

# 5 Similar Triangles Word Problems

November 1, 2020 2:12 PM

## Math 9

### Section 7.4 – Similar Triangles: Word Problems

Date: \_\_\_\_\_ Page 1 of 2

#### Learning Outcomes Covered:

7F: I can use similar triangles to solve problems.

**Example 1:** In the **similar triangles** below, solve for the missing side  $x$ .

Corresponding sides are proportional!

$$\frac{MO}{AB} = \frac{MN}{BC}$$

$$\frac{6}{11} = \frac{4}{x}$$

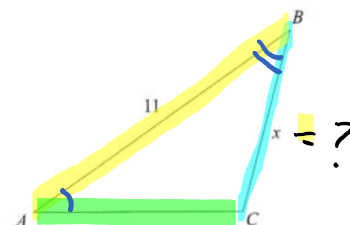
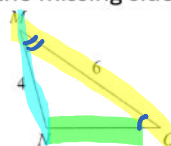
$$6x = 4(11)$$

$$6x = 44$$

$$x = \frac{44}{6}$$

$$x = \frac{44}{6} \div 2$$

$$= \frac{22}{3} \text{ units}$$



**Example 2:**  $\triangle MNO$  is similar to  $\triangle MPR$ . Calculate the missing length,  $x$ .

$$\frac{11.4}{6} = 1.9$$

$$(4)(1.9) = 7.6$$

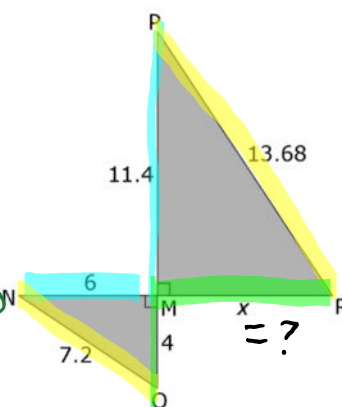
$$\frac{11.4}{6} = \frac{x}{4}$$

$$6x = 4(11.4)$$

$$6x = 45.6$$

$$x = \frac{45.6}{6}$$

$$x = 7.6 \text{ units}$$



**Example 3:** Using the information given in the diagram, determine the height of the actual tree.

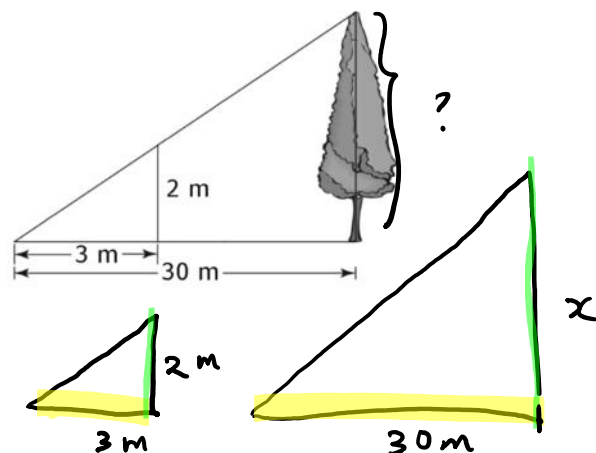
$$\frac{3}{30} = \frac{2}{x}$$

$$3x = 2(30)$$

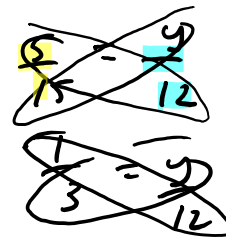
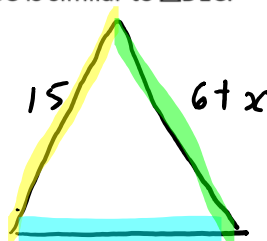
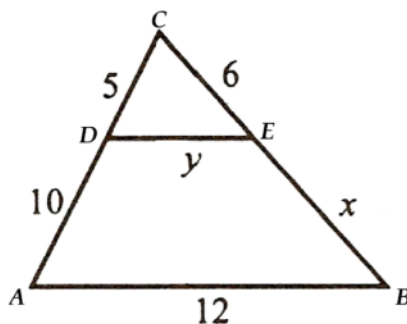
$$3x = 60$$

$$x = 20$$

The tree is 20m high.



## Section 7.4 – Similar Triangles: Word Problems

**Example 4:** Solve for the missing sides  $x$  and  $y$  if  $\triangle ABC$  is similar to  $\triangle DEC$ .

$$\frac{5}{15} = \frac{6}{6+x}$$

$$5(6+x) = 15(6)$$

$$5(6) + 5x = 90$$

$$30 + 5x = 90$$

$$-30 \quad -30$$

$$5x = 60$$

$$x = 12 \text{ units}$$

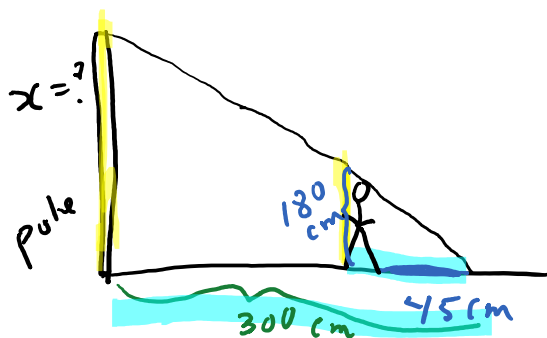
$$\frac{5}{15} = \frac{y}{12}$$

$$5x = 60$$

$$x = 12 \text{ units}$$

$$\frac{3y}{3} = \frac{12}{3}$$

$$y = 4 \text{ units}$$

**Example 5:** A person who stands 180 cm tall casts a shadow 45 cm long. A nearby telephone pole casts a shadow 300 cm long at the same time of day. What is the height of the pole in metres?

$$\frac{x}{180} = \frac{300}{45}$$

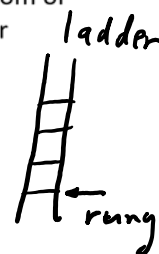
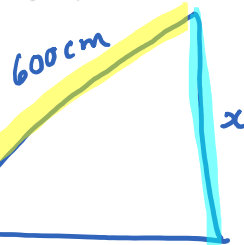
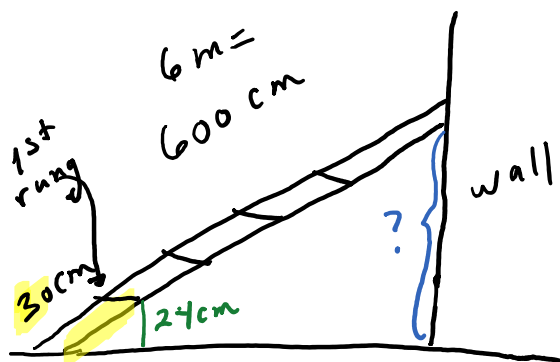
$$\frac{45x}{45} = \frac{300(180)}{45}$$

$$x = 1200 \text{ cm}$$

$$x = 12 \text{ m}$$

$$1 \text{ m} = 100 \text{ cm}$$

The pole is  
12 m  
high.

**Example 6:** A 6 m ladder is resting against a wall. The first rung of the ladder is 30 cm from the bottom of the ladder and 24 cm vertically above the ground. How high up the wall does the ladder reach?

$$\frac{30}{600} = \frac{24}{x}$$

$$\frac{30x}{30} = \frac{(24)(600)}{30}$$

$$x = 480 \text{ cm}$$

$$= 4.8 \text{ m}$$

$$\frac{600}{30} = \frac{x}{24}$$

The ladder  
is 480 cm or  
4.8 m up the  
wall.

Homework: Sec. 7.4 p. 350 ★ #7, 9, 12, 11, ★★ 13, ★★★ 14, 15