

Similar Triangles

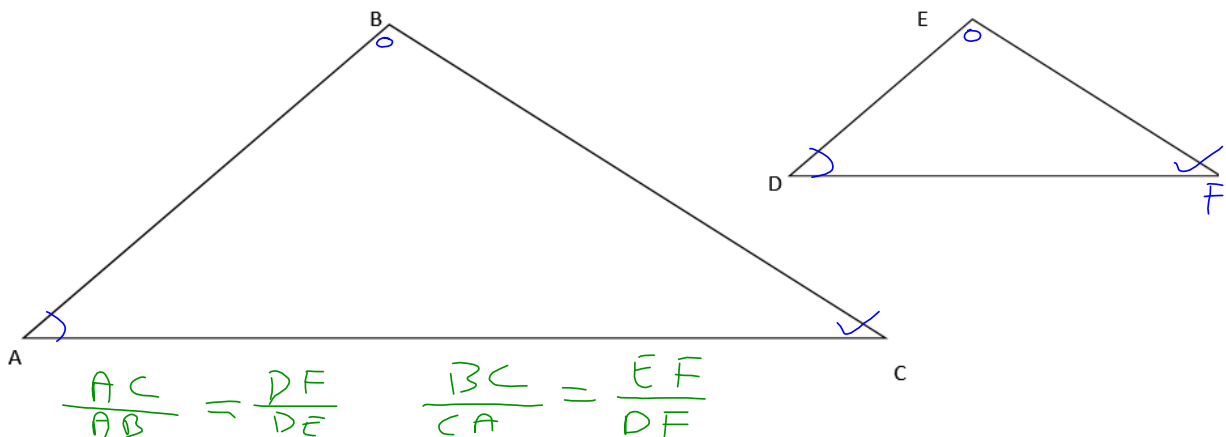
Examine the shapes below. What do you notice about each pair?



These objects show similarity. One figure is an enlargement of the other (uniform scaling). We will look at similar triangles – triangles that have this property.

Similar triangles are triangles that are scaled versions of each other.

Take a few minutes and complete some measurements on the **two pairs of similar triangles below**.



I made these triangles by enlarging one of the triangles. These triangles have two important properties:

- Corresponding angles are equal

- Ratio of corresponding sides are all equal.

$$\frac{AB}{DE} = \frac{AC}{DF} = \frac{BC}{EF}$$

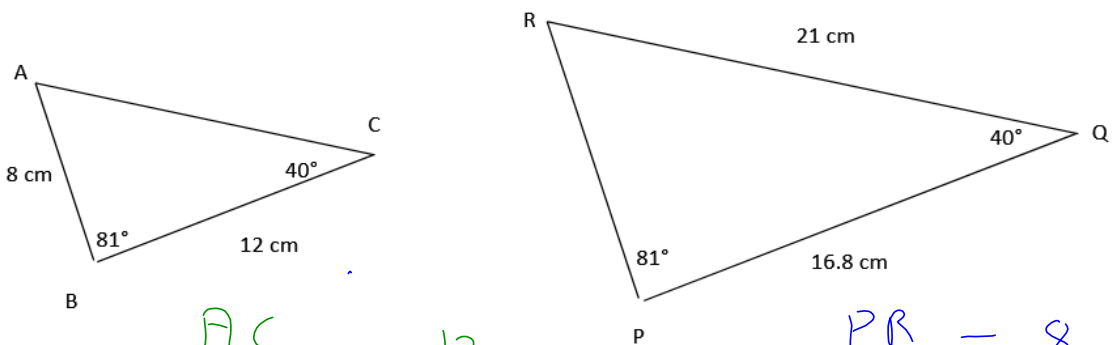
If one of the above properties holds, then so does the other. We say the triangles are **similar** and we can write:

$$\triangle ABC \sim \triangle DEF$$

Example 1 - How do we know the two triangles below are similar?

all angles are equal.

Find the length of side AC and PR in the pair of similar triangles below.



$$\frac{AC}{21} = \frac{12}{16.8}$$

$$AC = 21 \left(\frac{12}{16.8} \right)$$

$$AC = 15 \text{ cm}$$

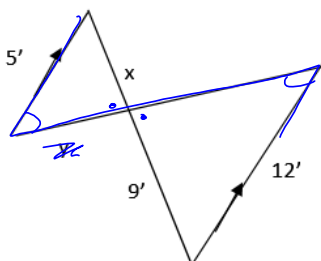
$$\frac{PR}{16.8} = \frac{8}{12}$$

$$PR = \frac{8}{12} (16.8)$$

$$PR = 11.2 \text{ cm}$$

In the next two examples 1) verify that the triangles are similar 2) solve for the missing measurements

Example #2



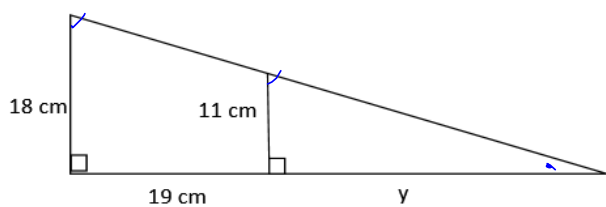
$$\frac{5}{12} = \frac{x}{9}$$

$$12x = 45$$

$$x = \frac{45}{12}$$

$$x = 3.75'$$

Example #3



$$\frac{11}{18} = \frac{y}{y+19}$$

$$18y = 11y + 209$$

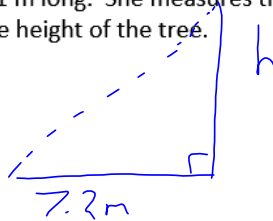
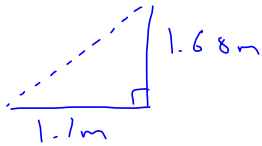
$$7y = 209$$

$$y = 29.85 \text{ cm}$$

Unit 6, Lesson 1

MPM2D

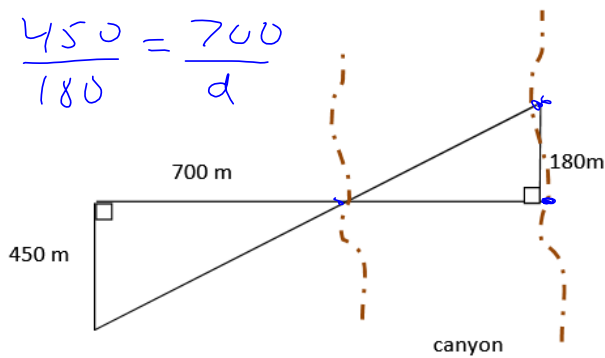
On a sunny day Ashley's shadow is 1.1 m long. She measures the shadow of a tall tree to be 7.2 m long. Ashley is 1.68m tall. Find the height of the tree.



$$\frac{h}{7.2} = \frac{1.68}{1.1} \quad h = 11\text{m}$$

To find the distance across a canyon a surveyor makes the following measurements. Find the distance across the canyon.

$$\frac{450}{180} = \frac{700}{d}$$

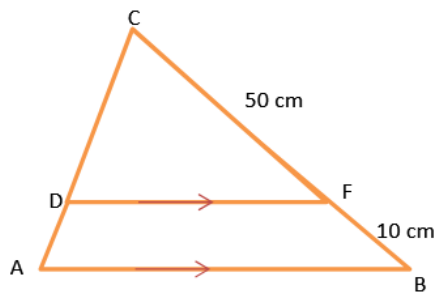


$$\frac{d}{180} = \frac{700}{450}$$

$$d = 280\text{m}$$

Unit 6, Lesson 1

MPM2D



The area of ABC is equal to 1125cm^2 . Find the area of triangle DCF.

7+3
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Text page 322 #1-9, 11, 12, ~~15~~