

**7-2**

**Skills Practice**

**Similar Polygons**

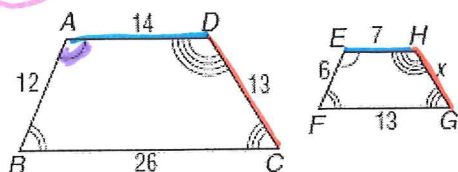
Determine whether each pair of figures is similar. Justify your answer.

1. **Yes!**  
 $\triangle ABC \sim \triangle DEF$   
 $\angle A \cong \angle D$   
 $\angle B \cong \angle E$   
 $\angle C \cong \angle F$   
 $\frac{AB}{DE} = \frac{6}{4} = \frac{3}{2}$   
 $\frac{BC}{EF} = \frac{9}{6} = \frac{3}{2}$   
 $\frac{AC}{DF} = \frac{10.5}{7} = 1.5$   
**Yes, b/c SLR are = and corr.  $\angle$ s are  $\cong$**

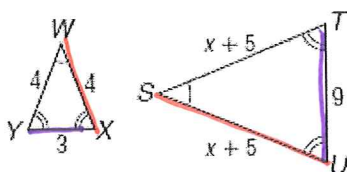
2. **Yes!**  
**Rhombus SPQR  $\sim$  Rhombus ZWXY**  
**ALL SLR =  $\frac{3}{7.5}$**   
**Yes b/c all corr  $\angle$ s are  $\cong$**

Each pair of polygons is similar. Write a similarity statement, and find  $x$ , the measure(s) of the indicated side(s), and the scale factor.

3.  $\overline{GH}$

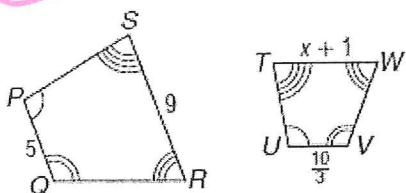


4.  $\overline{ST}$  and  $\overline{SU}$

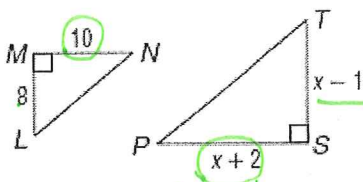


See Work attached

5.  $\overline{WT}$



6.  $\overline{TS}$  and  $\overline{SP}$



7. Triangle  $JKL$  is similar to  $\triangle TUV$  with a scale factor of  $\frac{3}{4}$ . If the lengths of the sides of  $\triangle TUV$  are 4, 6, and 8 centimeters, what are the lengths of the sides of  $\triangle JKL$ ?  
**3, 4.5, 6**

8. A triangle has side lengths of 3 meters, 5 meters, and 4 meters. The triangle is enlarged so that the larger triangle is similar to the original and the scale factor is 5. Find the perimeter of the larger triangle.  
 **$3 \cdot 5 + 5 \cdot 5 + 4 \cdot 5$**   
 **$P = 60m$**

9. A rectangle with length 60 centimeters and height 40 centimeters is reduced so that the new rectangle is similar to the original and the scale factor is  $\frac{1}{4}$ . Find the length and width of the new rectangle.

$60 \cdot \frac{1}{4} = 15 \text{ cm}$  Length  
 $40 \cdot \frac{1}{4} = 10 \text{ cm}$  Width

**7-1 Practice****Proportions**

1. **NUTRITION** One ounce of cheddar cheese contains 9 grams of fat. Six of the grams of fat are saturated fats. Find the ratio of saturated fats to total fat in an ounce of cheese.

$$2:3$$

2. **FARMING** The ratio of goats to sheep at a university research farm is 4:7. The number of sheep at the farm is 28. What is the number of goats?

$$16$$

$$\begin{array}{l} 4:7 \\ 6:5 \end{array}$$

$$\frac{4}{7} = \frac{6}{28}$$

3. **ART** Edward Hopper's oil on canvas painting *Nighthawks* has a length of 60 inches and a width of 30 inches. A print of the original has a length of 2.5 inches. What is the width of the print?

$$1.25 \text{ in}$$

Solve each proportion.

$$4. \frac{5}{8} = \frac{x}{12}$$

$$x = 7.5$$

$$5. \frac{x}{1.12} = \frac{1}{5}$$

$$x = 0.224$$

$$6. \frac{6x}{27} = \frac{4}{3}$$

$$x = 6$$

$$7. \frac{x+2}{3} = \frac{8}{9}$$

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

$$8. \frac{3x-5}{4} = \frac{-5}{7}$$

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

$$9. \frac{x-2}{4} = \frac{x+4}{2}$$

$$x = -10$$

Find the measures of the sides of each triangle.

10. The ratio of the measures of the sides of a triangle is 3:4:6, and its perimeter is 104 feet.

$$24 \text{ ft}, 32 \text{ ft}, 48 \text{ ft}$$

11. The ratio of the measures of the sides of a triangle is 7:9:12, and its perimeter is 84 inches.

$$21 \text{ in}, 27 \text{ in}, 36 \text{ in}$$

12. The ratio of the measures of the sides of a triangle is 6:7:9, and its perimeter is 77 centimeters.

$$24.5 \text{ in}, 31.5 \text{ in}$$

$$21 \text{ in}, 24.5 \text{ in}, 31.5 \text{ in}$$

$$6x + 7x + 9x = 77$$

$$x = 3.5$$

Find the measures of the angles in each triangle.

13. The ratio of the measures of the angles is 4:5:6.

$$48^\circ, 60^\circ, 72^\circ$$

$$4x + 5x + 6x = 180$$

14. The ratio of the measures of the angles is 5:7:8.

$$45^\circ, 63^\circ, 72^\circ$$

15. **BRIDGES** The span of the Benjamin Franklin suspension bridge in Philadelphia, Pennsylvania, is 1750 feet. A model of the bridge has a span of 42 inches. What is the ratio of the span of the model to the span of the actual Benjamin Franklin Bridge?

$$\frac{1}{500}$$

$$\frac{42}{21000} = \frac{1}{500}$$

a.) Sim. statement  
3.) Quad ABCD ~ Quad EFGH

b.) Find  $x$

$$\frac{HG}{DC} = \frac{EH}{AD}$$

$$\frac{x}{13} = \frac{7}{14}$$

$$\boxed{x = 6.5}$$

c.) INDICATED SIDE

$$\boxed{GH = 6.5}$$

d.) Scale Factor

$$\frac{EH}{AD} = \frac{7}{14} = \frac{1}{2} \text{ or } 2$$

4. a.)  $\triangle XYW \sim \triangle UTS$

b.)  $\frac{SU}{WX} = \frac{TU}{YX}$

$$\frac{x+5}{4} = \frac{9}{3}$$

$$3(x+5) = 36$$

$$3x + 15 = 36$$

$$3x = 21$$

$$\boxed{x = 7}$$

c.)  $ST$  and  $SU$

$$ST = 7 + 5$$

$$\boxed{ST = 12}$$

$$SU = 7 + 5$$

$$\boxed{SU = 12}$$

d.) SF:

$$\frac{TU}{YX} = \frac{9}{3} = 3$$

or  $\frac{1}{3}$

5.) PQRS ~ UVWT

$$x = 5$$

$$WT = 6$$

$$SF = \frac{3}{2} = \frac{2}{3}$$

6.  $\triangle LMN \sim \triangle TSP$

$$x = 13$$

$$TS = 12 \quad SP = 15$$

$$SF: \frac{2}{3} \text{ or } \frac{3}{2}$$

Handwritten text at the top of the page, possibly a title or header.

Handwritten text in the upper middle section.

Handwritten text in the middle section, possibly containing a list or series of items.

Handwritten text in the lower middle section.

Handwritten text in the bottom left section.

Handwritten text in the bottom right section, possibly including a signature or date.

Handwritten text in the bottom left corner.

Handwritten text in the bottom right corner.