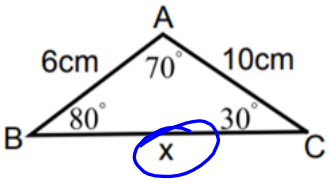
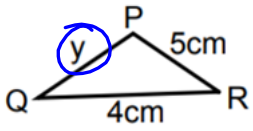
Warm-Up

April 23, 2019

$\triangle ABC \sim \triangle PQR$ find the angle measurements of $\triangle PQR$ and the missing side measurements x and y.





$\triangle ABC \sim \triangle PQR$

Angles

$\angle QPR = \angle BAC = 70^\circ$

$\angle PQR = \angle ABC = 80^\circ$

$\angle PRQ = \angle ACB = 30^\circ$

180°

Ratio of sides

$$\frac{AB}{PQ} = \frac{BC}{QR} = \frac{AC}{PR}$$

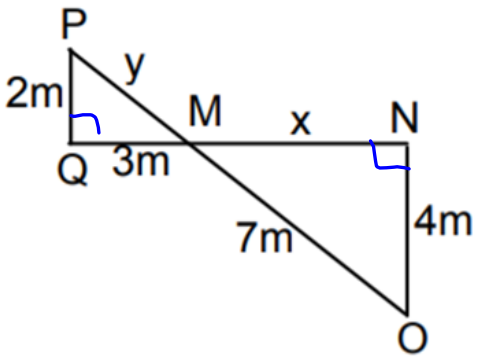
$$\frac{6}{y} = \frac{x}{4} = \boxed{\frac{10}{5}}$$

$x = 8$

$y = 3$

$$\frac{x}{4} = \frac{10}{5} \quad (4)$$

$x = 8$



$\frac{OM}{PM} = \frac{MN}{MQ} = \frac{ND}{QO}$

$\frac{7}{y} = \frac{x}{3} = \frac{4}{2}$

Identify the 2 similar triangles and determine the missing sides.

solve for x

$\frac{x}{3} = \frac{4}{2}$ (3)

$x = \frac{12}{2}$

$x = 6$

solve y

$\frac{7}{y} = \frac{4}{2}$

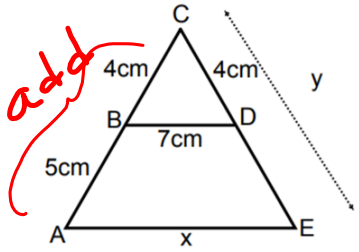
FLIP

$\frac{14}{7} = \frac{2}{4}$ (7)

$y = \frac{14}{4}$

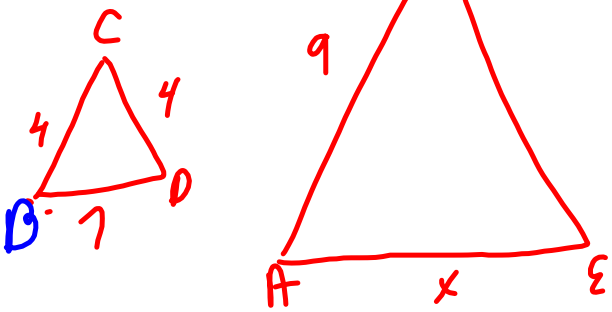
$y = 3.5$

Identify the similar triangles and identify the missing measures.



add

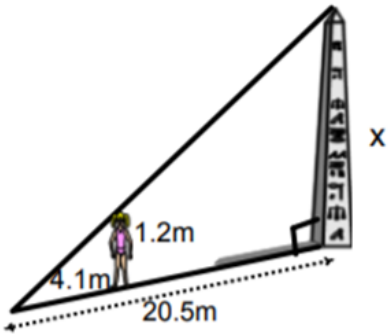
$\frac{AE}{BD} = \frac{AC}{BC} = \frac{CE}{CD}$



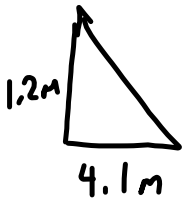
$\frac{x}{7} = \frac{9}{4}$

$x = 15.75$

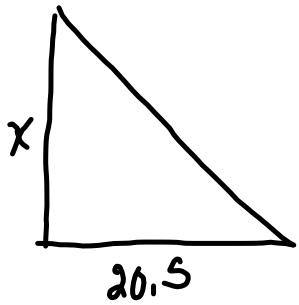
The length of a monument's shadow is 20.5m, when the length of Joan's shadow is 4.1m. If Joan is 1.2m tall, calculate the height of the monument.



Joan



Monument



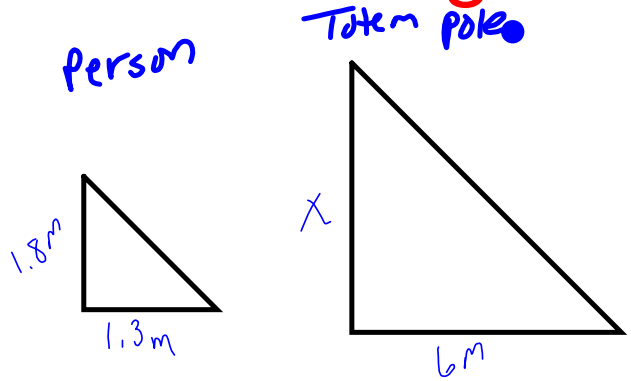
$$\frac{\text{height monument}}{\text{height Joan}} = \frac{\text{shadow monument}}{\text{shadow Joan}}$$

$$\frac{(1.2)x}{1.2} = \frac{20.5}{4.1}(1.2)$$

$$x = 6$$

At a certain time of day, a person who is 1.8 m tall has a shadow 1.3 m long. At the same time of day, the shadow of a totem pole is 6 m long. The sun's rays intersect the ground at equal angles. How tall is the totem pole, to the nearest tenth of a meter?

Include a diagram!!!



$$\frac{\text{height totem}}{\text{height person}} = \frac{\text{shadow totem}}{\text{shadow person}}$$

$$\frac{x}{1.8} = \frac{6}{1.3}$$

$$x = \frac{10.8}{1.3}$$

$$x = 8.3$$

How do you know if triangles are similar???

1. Show three equal angles by naming the angles with 3 letter and showing which angles are equal.

OR!!!

2. Showing the ratio of corresponding sides!!!

$\left[\frac{\text{short}}{\text{short}} = \frac{\text{Medium}}{\text{Medium}} = \frac{\text{long}}{\text{long}}\right]$

Whenever trying to find an unknown side set up ratio of corresponding sides FIRST!!!