Bellwork

Find the scale factor of the similar figures.

1. \[ \frac{6}{8} = \frac{3}{4} \]

Find the area of the regular polygon.

2. \[ A = \frac{87.53}{8} \text{ cm}^2 \]

\[ 8 \times \cos 25.7 = \frac{y}{8} \]

\[ y = \frac{25.7}{8} \approx 7.208 \]

\[ 8 \times 25.7 = \frac{x}{8} \times 8 \]

\[ x = 3.469 \]
Assignment 12.3

15. $49 \text{ u}^2$
17. $120 \text{ u}^2$
19. $10 \text{ u}^2$
21. $361 \text{ u}^2$
23. $240 \text{ u}^2$
25. $70 \text{ u}^2$
27. $12 \text{ ft}$
29. $b = 2A/h$
31. $b_1 = 2A/h - b_2$
33. $4 \text{ u}^2$

35. $3 \text{ ft}^2$
37. $552 \text{ in}^2$

30
Perimeters of Similar Polygons

Ratio of perimeter = ratio of side length (scale factor)

\[
\frac{P_I}{P_{II}} = \frac{a}{b} \quad \text{or} \quad a : b
\]
Areas of Similar Polygons

Ratio of area = ratio of side length squared

\[
\frac{A_I}{A_{II}} = \frac{a^2}{b^2}
\]
Example 1 - Find the ratio of the perimeters and areas. \( \text{ABCDE} \sim \text{LMNPQ} \)

\[
P = \frac{1}{2} \\
A = \frac{1}{4}
\]
Get Out a Blank Piece of Paper, Please!

**Finding Ratios** In Exercises 7–10, the polygons are similar. Find the ratio (red to blue) of their perimeters and of their areas.

10. \[ P = \frac{5}{3}, \quad A = \frac{25}{9} \]

**Hexagons** The ratio of the lengths of corresponding sides of two similar hexagons is 2:5. What is the ratio of their areas? \[ S = 2:5, \quad A = 4:25 \]
**Ex 2**

**OCTAGONAL FLOORS** A trading pit at the Chicago Board of Trade is in the shape of a series of regular octagons. One octagon has a side length of about 14.25 feet and an area of about 980.4 square feet. Find the area of a smaller octagon that has a perimeter of about 76 feet.

\[ \frac{9}{4} \times 12996 = \frac{980.4}{A} \]

\[ 12996A = 5662790.4 \]

\[ A = 435.73 \text{ ft}^2 \]
25. Find the area of the triangular pool, \( \triangle DEF \).

26. The walkway bordering the pool is 40 inches wide, so the scale factor of the similar triangles is about 1.3 : 1. Find \( AB \).

27. Find the area of \( \triangle ABC \). What is the area of the walkway?
Assignment 12.4

pg. 679 - 681

# 8 - 15 all, 25 - 27, 35 - 41 odd