Warm Up

1. Solve: $\frac{12}{8} = \frac{x}{60}$

$3/2$

$x = 90$

$8x = 60 \cdot 12$

2. The scale of a map is 1 cm : 10 miles. The actual distance between two towns is 4.3 miles. Find the length on the map.

$\frac{1\text{ cm}}{10\text{ miles}} = \frac{x}{4.3\text{ miles}}$ .43 cm.

3. A model train is 9 cm long. The actual engine is 18 meters long. What is the scale of the model?

$\frac{9\text{ cm}}{18\text{ m}} = \frac{9\text{cm}}{1800\text{cm}} = \frac{1}{200}$

6-3 Similar Polygons

Similar polygons - same shape, different size

congruent angles

proportional sides

$\triangle ABC \sim \triangle XYZ$

Scale factor - ratio between two corresponding sides

Ex 1 In the diagram, $\Delta ABC \sim \Delta DEF$

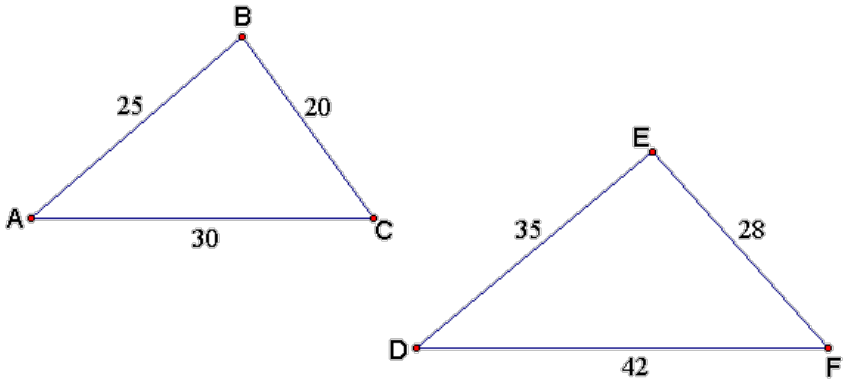
a. List all pairs of congruent angles.

$\angle A \cong \angle D \quad \angle B \cong \angle E \quad \angle C \cong \angle F$

b. Check that the ratios of corresponding sides are equal.

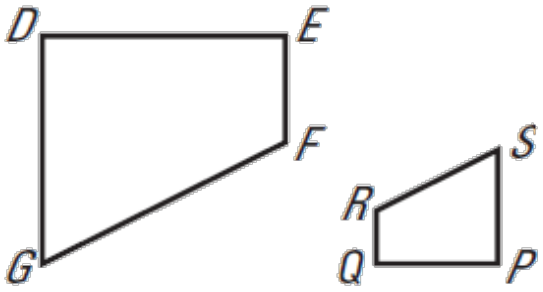
$\frac{25}{35} = \frac{20}{28} = \frac{30}{42}$

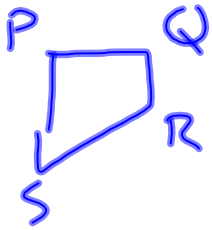
c. Write the ratios of corresponding sides as a proportion.



Ex. 2 List all pairs of congruent angles for the figures. Then write the ratios of the corresponding sides in a statement of proportionality.

$DEFG \sim PQRS$

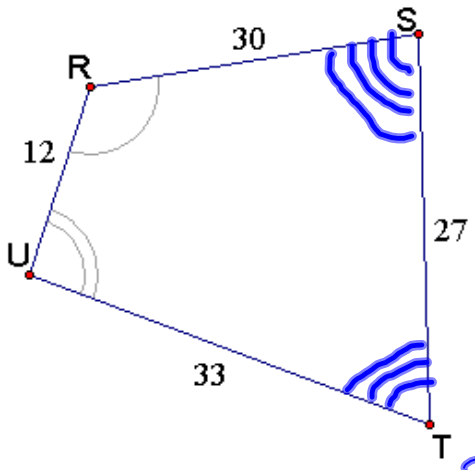


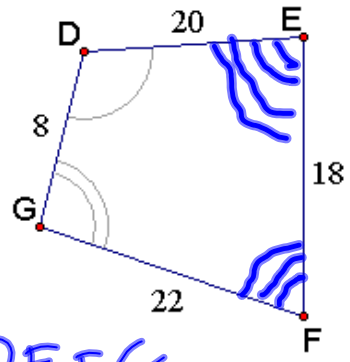


$\angle D \cong \angle P$
$\angle E \cong \angle Q$
$\angle F \cong \angle R$
$\angle G \cong \angle S$

$\frac{DE}{PQ} = \frac{DQ}{PS} = \frac{EF}{QR} = \frac{FQ}{RS}$

Ex 3 Determine whether the polygons are similar. If they are, write a similarity statement and find the scale factor of *RSTU* to *DEFG*.



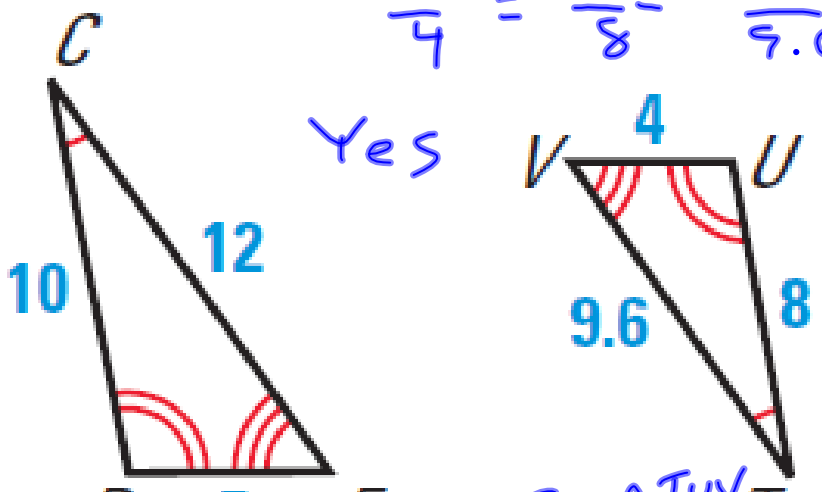


$\frac{12}{8}$ $\frac{33}{22}$ $\frac{27}{18}$ $\frac{30}{20}$

RSTU ~ DEFG

3:2 1.5 $\frac{3}{2}$ $\frac{12}{8}$

Ex. 4 Determine whether the polygons are similar. If they are, write a similarity statement and find the scale factor.



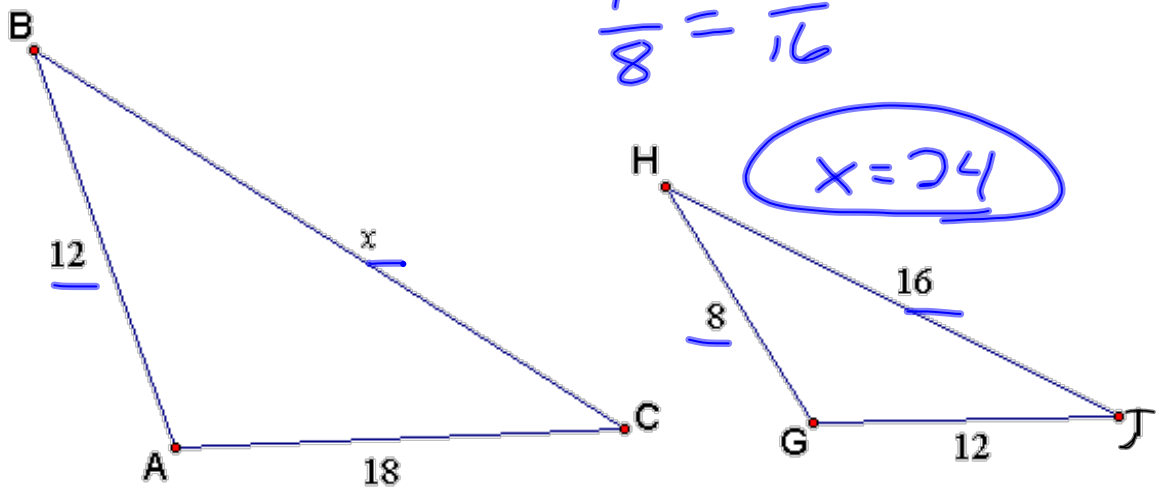
$\frac{5}{4} = \frac{10}{8} = \frac{12}{9.6}$

Yes

$\triangle CDE \sim \triangle TUV$

1.25 5:4 $\frac{5}{4}$

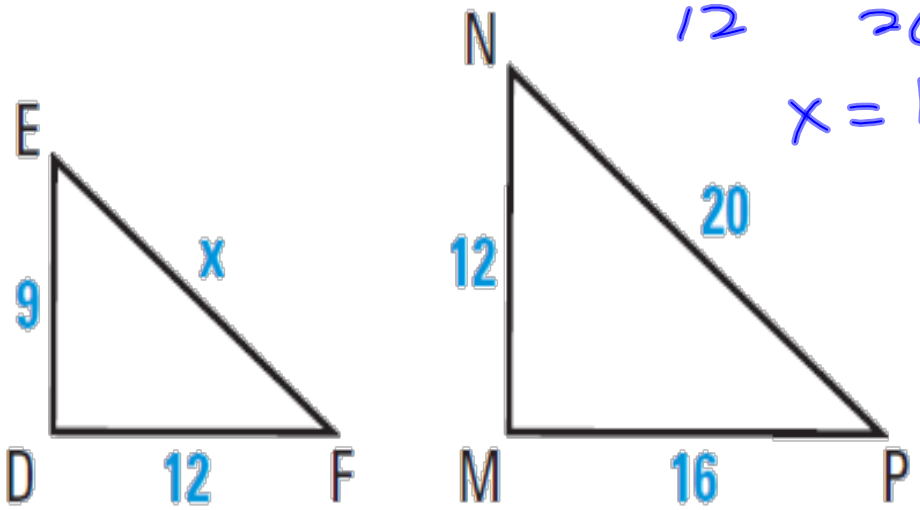
Ex 5 In the diagram, $\Delta ABC \sim \Delta GHJ$
Find the value of x.



$\frac{12}{8} = \frac{x}{16}$

$x = 24$

Ex. 6 In the diagram, $\Delta DEF \sim \Delta MNP$.
Find the value of x.

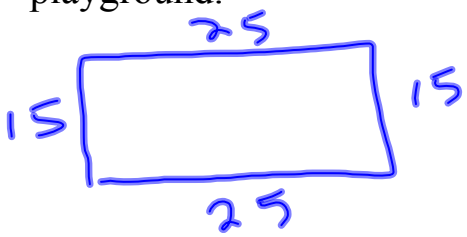


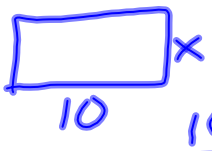
$\frac{9}{12} = \frac{x}{20}$

$x = 15$

Ex. 7 A rectangular playground has a length of 25 meters and width of 15 meters. You are constructing a new playground with a similar shape that is only 10 meters in length.

Find the scale factor of the new playground to the original playground.





2:5

$\frac{10}{25} = \frac{2}{5}$

Find the perimeter of both the new and original playground.

$\frac{25}{10} = \frac{15}{x}$