Math 8

Our Goal: To learn about the converse of the Pythagorean Theorem and the distance formula

Warm Up: Pythagorean Theorem review

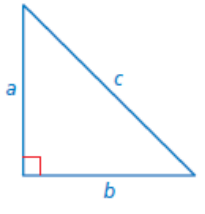
Today's homework
7.5 Exercises, p.322-322: 6-20 (evens)

Previous homework
Extension 7.4 Practice Handout 1-11

Key Ideas

Converse of the Pythagorean Theorem

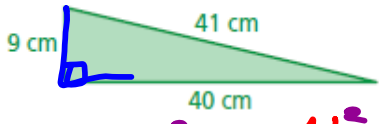
If the equation $a^2 + b^2 = c^2$ is true for the side lengths of a triangle, then the triangle is a right triangle.



If the sides of a triangle work for $a^2+b^2=c^2$, then it's a right triangle!

Tell whether each triangle is a right triangle.

a.

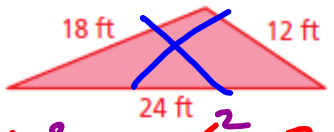


$9^2 + 40^2 = 41^2$

$81 + 1600 = 1681$

Right

b.



$12^2 + 18^2 = 24^2$

$144 + 324 = 576$

Not Right Triangle

Tell whether the triangle with the given side lengths is a right triangle.

1. 28 in., 21 in., 20 in.

$20^2 + 21^2 = 28^2$

$400 + 441 = 784$

$841 \neq 784$

NO!

2. 1.25 mm, 1 mm, 0.75 mm

$0.75^2 + 1^2 = 1.25^2$

$0.5625 + 1 = 1.5625$

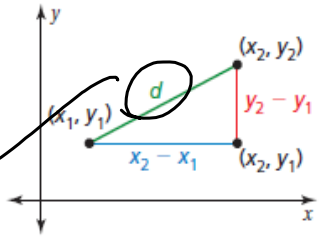
Yes!

Key Idea

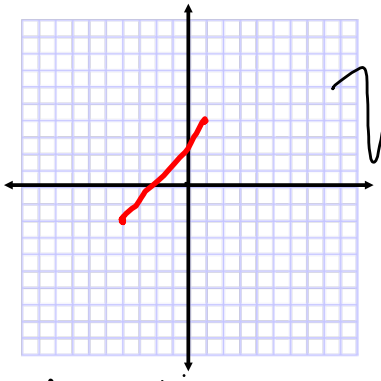
Distance Formula

The distance d between any two points (x_1, y_1) and (x_2, y_2) is given by the formula

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



Find the distance between (1, 5) and (−4, −2).



Answer:

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

$5^2 + 7^2$

$25 + 49$

$= 74$

$8.6 = \sqrt{74}$

Find the distance between the two points.

3. (0, 0), (4, 5)

Find the distance between the two points.

4. (7, −3), (9, 6)

$\sqrt{2^2+9^2}$

$\sqrt{4+81}$

$\sqrt{85} = 9.2$

Find the distance between the two points.

5. (−2, −3), (−5, 1)

$\sqrt{(-2-(-5))^2+(-3-1)^2}$

$\sqrt{3^2+16}$

$\sqrt{9+16}$

$\sqrt{25}$

5

Exit Ticket: Find the distance between (−4, 6) and (3, −2)