

Date _____

Name _____

1.3A: Using the Pythagorean Relationship

Example 1: Determine the length of the Hypotenuse of a Right Triangle

Determine the length of hypotenuse c . Express your answer to the nearest tenth of a meter.

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

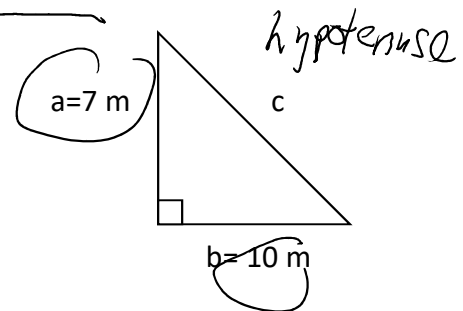
$$(7)^2 + (10)^2 = c^2$$

$$49 + 100$$

$$149 = c^2$$

$$c = \sqrt{149} = 12.2065562$$

$$= 12.2 \text{ m}$$



SHOW YOU KNOW: Determine the length of the hypotenuse for the right triangle, to the nearest centimeter.

$$f^2 + g^2 = h^2$$

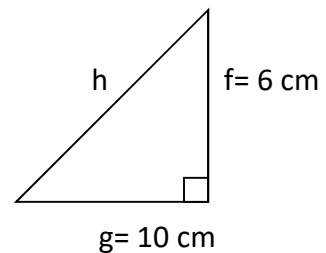
$$(6)^2 + (10)^2$$

$$36 + 100$$

$$136 = h^2$$

$$h = \sqrt{136}$$

$$= 11.7 \text{ cm}$$



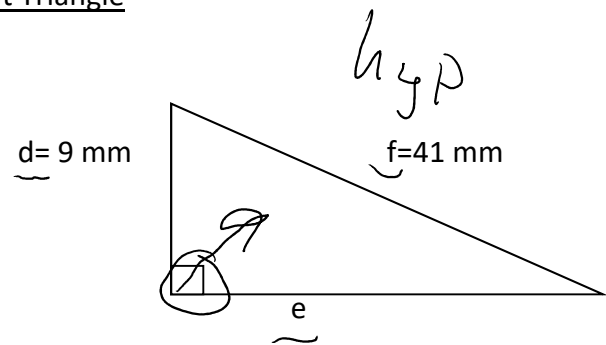
Example 2: Determine the Length of a Leg of a Right Triangle

What is the length of leg e of the right triangle?

$$\begin{aligned}d^2 + e^2 &= f^2 \\(9)^2 + e^2 &= (41)^2 \\81 + e^2 &= 1681 \\-81 &\quad -81\end{aligned}$$

$$e^2 = 1600$$

$$\begin{aligned}e &= \sqrt{1600} \\&= 40 \text{ mm}\end{aligned}$$



SHOW YOU KNOW: Determine the length of the leg of the right triangle.

$$\begin{aligned}r^2 + s^2 &= t^2 \\(20)^2 + s^2 &= (52)^2 \\400 + s^2 &= 2704 \\-400 &\quad -400 \\s^2 &= 2304 \\s &= \sqrt{2304} \\&= 48 \text{ cm}\end{aligned}$$

