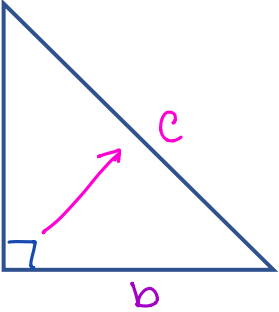


Name: _____

Date: _____

Learning Goal 7.2	I can find missing sides or identify right triangles using the Pythagorean Theorem.
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The Pythagorean Theorem

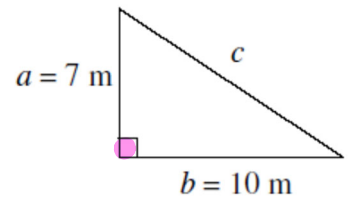


$a^2 + b^2 = c^2$
 ↙ legs of the triangle ↘ hypotenuse
 ↙ longest side ↘ opposite the 90° angle

Example Determine the length of the **hypotenuse, c**, of following right triangle. Express your answer to the nearest tenth of a metre.

one decimal place

$$\begin{aligned}
 a^2 + b^2 &= c^2 \\
 (7)^2 + (10)^2 &= c^2 \\
 49 + 100 &= c^2 \\
 \sqrt{149} &= \sqrt{c^2} \\
 12.2 &= c
 \end{aligned}$$

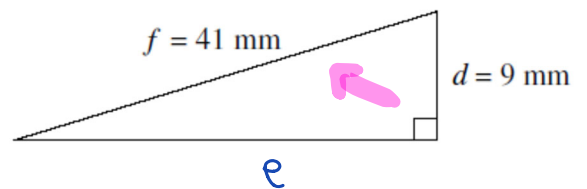


CALCULATOR
 $\sqrt{149} \leftarrow$ 2 level
 $149 \sqrt{} \leftarrow$ 1 level

The length of the hypotenuse is 12.2 m.

Example Determine the length of the **leg, e**, of the right triangle. Express your answer to the nearest millimeter.

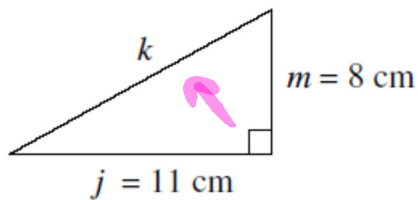
$$\begin{aligned}
 e^2 + d^2 &= f^2 \\
 e^2 + (9)^2 &= (41)^2 \\
 e^2 + 81 &= 1681 \\
 \begin{array}{r}
 -81 \\
 \hline
 \sqrt{e^2} = \sqrt{1600} \\
 \hline
 e = 40
 \end{array}
 \end{aligned}$$



The length of the triangle leg is 40 mm.

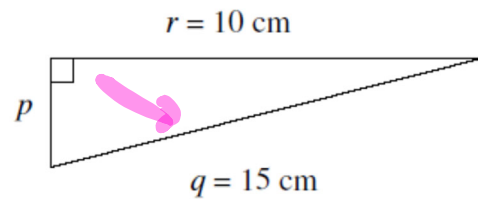
Example Find the missing side length to the nearest tenth.

a.



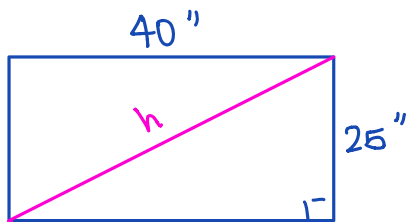
$$\begin{aligned} j^2 + m^2 &= k^2 \\ 11^2 + 8^2 &= k^2 \\ 121 + 64 &= k^2 \\ \sqrt{185} &= \sqrt{k^2} \\ 13.6 &= k \\ k &\approx 13.6 \text{ cm} \end{aligned}$$

b.



$$\begin{aligned} p^2 + r^2 &= q^2 \\ p^2 + 10^2 &= 15^2 \\ p^2 + 100 &= 225 \\ -100 &\quad -100 \\ \hline \sqrt{p^2} &= \sqrt{125} \\ p &\approx 11.1 \text{ cm} \end{aligned}$$

Example Jeremy's brand-new big screen TV measures 40" by 25". What is the length of the diagonal of the TV? Express your answer to the nearest tenth of an inch.



$$\begin{aligned} 40^2 + 25^2 &= h^2 \\ 1600 + 625 &= h^2 \\ \sqrt{2225} &= \sqrt{h^2} \\ h &= \sqrt{2225} \\ &\approx 47.1 \end{aligned}$$

Jeremy's TV is listed as 47"