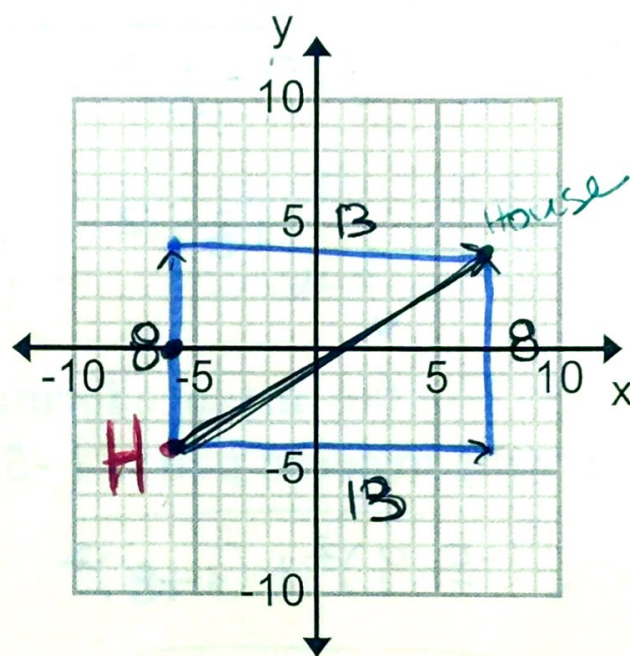


Ex. 1:

You are a 911 operator for the city of Euclid. You receive a phone call and you need to send an ambulance to a house located at the corner of $(7,4)$ and the hospital is located at $(-6,-4)$.

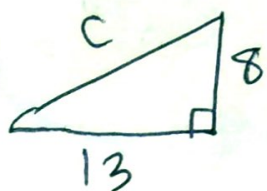
Graph the two points and draw the path that the ambulance will take to reach the house.



- a. What is the distance the ambulance will drive from the hospital to the house?

21 blocks.

- b. The dispatcher decided that the distance by ambulance was too far so they decided to dispatch a helicopter. Use the Pythagorean theorem to determine how far away the helicopter is from the house?



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

$$64 + 169 = c^2$$

$$\sqrt{233} = c$$

$$15.26 \dots \approx c$$

$$15.3 \approx c$$

Distance Formula: $\sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$

(x_1, y_1) (x_2, y_2)

Ex. 2: Use the distance formula to calculate the distance from the hospital to the house. Did the Pythagorean theorem and the distance formula give you the same answer?

$(7, 4)$ $\sqrt{(7 - (-6))^2 + (4 - (-4))^2}$

$(-6, -4)$ $\sqrt{(13)^2 + (8)^2} = \sqrt{169 + 64} = \sqrt{233}$

15.3

Ex. 3: Use the distance formula to find the distance for the following ordered pairs: $(-5, 3)$ and $(9, -8)$. Show your work.

$$\sqrt{(-5 - 9)^2 + (3 - (-8))^2}$$

$$\sqrt{(-14)^2 + (11)^2}$$

$$\sqrt{196 + 121} = \sqrt{317} \approx 17.8$$

Ex. 4: Use the distance formula to find the distance for the following ordered pairs: $(-20, 12)$ and $(15, 30)$. Show your work.

$$\sqrt{(-20 - 15)^2 + (12 - 30)^2}$$

$$\sqrt{(-35)^2 + (-18)^2}$$

$$\sqrt{1225 + 324}$$

$$\sqrt{1549} \approx 39.4$$

Midpoint Formula:

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

Ex. 5: Find the coordinates of the midpoint of \overline{AB} with endpoints $A(-2, 3)$ and $B(5, -2)$.

$$\frac{-2 + 5}{2} = \frac{3}{2}$$

Midpoint $(1.5, .5)$

$$\frac{3 + -2}{2} = \frac{1}{2}$$

Ex. 6: The midpoint of \overline{RP} is $M(2, 4)$. One endpoint is $R(-1, 7)$. Find the coordinates of the other endpoint.

