

Similar Figures

Name _____

Worksheet - Bernhard GT GEOMETRY

1. Solve each of the following proportions

a) $\frac{30}{11x} = \frac{3x}{10}$

b) $\frac{5\sqrt{6}}{9} = \frac{2x}{3\sqrt{2}}$

c) $\frac{5-x}{3} = \frac{2}{3-x}$

d) $\frac{x+1}{x-2} = \frac{x+3}{x-4}$

2. Solve the following problems.

- a) A car travels 106 miles on 4 gallons of gas. How far can it be expected to travel on a full tank of 16 gallons?
- b) A recipe for six dozen cookies calls for $2\frac{1}{2}$ cups of flour. How many cups of flour are needed for 10 dozen cookies?
- c) In a mixture of concrete, the ratio of cement to sand is one to four. How many shovels of cement are needed to mix with 80 shovels of sand?
- d) On a map, 1 in represents 100 miles. Find the actual distance between 2 towns that are $5\frac{1}{4}$ in. apart on the map.
- e) The ratio of two complementary angles is 7 : 11. Find the measure of each angle.
- f) The ratio of angles in a triangle is 1 : 2 : 6. Find the measure of each angle.
- g) The ratio of two supplementary angles is 5 : 7. Find the measure of the smaller angle.

3. Find the ratio of x to y in each problem.

a) $25x = 35y$ $\frac{x}{y} = \underline{\hspace{2cm}}$

b) $\frac{x-3y}{x+y} = \frac{2}{3}$ $\frac{x}{y} = \underline{\hspace{2cm}}$

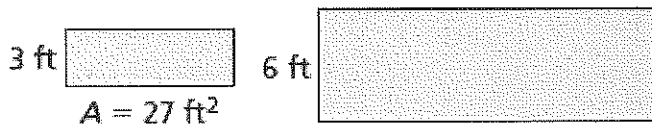
11. A school gymnasium is being remodeled. The basketball court will be similar to an NCAA basketball court, which has a length of 94 feet and a width of 50 feet. The school plans to make the width of the new court 45 feet. Find the perimeters of an NCAA court and of the new court in the school. Draw and label both courts. Show all work.

Perimeter_{NCAA} = _____

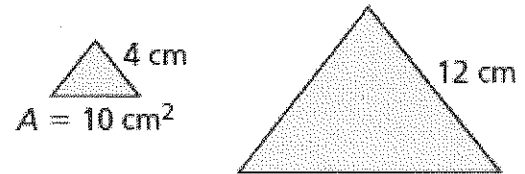
Perimeter_{School} = _____

For #12 - 15, the polygons are similar. The area of one polygon is given. Find the area of the other polygon.

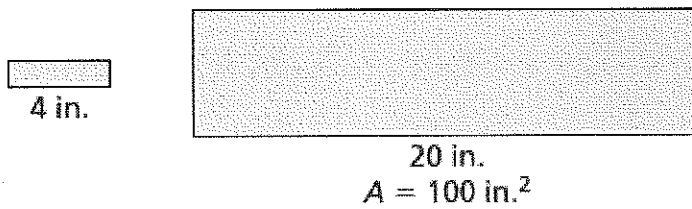
12. Area = _____



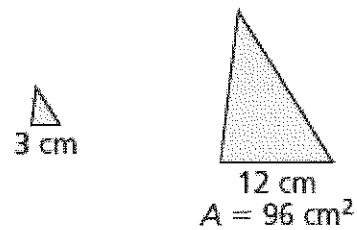
13. Area = _____



14. Area = _____



15. Area = _____



16. Describe and correct the error in finding the perimeter of triangle B. The triangles are similar.

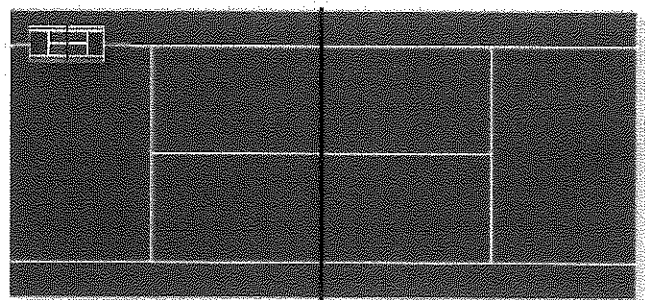
$\frac{5}{10} = \frac{28}{x}$
 $5x = 280$
 $x = 56$

17. Describe and correct the error in finding the area of rectangle B. The rectangles are similar.

$A = 24 \text{ units}^2$
 $\frac{6}{18} = \frac{24}{x}$
 $6x = 432$
 $x = 72$

18. In table tennis, the table is a rectangle 9 feet long and 5 feet wide. A tennis court is a rectangle 78 feet long and 36 feet wide. Are the two surfaces similar? Explain. If so, find the scale factor of the tennis court to the table.

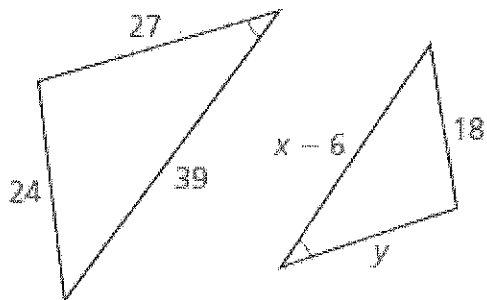
Scale Factor = _____



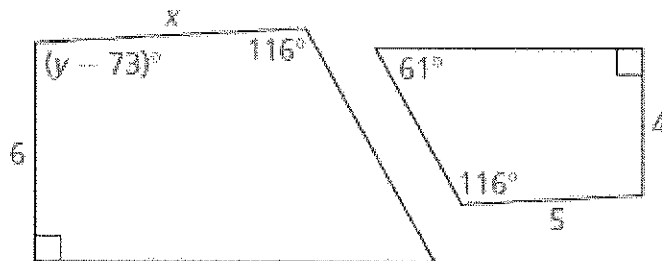
19. Your sister claims that when the side lengths of two rectangles are proportional, the two rectangles must be similar. Is she correct? Explain your reasoning.

For #20 - 21, the two polygons are similar. Find the values of x and y

20. $x =$ _____ $y =$ _____



21. $x =$ _____ $y =$ _____



22. The equations of the lines shown are $y = \frac{4}{3}x + 4$ and $y = \frac{4}{3}x - 8$.
Show that $\triangle AOB \sim \triangle COD$.

