

7.3 Indirect Measurement with Similar Triangles –HW

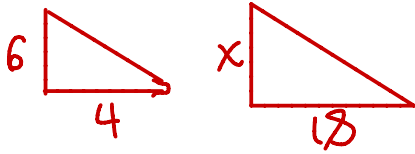
Name: key

Chapter 7- Establishing Similarity

Date: _____ Period: _____

Draw a diagram, write a proportion and solve the problem.

1.) At a certain time of day, a 6 ft. man casts a 4ft. shadow. At the same time of the day, a tree that casts an 18ft shadow, how tall is the tree?

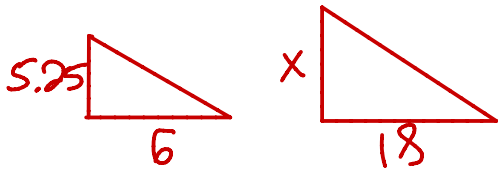


$$\frac{6}{x} = \frac{4}{18}$$

$$4x = 108$$

$$\rightarrow x = 27 \text{ ft}$$

2.) A person 5.25 ft. tall casts a 6 foot shadow. At the same time of the day a lamppost casts an 18 foot shadow. What is the height of the lamppost?



$$\frac{5.25}{x} = \frac{6}{18}$$

$$6x = 94.5$$

$$\rightarrow x = 15.75 \text{ ft}$$

3.) A boxcar on a train has a length of 40 feet and a width of 9 feet. A scale model is made with a length of 16 inches. Find the width of the model.

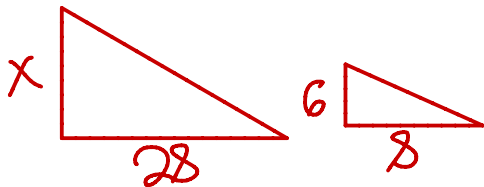
$\frac{\text{length}}{\text{width}}$

$$\frac{40}{9} = \frac{16}{x}$$

$$40x = 144$$

$$x = 3.6 \text{ in}$$

4.) A flagpole casts a shadow 28 feet long. A person standing nearby casts a shadow eight feet long. If the person is six feet tall, how tall is the flagpole?



$$\frac{x}{6} = \frac{28}{8}$$

$$8x = 168$$

$$x = 21 \text{ ft}$$

5.) A photograph measuring four inches wide and five inches long is enlarged to make a wall mural. If the mural is 120 inches wide, how long is the mural?

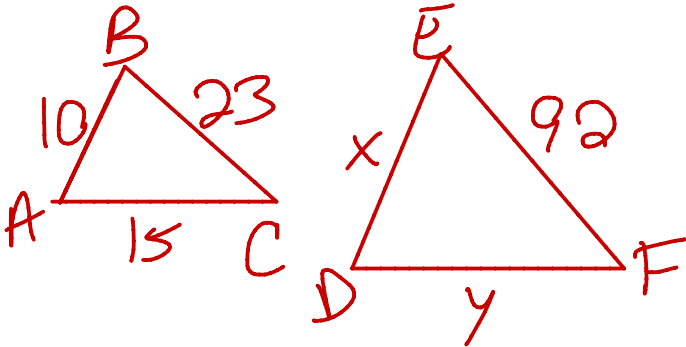
$\frac{\text{width}}{\text{length}}$

$$\frac{4}{5} = \frac{120}{x}$$

$$4x = 600$$

$$x = 150 \text{ inches}$$

6.) $\triangle ABC$ is similar to $\triangle DEF$. The lengths of the sides of ABC are $AB = 10$ cm, $BC = 23$ cm and $AC = 15$ cm. The length of the longest side in $\triangle DEF$ is 92 cm. Find the other two sides and then find the perimeter.



$$\frac{23}{92} = \frac{10}{x}$$

$$23x = 920$$

$$x = 40 \text{ cm}$$

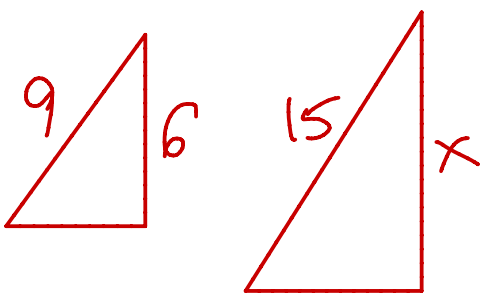
$$\frac{23}{92} = \frac{15}{y}$$

$$23y = 1380$$

$$y = 60 \text{ cm}$$

$$P = 92 + 40 + 60 = 192 \text{ cm}$$

7.) A 9-foot ladder leans against a building six feet above the ground. At what height would a 15-foot ladder touch the building if both ladders form the same angle with the ground?

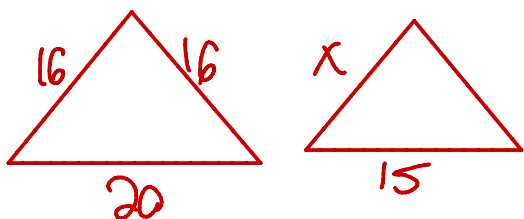


$$\frac{9}{15} = \frac{6}{x}$$

$$9x = 90$$

$$x = 10 \text{ ft}$$

8.) David wants to reduce a triangular pattern with sides 16, 16 and 20 centimeters. If the longest side of the new pattern is to be 15 cm, how long should the other two sides be?



$$\frac{20}{15} = \frac{16}{x}$$

$$20x = 240 \rightarrow x = 12 \text{ cm}$$