Homework

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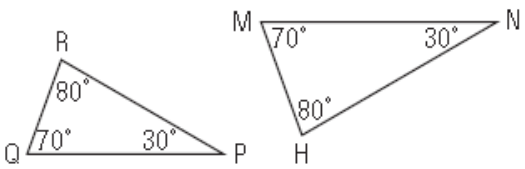
Show all work

Show all work

4. Which triangles in each pair are similar? How do you know?

a)



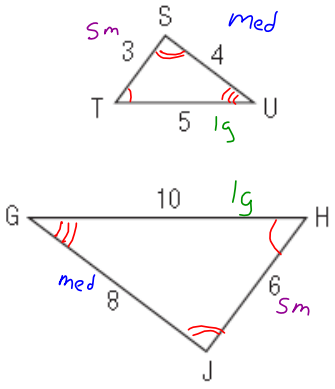
$\angle R = \angle H$

$\angle Q = \angle M$

$\angle P = \angle N$

$\therefore \triangle RQP \sim \triangle HMN$ (AAA)

b)

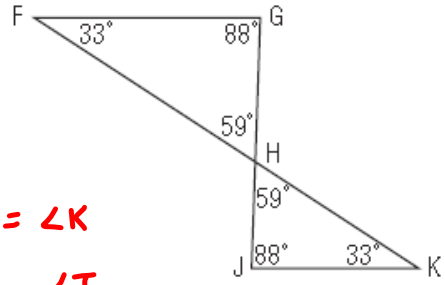


sm	med	Lg
$\frac{6}{3}$	$\frac{8}{4}$	$\frac{10}{5}$
2	$= 2$	$= 2$

$\triangle STU \sim \triangle JHG$ (SSS)

5. In each diagram, identify two similar triangles. Explain why they are similar.

a)



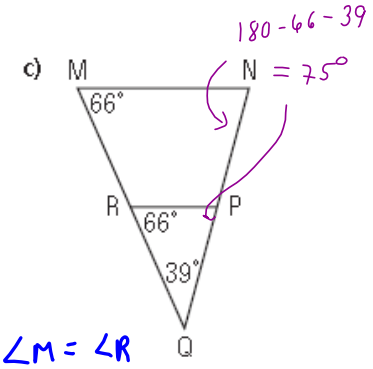
$\angle F = \angle K$

$\angle G = \angle J$

$\angle H = \angle H$

$\triangle FGH \sim \triangle KJH$ (AAA)

c)



$\angle M = \angle R$

$\angle Q = \angle Q$

$\angle N = \angle P$

$\triangle MQP \sim \triangle RQP$ (AAA)

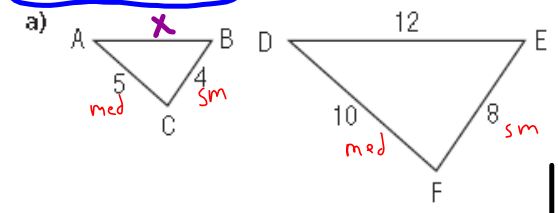
Apply

6. Determine the length of AB in each pair of similar triangles.

since states similarity

don't have to prove

a)



$\frac{x}{12} = \frac{4}{8}$

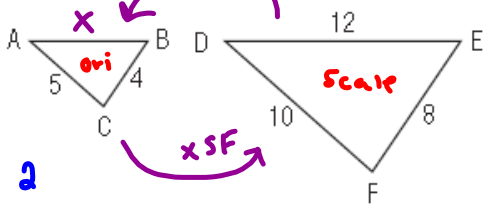
$x = \frac{12(4)}{8}$

$x = 6$

Apply

6. Determine the length of AB in each pair of similar triangles.

a)



Method 2

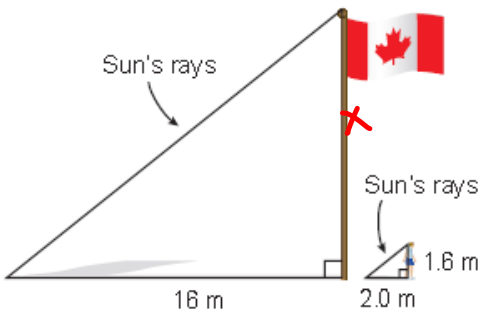
$SF = \frac{s}{o} = \frac{8}{4} = 2$

$x = 12 \div 2$

$= 6$

orig $\times$ Scale $\div$

7. Jaquie is 1.6 m tall. When her shadow is 2.0 m long, the shadow of the school's flagpole is 16 m long. How tall is the flagpole, to the nearest tenth of a metre?



Method 1

$\frac{x}{1.6} = \frac{16}{2}$

$x = \frac{16(1.6)}{2}$

$x = 12.8\text{ m}$

Method 2

$SF = \frac{2}{16} = \frac{1}{8} = 0.125$

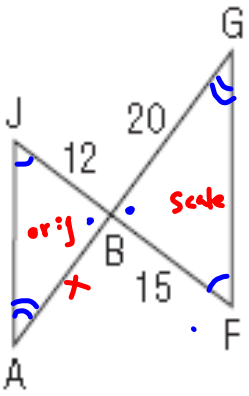
Scale $\rightarrow$ orig

$x = 1.6 \div 0.125$

$x = 12.8\text{ m}$

6. Determine the length of AB in each pair of similar triangles. → Don't need to prove

b)



Method 1

$\frac{AB}{GB} = \frac{BJ}{BF}$

$\frac{x}{20} = \frac{12}{15}$

$x = \frac{(20)(12)}{15}$

$x = 16$

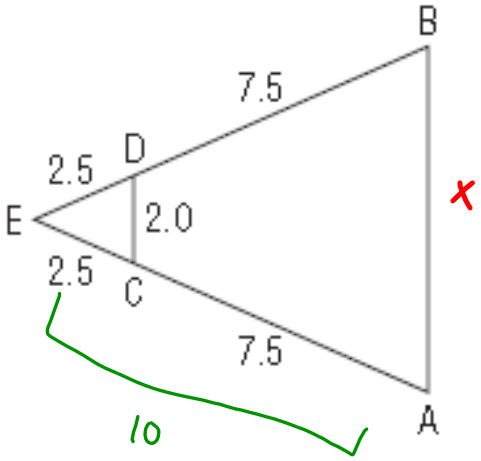
Method 2

$SF = \frac{15}{12} = 1.25$

$x = 20 \div 1.25$

$x = 16$

c)



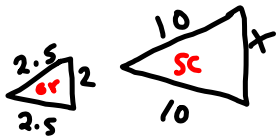
Method 1

$\frac{AB}{CD} = \frac{AE}{CE}$

$\frac{x}{2} = \frac{10}{2.5}$

$x = \frac{10(2)}{2.5}$

$x = 8$



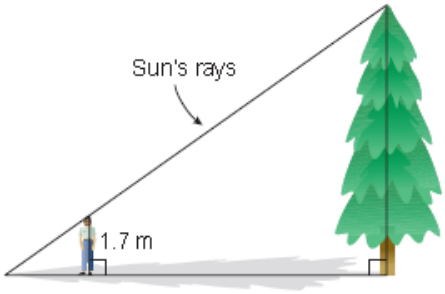
Method 2

$SF = \frac{10}{2.5} = 4$

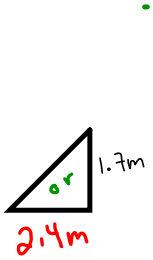
$x = 2 \times 4$

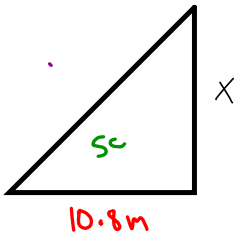
$x = 8$

9. Tina wants to estimate the heights of two trees. For each tree, she stands so that one end of her shadow coincides with one end of the shadow of the tree. Tina's friend measures the lengths of her shadow and the tree's shadow. Tina is 1.7 m tall.



a) Tina's shadow is 2.4 m and the first tree's shadow is 10.8 m. What is the height of the tree?





Method 1

$\frac{X}{1.7} = \frac{10.8\text{m}}{2.4\text{m}}$

$X = \frac{10.8(1.7)}{2.4}$

$X = 7.65\text{m}$

Method 2

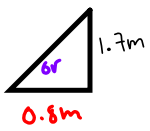
$SF = \frac{10.8}{2.4}$

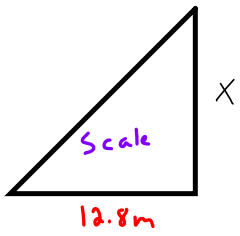
$SF = 4.5$

$X = 1.7 \times 4.5$

$X = 7.65\text{m}$

b) Tina's shadow is 0.8 m and the second tree's shadow is 12.8 m. What is the height of the tree?





Method 1

$\frac{X}{1.7} = \frac{12.8}{0.8}$

$X = \frac{(1.7)(12.8)}{0.8}$

$X = 27.2\text{m}$

Method 2

$SF = \frac{12.8}{0.8}$

$SF = 16$

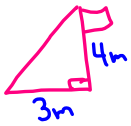
$X = 1.7 \times 16$

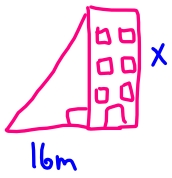
$X = 27.2\text{ m}$

10. When the shadow of a building is 16 m long, a 4-m fence post casts a shadow 3 m long.

a) Sketch a diagram.

b) How tall is the building?



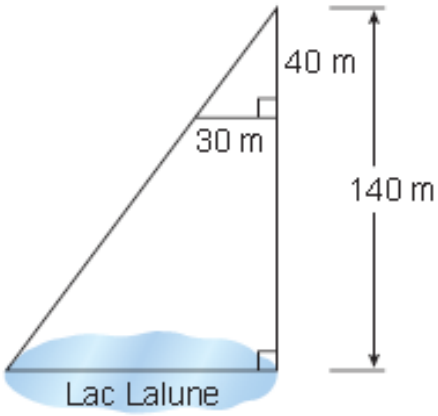


$\frac{x}{4} = \frac{16}{3}$

$x = \frac{16(4)}{3}$

$x = 21.\overline{3}\ m$

11. This scale diagram shows the measurements a surveyor made to determine the length of Lac Lalune. What is this length? How do you know?

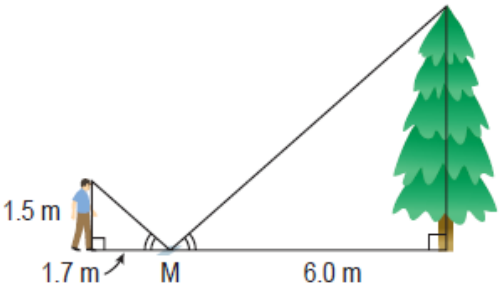


$$x = \frac{30(140)}{40}$$

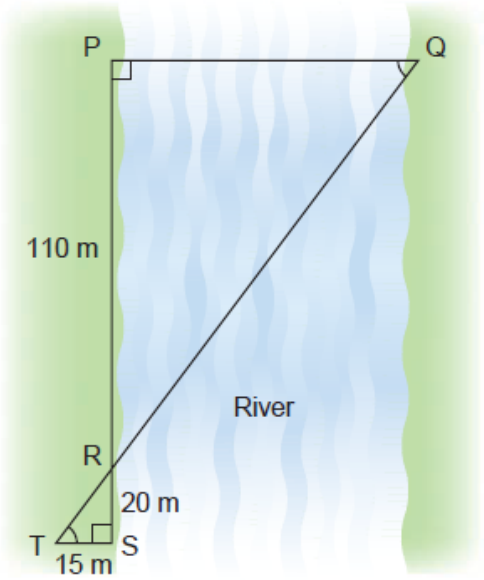
$$x = 105$$

Take It Further

13. Phillipe places a mirror M on the ground 6.0 m from a tree. When he is 1.7 m from the mirror, he can see the top of the tree in the mirror. His eyes are 1.5 m above the ground. The diagram below shows the equal angles. How can you use similar triangles to determine the height of the tree to the nearest tenth of a metre?



12. To help calculate the distance PQ across a river, Emil drew the diagram below based on measurements he made. What is the distance across the river?



14. The foot of a ladder is 3 m from the base of a wall. The ladder just touches the top of a 1.4-m fence that is 2.4 m from the wall. How high up the wall does the ladder reach? How do you know?