

Name: _____

8.1 Practice Problems

1. Algebra If $\frac{x}{y} = \frac{5}{8}$, which of the following must be true?

a. $8x = 5y$ True, cross multiply

d. $\frac{x}{5} = \frac{y}{8}$ True, cross multiply

b. $5x = 8y$ False $5 \cdot 5 \neq 8 \cdot 8$

e. $\frac{x}{8} = \frac{y}{5}$ False, $\frac{5}{8} \neq \frac{8}{5}$

c. $\frac{y}{x} = \frac{8}{5}$ True, cross multiply

f. $\frac{x+y}{y} = \frac{13}{8}$

$8x + 8y = 13y$

$8x = 5y$ True

2. Solve for x.

a. $\frac{7}{5} = \frac{x}{3}$ $x = \frac{21}{5}$

d. $\frac{x}{x+2} = \frac{3}{4}$ $3x + 6 = 4x$
 $6 = x$

b. $\frac{2}{x} = \frac{x}{32}$ $x^2 = 64$
 $x = \pm 8$

e. $\frac{x+1}{x} = \frac{7}{5}$ $5x + 5 = 7x$
 $5 = 2x$

c. $\frac{3}{11} = \frac{8}{x}$ $x = \frac{88}{3}$

f. $\frac{5}{x} = \frac{3}{x+1}$

$3x = 5x + 5$
 $-5 = 2x$

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

3. Decide whether the polygons are always, sometimes or never similar.

a. Two triangles S

b. Two congruent pentagons A

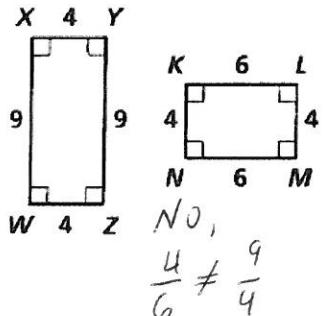
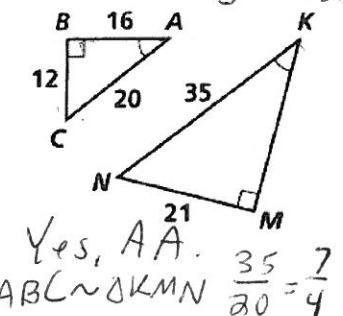
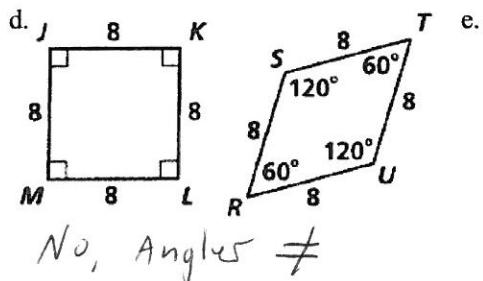
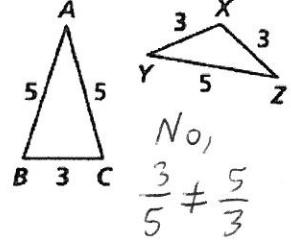
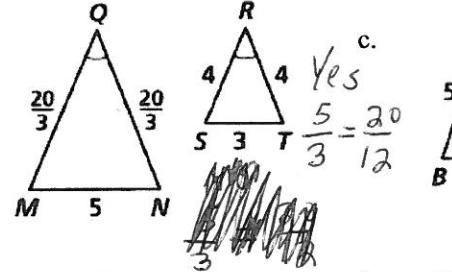
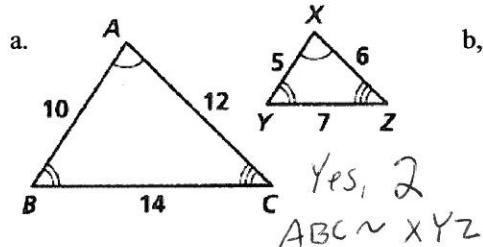
c. Two regular octagons A

d. A rectangle and a square S

e. A right triangle and an isosceles triangle S

f. A parallelogram and a trapezoid N

4. Are the polygons similar? If they are, write a similarity statement, and give the similarity ratio. If they are not, explain.



LMNO ~ HIJK. Complete the proportions and congruence statements.

7. $\angle M \cong ? \angle I$

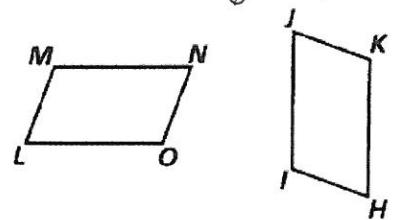
8. $\angle K \cong ? \angle O$

9. $\angle N \cong ? \angle J$

10. $\frac{MN}{IJ} = ?$ No

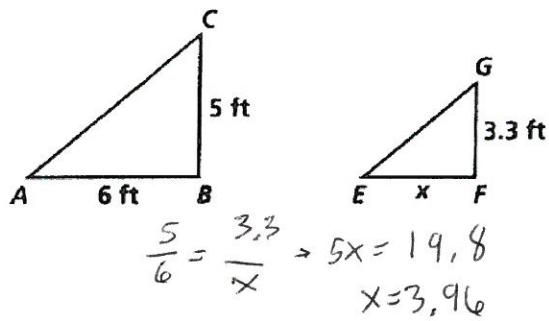
11. $\frac{HK}{?} = \frac{HI}{LM}$

12. $\frac{IJ}{MN} = \frac{HK}{?}$

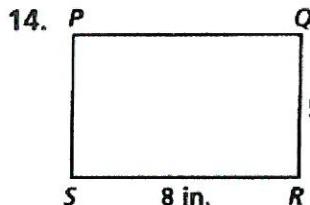
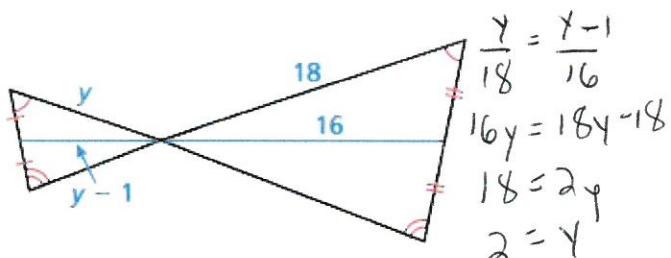


Algebra The polygons are similar. Find the values of the variables.

13.

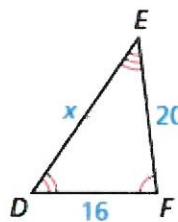


15. Find y.



$$\frac{3}{5} = \frac{x}{8} \Rightarrow 5x = 24 \\ x = \frac{24}{5}$$

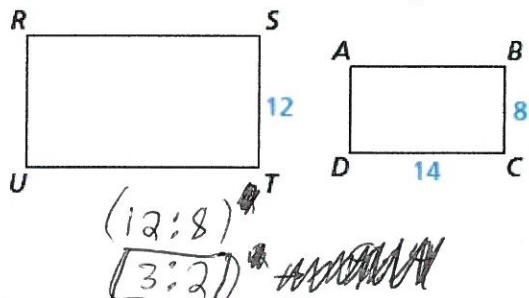
16. Find x and write a similarity statement.



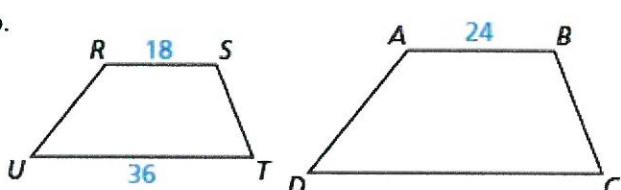
$$\frac{x}{18} = \frac{20}{15} \\ 15x = 360 \\ x = 24$$

17. Given RSTU ~ ABCD, find the ratio of their perimeters.

a.



b.

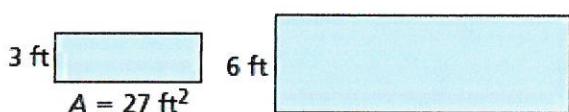


$$18/24 = 3/4$$

In Exercises 19–22, the polygons are similar. The area of one polygon is given. Find the area of the other polygon.

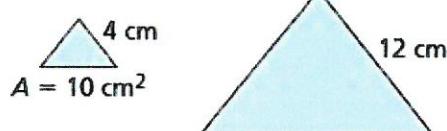
(See Example 5.)

19.



$$3:6 = 1:2 \\ \text{Ratio of Areas } 1^2:2^2 \\ 1:4 \\ 27 \times 4 = 108$$

20.



$$4:12 = 1:3 \\ \text{Ratio of Areas } 1^2:3^2 = 1:9 \\ 10 \times 9 = 90$$

21.

