9-9 Warm-Up

Simplify.

1. $|-6-3|$ $= |-9| = 9$

2. $|10-2|$ $= |8| = 8$

3. $2|-5+4|+10$

$2|-1|+10$

$2 \cdot 1 + 10$

$2 + 10 = 12$

Solve.

$\frac{-21}{3} = -7$

4. $2 = |3y+5|$

$|3y+5| = 2$

(1) $3y+5 = 2$

$-5 \quad -5$

$\frac{3y}{3} = \frac{-3}{3}$

$y = -1$ ✓

(2) $3y+5 = -2$

$-5 \quad -5$

$\frac{3y}{3} = \frac{-7}{3}$

$y = -\frac{7}{3}$ ✓

5. $-3 = |y+10|$

$\emptyset$

Algebra 9-9 Pythagorean Theorem & Distance Formula

Pythagorean Theorem

Example: Find the distance between A (-1, 2) and B (3, -4) using Pythagorean Theorem.

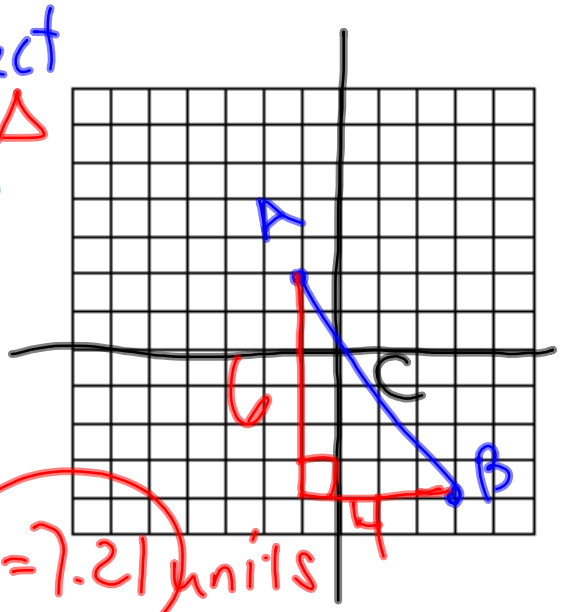
1. Plot Points & Connect
2. create a right △
3. Count the length of the legs

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

$6^2 + 4^2 = c^2$

$36 + 16 = c^2$

$\sqrt{52} = \sqrt{c^2}$



$c = 7.21$ units

Distance Formula

d = $\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$ Example: Find the distance between A (-1, 2) and B (3, -4) using the distance formula.

$x_1\ y_1 \quad x_2\ y_2$

$d=\sqrt{(3-(-1))^2+(-4-2)^2}=\sqrt{4^2+(-6)^2}=\sqrt{16+36}=\sqrt{52}$

$=7.21$ units

* Pythagorean length, Theorem and Distance formula are used to find

Examples

1. Donny needs to get from the school, point S, to Pizza Palace, point P.

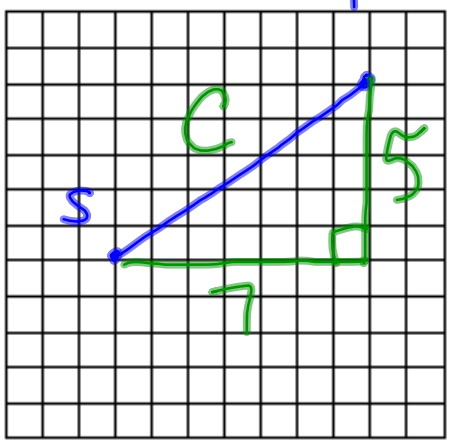
   a. Draw a path he could take if he walks there. How far did he travel?

   5+7=12 _____

   $a^2+b^2=c^2$ | $49+25=c^2$ | $\sqrt{74}=\sqrt{c^2}$ | $c=8.6$ units

   b. Draw the path he would take if he took a helicopter directly to Pizza Palace.

   How far did he travel? _____



2. Find the distance between the two points using both methods. Round your answer to the nearest tenth.

X (-4, 8) and Y (5, -1)

$x_1\ y_1 \quad x_2\ y_2$

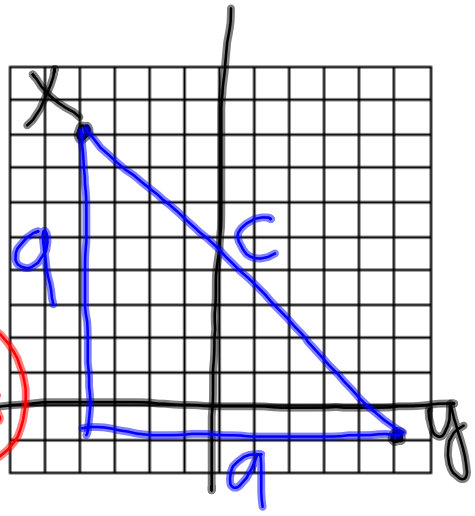
a. Using distance formula.

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

$$d=\sqrt{(5-{-4})^2+(-1-8)^2}$$

$$d=\sqrt{9^2+(-9)^2}=\sqrt{81+81}=\sqrt{162}$$

$=12.73$ units



b. Using Pythagorean Thm.

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

$$9^2+9^2=c^2$$

$$81+81=c^2$$

$$\sqrt{162}=\sqrt{c^2} \qquad c=12.73 \text{ units}$$

9-9 #'s 7-17