Name: _____Review: Midpoint, endpoint, distance formula, and Pythagorean Theorem

Pythagorean Theorem

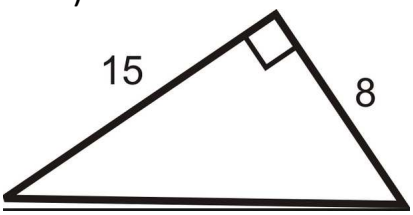
$$a^2 + b^2 = c^2$$

Note:

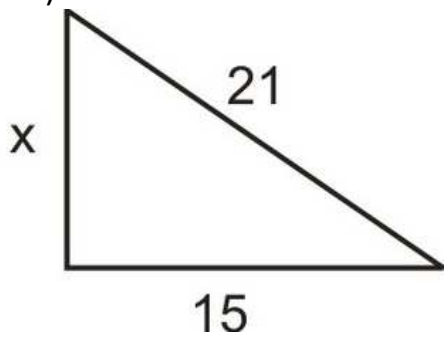
- **c** is the **longest side** of the triangle
- **a** and **b** are the other two sides

1) a = 6, b = 8, c = ?

2)



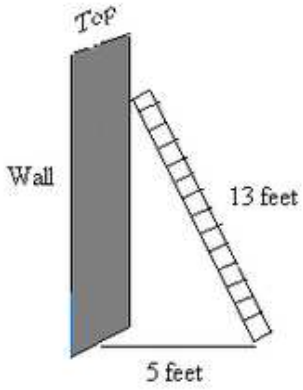
3)



Pythagorean Theorem:

4) a = 10, b = ?, c = 20

5) How high along the wall is the ladder?

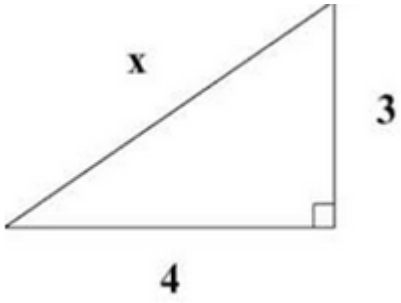


6)

Jay needs to go to the store. How far does he have to walk if each unit represents 2 miles?

Food Lion

Jay



The midpoint of two points is the average. Add the x-coordinates of the points and divide by 2. Add the y-coordinates of the points and divide by 2. Formula:

The midpoint M of the line segment joining the points (x_1, y_1) and (x_2, y_2) is

$$M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

To find the endpoint, multiply the x-coordinate of the midpoint by 2, and subtract the x-coordinate of the given point. Multiply the y-coordinate of the midpoint by 2, and subtract the y-coordinate of the given point.

Midpoint, Endpoint Worksheet

1) Find the midpoint of (5, 6) and (6, 9) _____

2) Find the midpoint of (7, -4) and (-2, -4) _____

3) Find the midpoint of (14, -11) and (-5, 8) _____

4) Find the endpoint if one endpoint is (-6, 9) and midpoint is (3, 2) _____

5) The midpoint is (12, 6). Find the other endpoint if the first endpoint is (15, 9)_____

6) Find the other endpoint if the midpoint is (-11, 20) and the endpoint is (-3, -7)_____

Distance **Worksheet**

Distance formula: is the alternative to Pythagorean Theorem.

Distance Formula: Given the two points (x_1, y_1) and (x_2, y_2), the distance between these points is given by the formula:

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

OR we use the difference of the **x values** on the numberr line as our a value

And the difference of the **y values** on the number line as our b value and use the pythagorean theorem Be **careful of negatives. THE DISTANCE ANSWER IS ALWAYS POSITIVE.**

$$\mathbf{a^2 + b^2 = c^2}$$

1) Find the distance between (5, 3) and (7, 2) _____

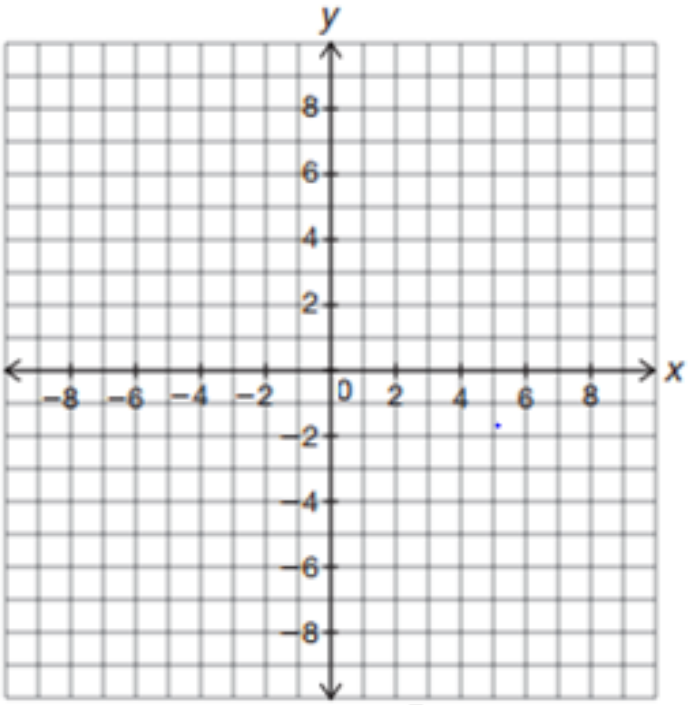
2) Find the distance between (4, -8) and (-12, -7) _____

3) Find the distance between (0, 9) and (-14, 6) _____

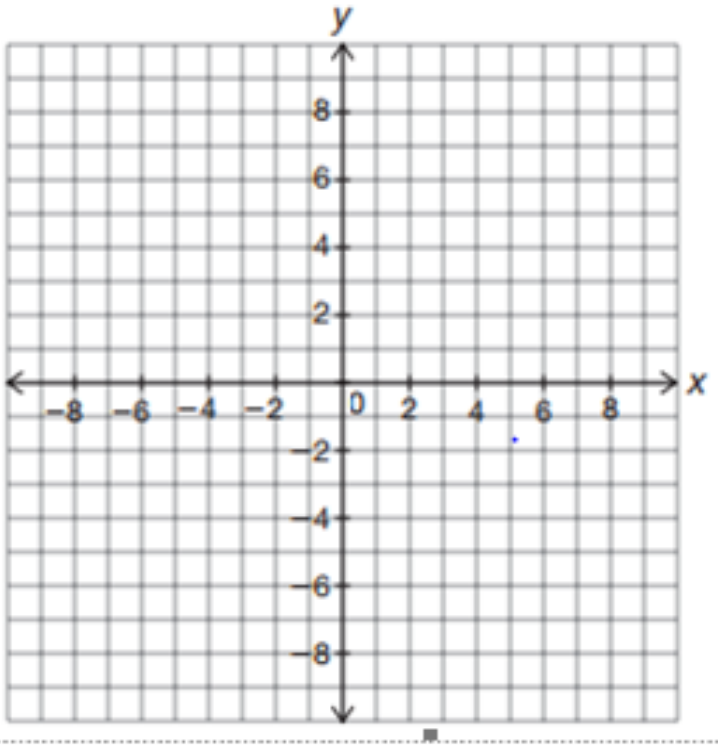
4) Joe, Mac, and Tom live in a neighborhood. Joe lives at (-8, -6) and Tom at (10, 4). If Mac is equidistant in between, where does Mac live? _____

b. How far away does Mac live from Tom? _____

Perimeter



Graph ABCD with vertices A(-8, -3), B(0, 3), C(10, 3), and D(2, -3). What is the perimeter? Based on side lengths, what is the shape?



Graph ABCD with vertices A(1, 6) B (4, 3) C(0, -2) D (-3, 1).). What is the perimeter? Based on side lengths, what is the shape?