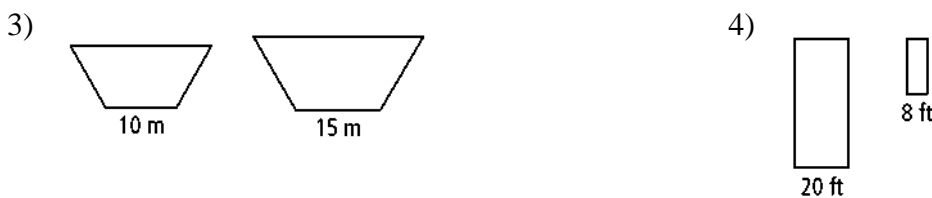Name_____ Date_____

10.3 – Areas of Similar Shapes

The figures in each pair are similar. Compare the first figure to the second. Give the ratio of the perimeters **and** the ratio of the areas.

1)

6 mm

8 mm

2)

3 in.

6 in.

3)

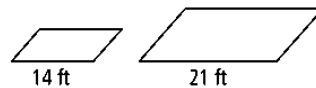

10 m   15 m

4)

8 ft

20 ft

The figures in each pair are similar. The area of one figure is given. Find the area of the other figure to the nearest whole number.
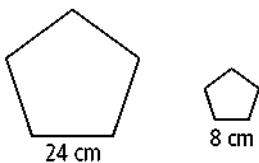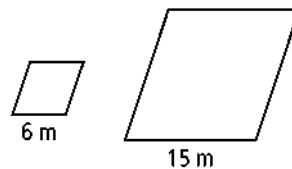
5)   area of smaller triangle $= 12$ in.^{2}

4 in.   8 in.
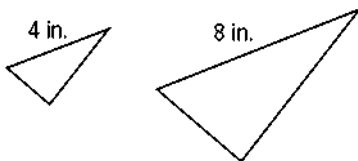
6)   area of smaller parallelogram $= 72$ ft^2

14 ft   21 ft

7)   area of larger pentagon $= 135$ cm^2

24 cm   8 cm

8)   area of smaller rhombus $= 60$ m^2

6 m

15 m

Find the scale factor and the ratio of perimeters for each pair of similar figures.

9)   two regular pentagons with areas 144 in.^{2} and 36 in.^{2}

10) two rectangles with areas 72 m^2 and 50 m^2

11) two regular pentagons with areas 147 ft^2 and 12 ft^2

12) two equilateral triangles with areas $121\sqrt{3}$ cm^2 and $16\sqrt{3}z$ cm^2

13) two circles with areas 12π in.^{2} and 27π in.^{2}

The scale factor of two similar polygons is given. Find the ratio of their perimeters and the ratio of their areas.
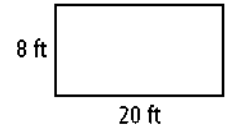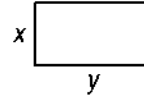
14) 5 : 1

15) 2 : 7

16) $\dfrac{3}{4}$

17) $\dfrac{10}{7}$

18) 10 : 3

19) $\dfrac{5}{9}$

Find the values of *x* and *y* when the smaller similar rectangle shown here has the area given.

x ☐   8 ft ☐
y 20 ft

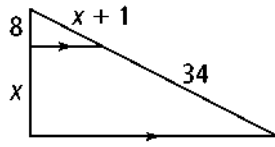20) 10 ft^2 21) 20 ft^2 22) 22.5 ft^2

23) The area of a regular octagon is 45 ft^2. What is the area of a regular octagon with sides $\frac{1}{3}$ the length of sides of the larger octagon?

24) The longer base of a right trapezoid is 12 ft. The longer base of a similar right trapezoid is 30 ft. The area of the smaller right trapezoid is 20 ft^2. What is the area of the larger right trapezoid?

25) Two similar parallelograms have areas 125 m^2 and 80 m^2. The height of the larger parallelogram is 10 m. What are the lengths of the bases of both parallelograms?

The pair of figures is similar. Compare the larger figure to the smaller figure. Find the   ratio of their perimeters and the ratio of their areas.

26)

27)

28)