

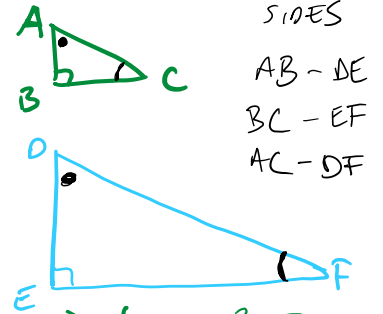
4.3 – Similar Triangles

Corresponding Angles: the angles that are in the same position in a figure

Corresponding Sides: the sides that are the same in relative position in a figure

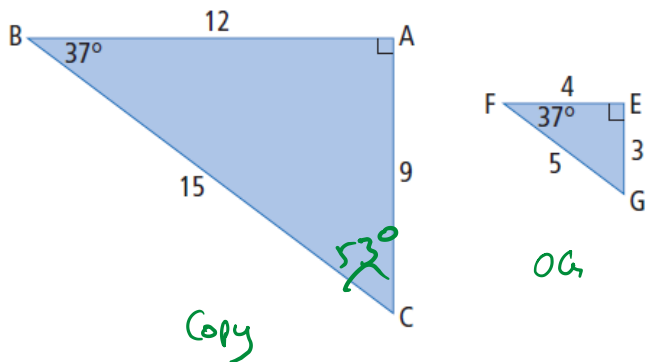
Similar figures: have the same shape but different sizes. To be similar corresponding angles must be equal, corresponding sides are proportional

NOTE: angles in a triangle add up to 180°.



Identify Similar Triangles

Determine if $\triangle ABC$ is similar to $\triangle EFG$.

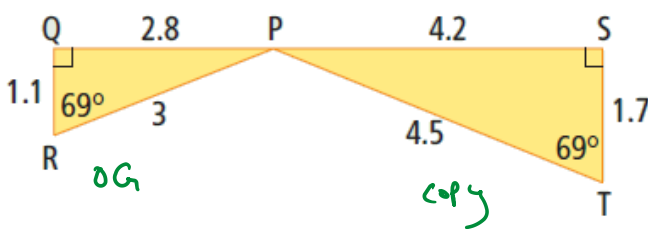


Compare corresponding angles:
 $\angle A = 90^\circ$ and $\angle E = 90^\circ$
 $\angle B = 37^\circ$ and $\angle F = 37^\circ$
 $\angle C = 53^\circ$ and $\angle G = 53^\circ$

We say that $\triangle ABC \sim \triangle EFG$
 means similar

Compare corresponding sides:
 $\frac{AB}{EF} = \frac{12}{4} = 3$ $\frac{BC}{FG} = \frac{15}{5} = 3$ $\frac{AC}{EG} = \frac{9}{3} = 3$

Practice: Determine if the pair of triangles is similar. Show how you know.

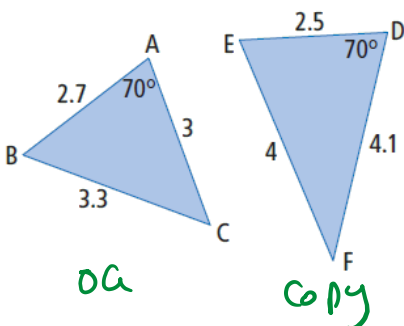


corresponding angles \checkmark
 sides are proportional?

$\frac{PS}{PQ} = \frac{4.2}{2.8} = 1.5$ $\frac{ST}{QR} = \frac{1.7}{1.1} = 1.5?$ $\frac{PT}{PR} = \frac{4.5}{3} = 1.5$

$\triangle PQR \sim \triangle PST$

1. SHOW YOU KNOW: Determine if the pair of triangles is similar.



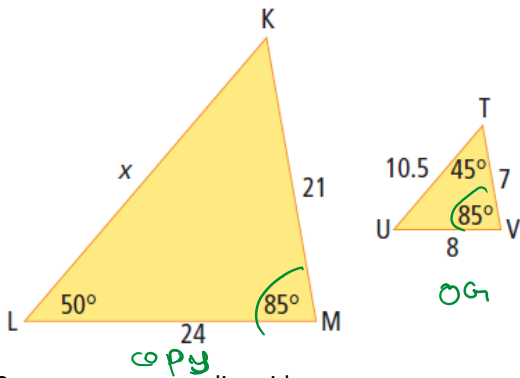
$\frac{DE}{AB} = \frac{2.5}{2.7} = 0.92$ $\frac{DF}{AC} = \frac{4.1}{3} = 1.36$

Not similar

Use Similar Triangles to Determine a Missing Side Length

Kyle is drawing triangles for a math puzzle. Use your knowledge of similar triangles to determine:

- a) if the triangles are similar
- b) the missing side length



Check the unknown angles in each triangle and compare.

$$\begin{aligned} \angle M &= \angle V = 85^\circ \\ \angle L &= \angle U = 50^\circ \quad (180 - 45 - 85) \\ \angle K &= \angle T = 45^\circ \quad (180 - 85 - 50) \end{aligned}$$

Compare corresponding sides:

Method 1: Use a Scale Factor

$$\frac{KM}{TV} = \frac{21}{7} \quad \frac{LM}{UV} = \frac{24}{8}$$

$$= 3 \quad = 3$$

Scale factor is 3

$$x = 10.5 \times 3 = 31.5$$

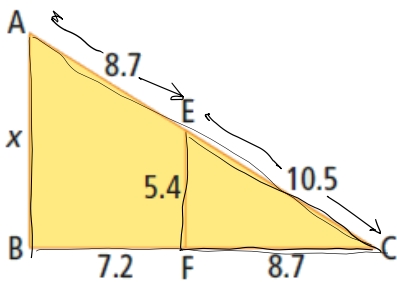
Method 2: Use a proportion

copy

$$\frac{x}{10.5} = \frac{21}{7}$$

$$x = 31.5$$

Practice: Solve using a method of your choice. What is the missing side length?



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

copy OG

$$\frac{EF}{AB} = \frac{EC}{AC}$$

$$\frac{5.4}{x} = \frac{10.5}{19.2}$$

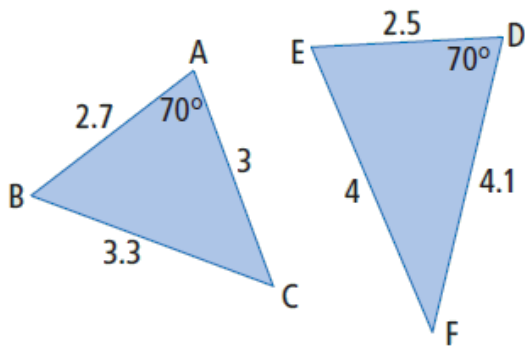
$$x = 9.874 = 9.9$$

Key Points:

- Triangles are similar if...
 - corresponding angles are equal (same)
 - corresponding sides are proportional

4.3 - Similar Triangles SHOW YOU KNOW

1. Determine if the pair of triangles is similar. Show how you know.



2. Solve using a method of your choice. What is the missing side length?

