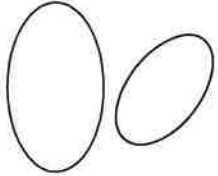
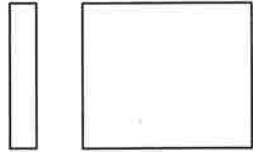


## 5-6 Notes Similar Figures

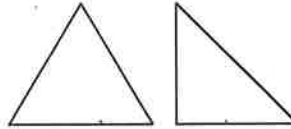
Review: Are the objects below *similar*?



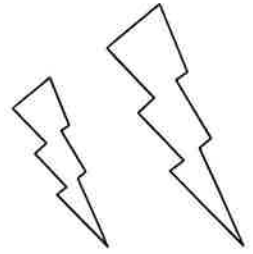
Yes



No



No



Yes

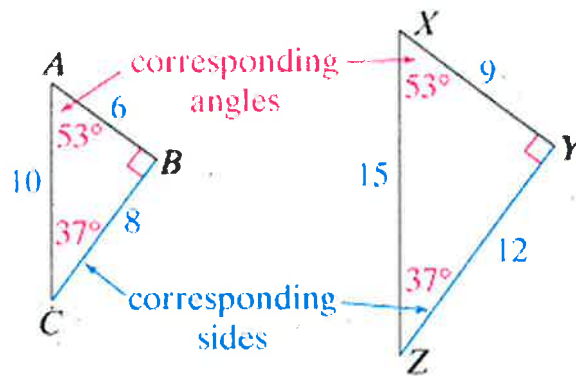
Similar figures have 2 properties:

- 1) Corresponding angles have the same measure
- 2) Lengths of corresponding sides form equal ratios (proportional)

Triangles ABC and XYZ are similar figures.

Corresponding  $\nabla$ s

$$\begin{aligned} \angle A &= \angle X \\ \angle B &= \angle Y \\ \angle C &= \angle Z \end{aligned}$$



Correspond. sides

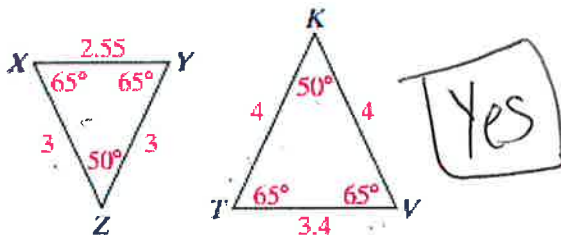
$$\frac{6}{9} = \frac{8}{12} = \frac{10}{15}$$

$$72 = 72 \quad 120 = 120 \checkmark$$

$$\frac{6}{9} = \frac{10}{15} \quad 90 = 90 \checkmark$$

Are the two figures similar? Explain why or why not.

1.

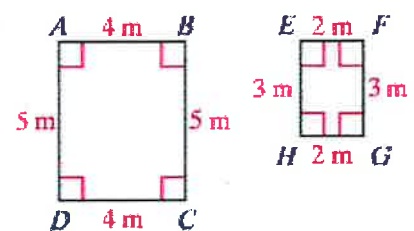


$\nabla$  same?  $\checkmark$

$$\frac{3}{4} = \frac{2.55}{3.4}$$

$$10.2 = 10.2 \checkmark$$

2.



$$\frac{4}{2} = \frac{5}{3}$$

$$10 = 12? \quad \text{NO}$$

### Using Similar Figures to find Missing Information

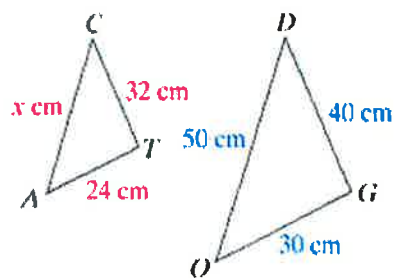
The two triangles at the right are similar. Find the value of  $x$ .

$$\frac{x}{50} = \frac{24}{30} \quad \leftarrow \text{Write a proportion.}$$

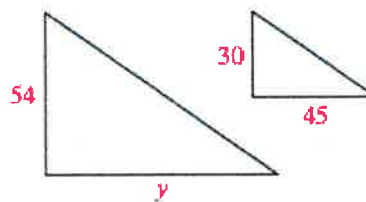
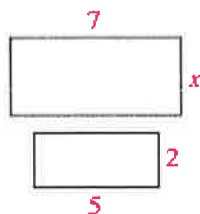
$$30x = 50 \cdot 24 \quad \leftarrow \text{Write the cross products.}$$

$$\frac{30x}{30} = \frac{1,200}{30} \quad \leftarrow \text{Divide each side by 30.}$$

$$x = 40 \quad \leftarrow \text{Solve for } x.$$



**You Try! Find the measure of missing sides below.**



$$\begin{array}{r} 2.8 \\ 5 \overline{)14.0} \\ \underline{-10} \phantom{0} \\ 40 \end{array}$$

$$\frac{7}{5} = \frac{x}{2}$$

$$\frac{14}{5} = \frac{5x}{5}$$

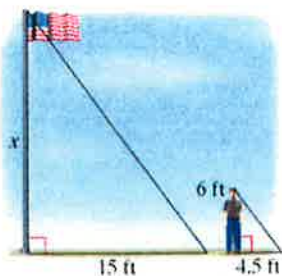
$$\boxed{x = 2.8}$$

$$\frac{54}{30} = \frac{y}{45}$$

$$\frac{2,430}{30} = \frac{30y}{30}$$

$$\boxed{y = 81}$$

**You Try! A 6-ft person standing near a flagpole has a shadow 4.5 ft long. The flagpole has a shadow 15 ft long. What is the height of the flagpole?**

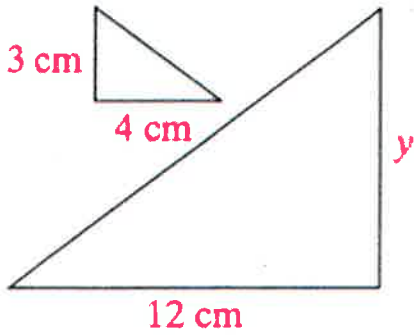


$$\frac{6}{x} = \frac{4.5}{15}$$

$$\frac{90}{4.5} = \frac{4.5x}{4.5}$$

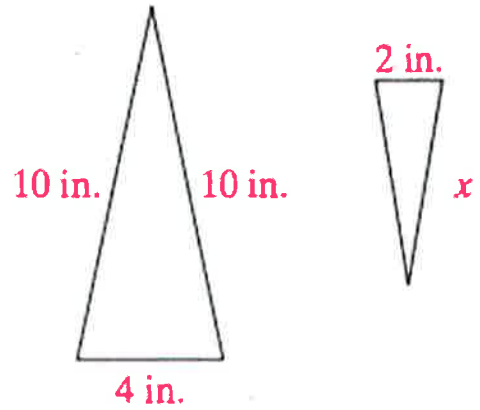
$$\boxed{x = 20 \text{ ft}}$$

You Try! The triangles in each pair are similar. Find the missing length. Round to the nearest tenth where necessary.



$$\frac{12}{y} = \frac{4}{3}$$

$$\frac{36}{4} = \frac{4y}{4} \quad \boxed{y=9}$$



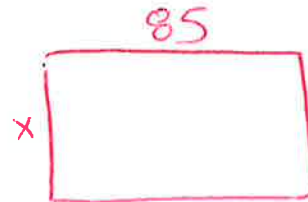
$$\frac{4}{10} = \frac{2}{x}$$

$$\frac{4x}{4} = \frac{20}{4}$$

$$\boxed{x=5}$$

You Try! **Projection** An image on a slide is similar to its projected image. A slide is 35 mm wide and 21 mm high. Its projected image is 85 mm wide. To the nearest centimeter, how high is the image?

$$\frac{35}{21} = \frac{85}{x}$$



$$85 \times 21 = 1,785$$



$$\frac{1785}{35} = \frac{35x}{35}$$

$$\boxed{x=51}$$

