nashville to Memphis? (As the crow flies)



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Distance on the Coordinate Plane (Handout)

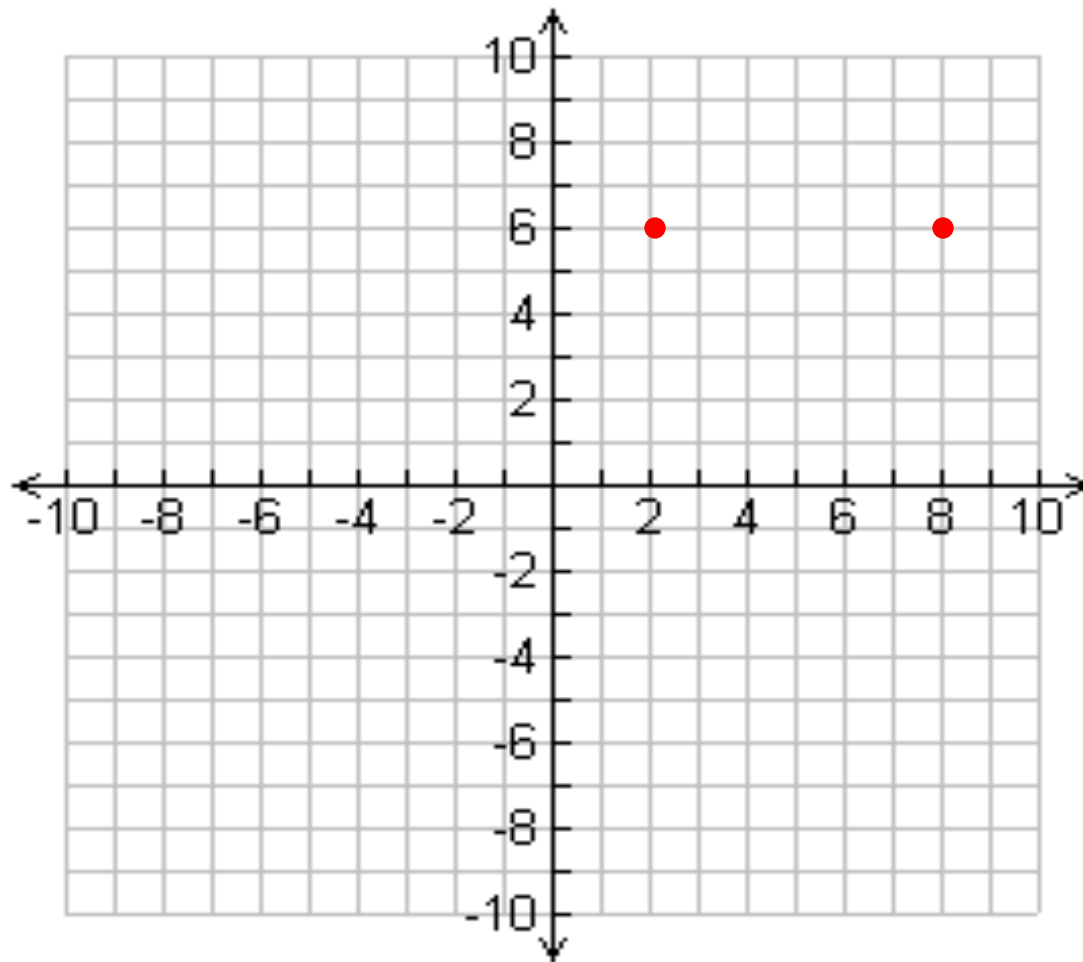
Distance on the Coordinate Plane

2

Objectives:

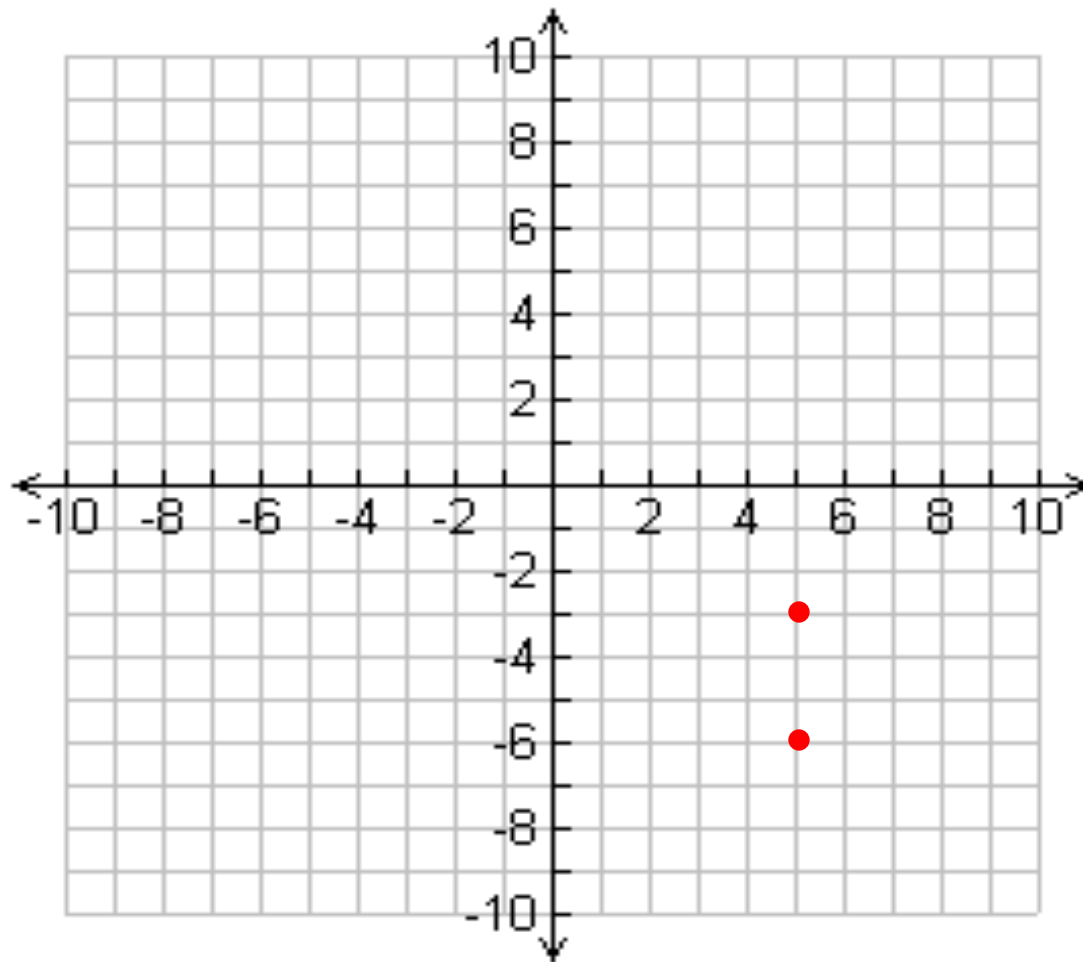
- Find the distance between any two points on the coordinate plane:
 - Horizontally
 - Vertically
 - Diagonally

How far are these points from each other???



6 units

How far are these points from each other???

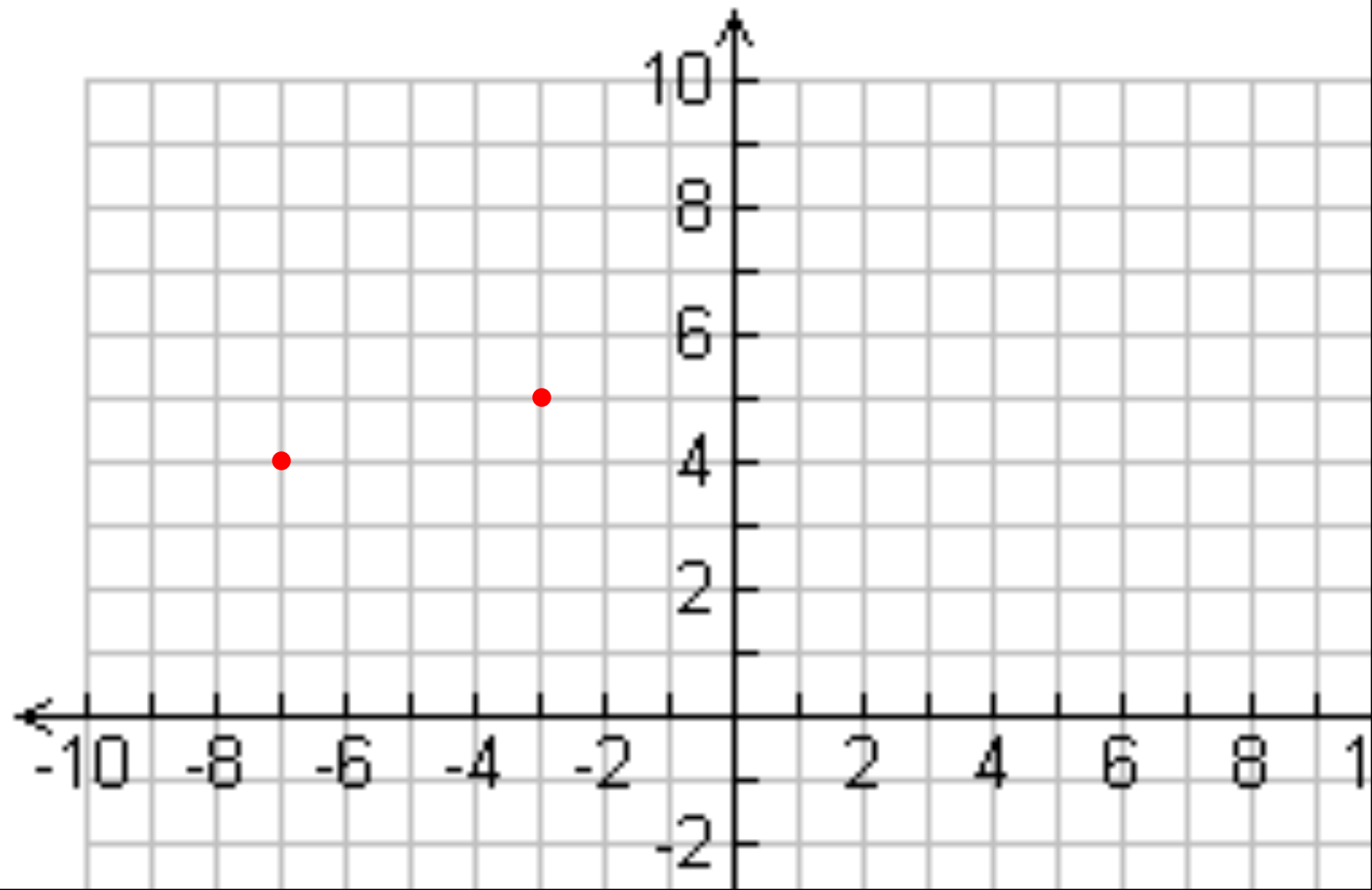


3 units

How far are these points from each other???

???

Can't count diagonally!



Activity: Estimating Distances

For each one:

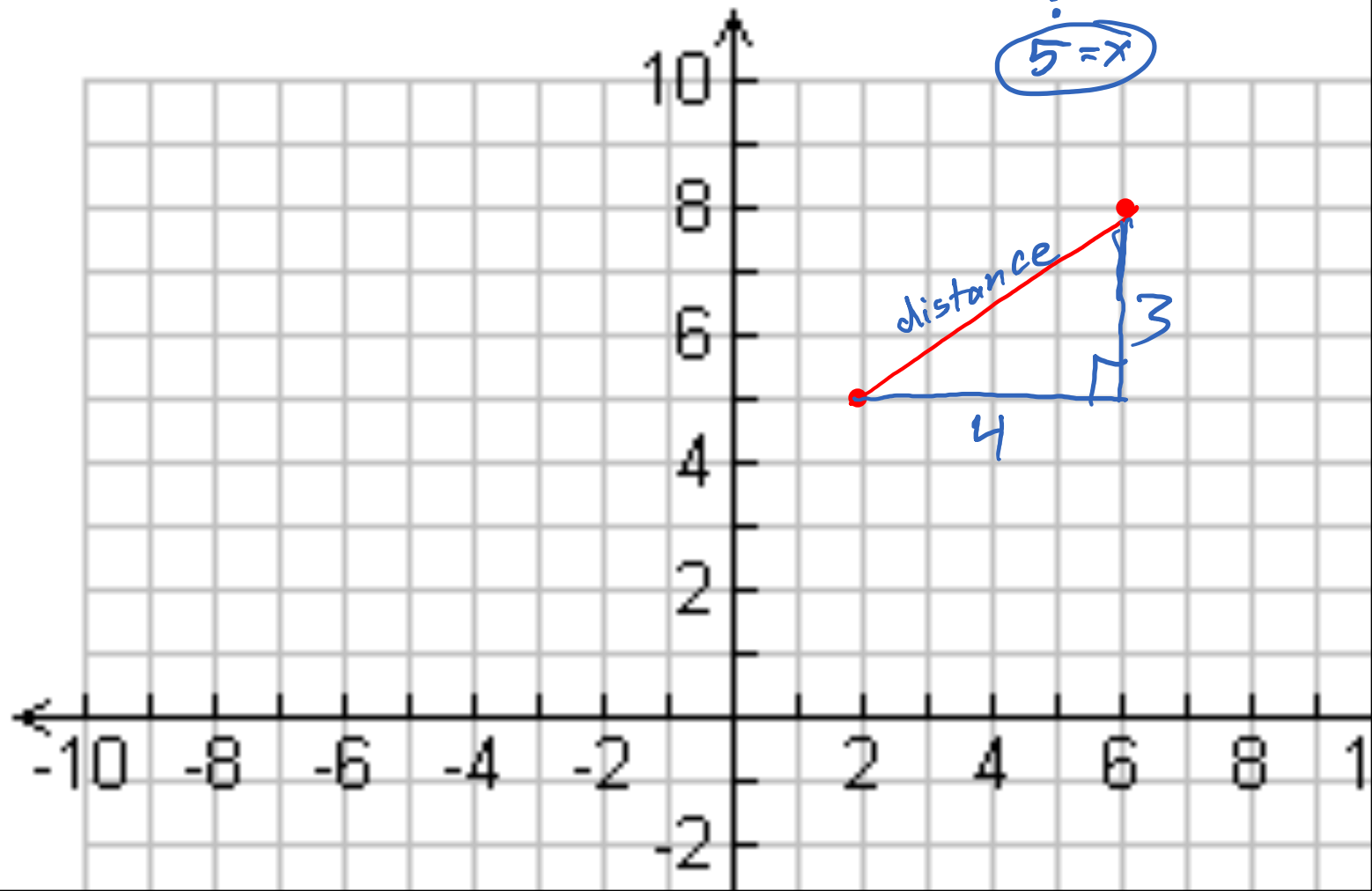
- Draw the two points
- **ESTIMATE** the distance, in cm, between the points.
- Measure the actual distance to the nearest tenth of a centimeter.

1. $(1, 23)$ and $(5, 21)$
2. $(9, 17)$ and $(17, 23)$
3. $(1, 15)$ and $(2, 10)$
4. $(11, 11)$ and $(15, 15)$
5. $(2, 7)$ and $(18, 0)$

How can we get the EXACT distance???

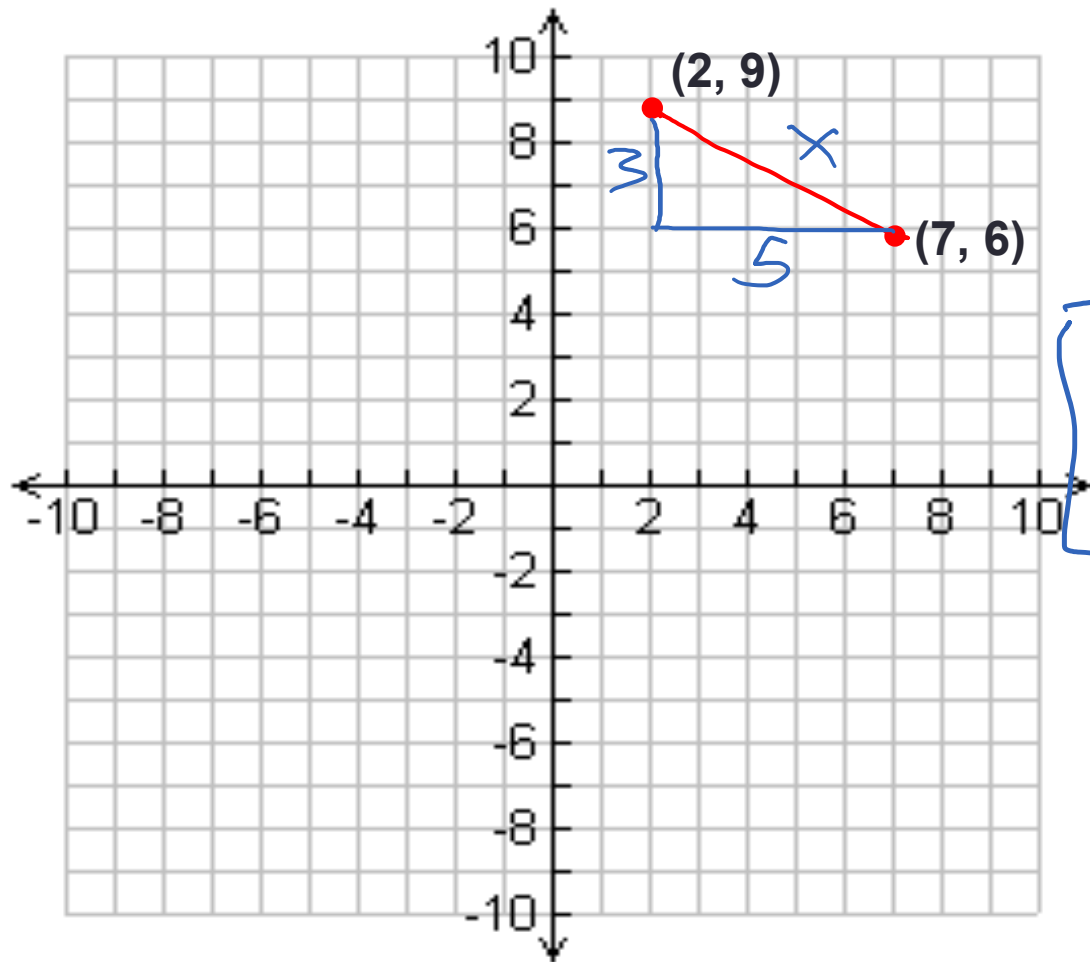
$$4^2 + 3^2 = x^2$$

$$\vdots$$
$$\boxed{5 = x}$$



- **Finding the Distance between Points in the Coordinate Plane**
- Draw a right triangle
- Count the side lengths
- Use the Pythagorean Theorem!

Find the distance between the points.

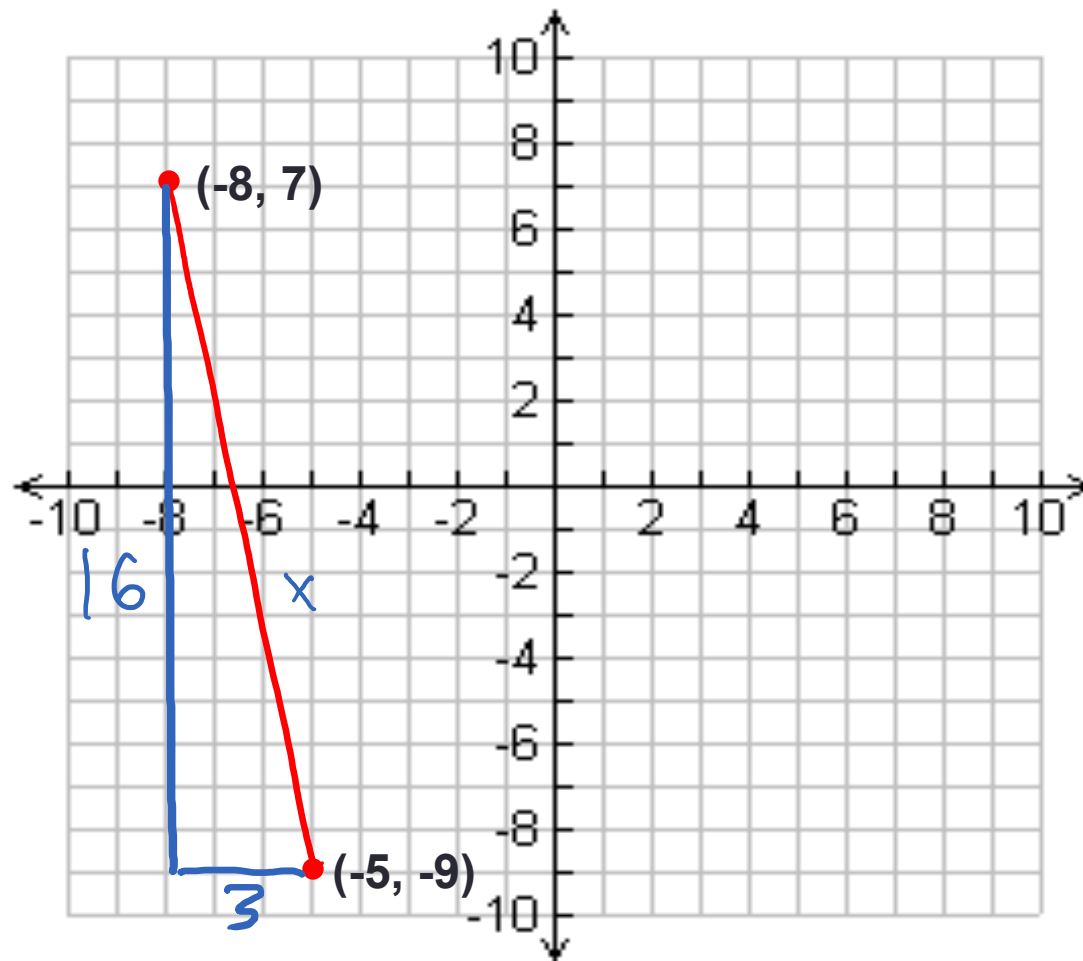


$$\begin{aligned}3^2 + 5^2 &= x^2 \\9 + 25 &= x^2 \\\sqrt{34} &= \sqrt{x^2}\end{aligned}$$

ROUNDED: $x \approx 5.8$

EXACT: $x = \sqrt{34}$

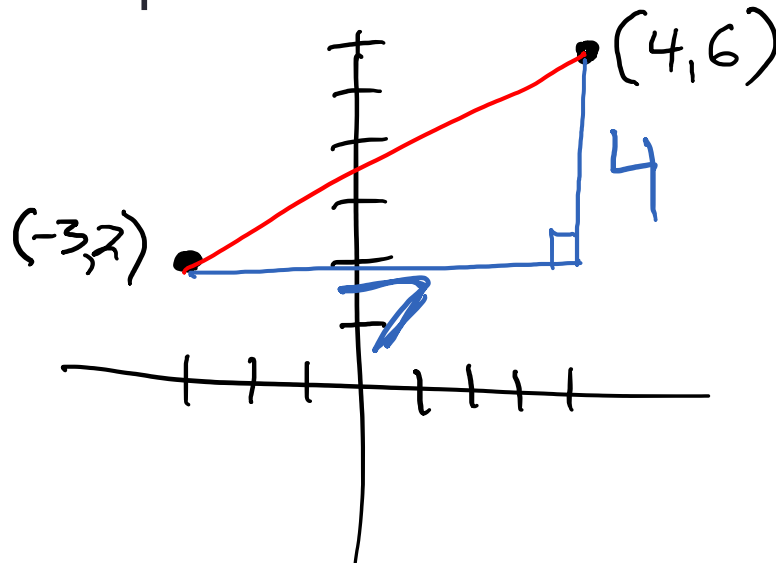
Find the distance between the points.



$$\begin{aligned} 16^2 + 3^2 &= x^2 \\ \sqrt{265} &= \sqrt{x^2} \\ x &\approx 16.3 \end{aligned}$$

Example 3

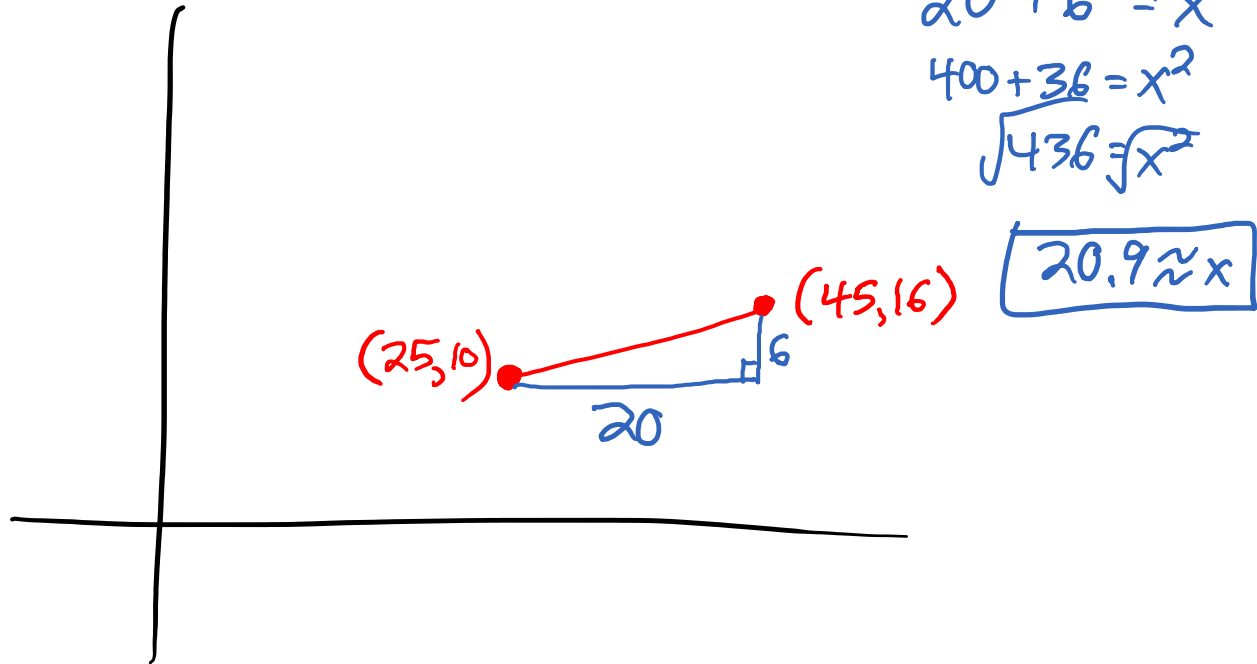
- What is the distance between **(-3, 2)** and **(4, 6)**? Draw a picture to help!!!



$$7^2 + 4^2 = x^2$$
$$\sqrt{65} = \sqrt{x^2}$$
$$\boxed{8.1 \approx x}$$

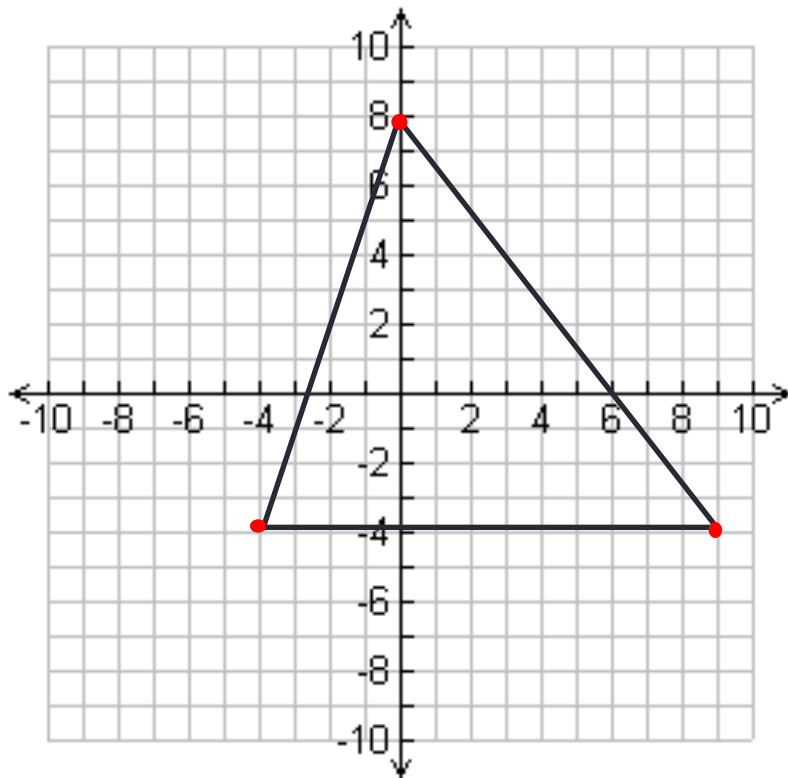
Example 4

- Can you figure out what the distance would be between (25, 10) and (45, 16)?



Example 5

- Find the perimeter of the triangle.



Geography Application

- This mathematical concept is used to find the distance between cities.
- Nashville has a latitude of about 36.2° N and a longitude of about 86.8° W. Memphis has a latitude of about 35.2° N and 90.1° W. Each degree of latitude or longitude is about 60 miles. Based on this information, how far apart are Nashville and Memphis?



Homework

- p.435 (1-4, )
- **YOU MUST SHOW ALL YOUR WORK!!!**