

UNIT 6: IRRATIONAL MATH

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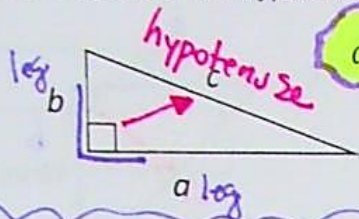
Objectives: I can apply the Pythagorean Theorem to find the length of a hypotenuse.

Using the Pythagorean Theorem to Find the Length of the Hypotenuse

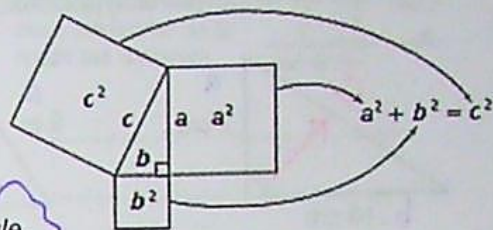
Notes:

In a right triangle, the square of the hypotenuse is equal to the sum of the squares of the other two sides.

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



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



We will use this theorem to find the missing side length of a right triangle.

State all lengths as square roots, then approximate to the nearest hundredth. If a diagram is not provided, you must draw one.

1) $c \approx 12.04 \text{ in}$

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

$$c^2 = (8)^2 + (9)^2$$

$$c^2 = 64 + 81$$

$$\sqrt{c^2} = \sqrt{145}$$

$$c \approx 12.04 \text{ in}$$

2) $c \approx 10.44 \text{ m}$

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

$$c^2 = (3)^2 + (10)^2$$

$$c^2 = 9 + 100$$

$$\sqrt{c^2} = \sqrt{109}$$

$$c \approx 10.44$$

3) A computer screen may be described in terms of the diagonal measure of its screen. If a computer screen is 18 inches wide and 11 inches high, what is the length of its diagonal? [Draw diagram here.]

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

$$c^2 = (11)^2 + (18)^2$$

$$c^2 = 121 + 324$$

$$\sqrt{c^2} = \sqrt{445}$$

$$c \approx 21.10 \text{ in}$$

4) A boat starts at dock and travels 100 km east and then 70 km south. How far is the boat from the dock? [Draw diagram here.]

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

$$c^2 = (70)^2 + (100)^2$$

$$c^2 = 4900 + 10000$$

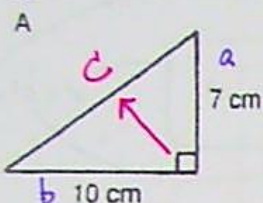
$$\sqrt{c^2} = \sqrt{14,900}$$

$$c \approx 122.07 \text{ km}$$

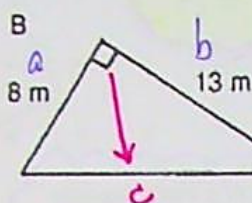
Assignment: HW HELP!

State all lengths as square roots, then approximate to the nearest hundredth. If a diagram is not provided, you must draw one.

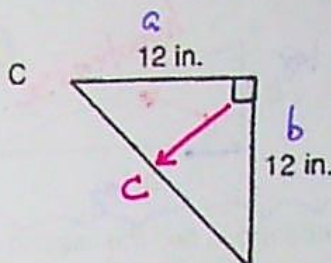
- 1) Find the length of the hypotenuse of each right triangle.



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

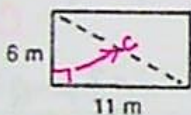


$$c^2 = a^2 + b^2$$



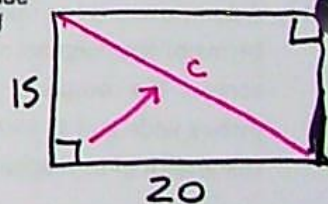
$$c^2 = a^2 + b^2$$

- 2) A rectangle is 6 m wide and 11 m long. How long is the diagonal of the rectangle?

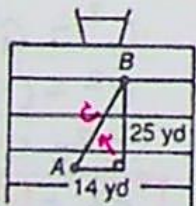


- 3) A television screen may be described in terms of the diagonal measure of its screen. If a TV screen is 20 in. wide and 15 in. high, what is the length of its diagonal?

[Draw diagram here.]



- 4) A quarterback at point A throws the football to a receiver who catches it at point B. How long was the pass?



- 5) A rope is stretched from the top of a 7-foot tent pole to a point on the ground 12 ft from the base of the pole. How long is the rope?

[Draw diagram here.]

