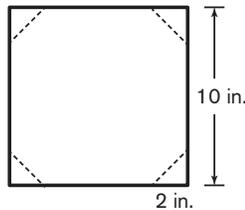


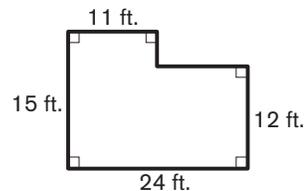


# Area Stretch

231. \_\_\_\_\_ % Norm has a square sheet of paper with 10-inch sides. Along each side, he makes a mark 2 inches from each corner. He then draws a line segment connecting the two marks near each corner. Finally, he cuts along each line segment, removing a triangle from each corner of the square and creating an octagon. What percentage of the area of the square is the area of the octagon?



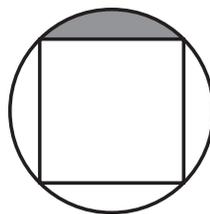
232. \_\_\_\_\_  $\text{ft}^2$  The figure shows an office floor plan. How many square feet does this office occupy?



233. \_\_\_\_\_  $\text{m}^2$  A running track consists of two parallel straight segments, each 100 meters long, connected by two semicircular stretches, each with inner diameter 50 meters. What is the total area enclosed by the running track? Express your answer to the nearest hundred.

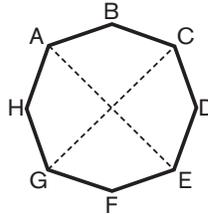
234. \_\_\_\_\_  $\text{units}^2$  What is the greatest possible area of a concave pentagon in the coordinate plane with vertices  $(-2, 0)$ ,  $(2, 0)$ ,  $(2, 10)$ ,  $(0, 6)$  and  $(-2, 10)$ ?

235. \_\_\_\_\_  $\text{units}^2$  A square is inscribed in a circle of radius 4 units. The square divides the interior of the circle into five regions, four of which lie outside the square. What is the area of the shaded region? Express your answer in terms of  $\pi$ .

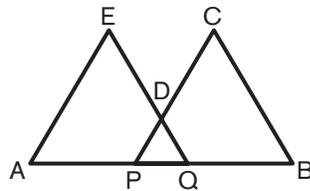


236. \_\_\_\_\_ in<sup>2</sup> Amy marks two points A and B that are 4 inches apart. She draws one circle that has segment AB as a diameter. She then draws a larger circle, which overlaps the first circle, such that the arc from A to B along its circumference is a quarter-circle. What is the total area covered by the two circles? Express your answer in terms of  $\pi$ .

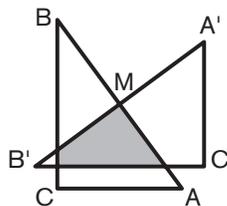
237. \_\_\_\_\_ units<sup>2</sup> In convex octagon ABCDEFGH, shown here, each side has length 6 units, and diagonals AE and CG have length 16 units. If the octagon is symmetric across both diagonals AE and CG, what is its area? Express your answer in simplest radical form.



238. \_\_\_\_\_ units<sup>2</sup> In this figure,  $AE = EQ = BC = CP = 10$  units, and  $AQ = BP = 12$  units. The points A, P, Q and B are collinear. If the perimeter of the concave pentagon ABCDE is 52 units, what is its area? Express your answer as a common fraction.



239. \_\_\_\_\_ units<sup>2</sup> Right triangle ABC with  $AC = 3$  units,  $BC = 4$  units and  $AB = 5$  units is rotated  $90^\circ$  counterclockwise about M, the midpoint of side AB, to create a new right triangle A'B'C'. What is the area of the shaded region where triangles ABC and A'B'C' overlap? Express your answer as a common fraction.

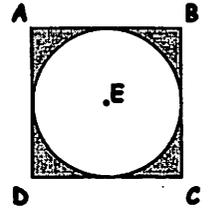


240. \_\_\_\_\_ units In right triangle ABC,  $\angle C$  is a right angle,  $AC = 10$  units and  $BC = 24$  units. If a point X is located inside triangle ABC so that the distance from X to side AB is twice the distance from X to side AC, and the distance from X to side AC is twice the distance from X to side BC, what is the distance from X to side AB? Express your answer as a common fraction.

# Geometry Stretch

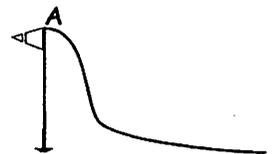
1. \_\_\_\_\_ How many square units are in the greatest area that can be enclosed by a rectangle whose perimeter is 20 units?
2. \_\_\_\_\_ What is the number of units in the perimeter of a triangle bound by the x-axis, the y-axis and the line  $y = \frac{3}{4}x + 3$ ?

3. \_\_\_\_\_ Circle E is inscribed in square ABCD. If the length of segment AB is 4 inches, how many square inches are in the area of the shaded region? Express your answer in terms of  $\pi$ .



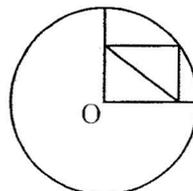
4. \_\_\_\_\_ Three angles of a pentagon have measures  $88^\circ$ ,  $124^\circ$  and  $92^\circ$ . If the measures of the remaining 2 angles are equal, what is the measure, in degrees, of one of the remaining angles?
5. \_\_\_\_\_ What is the number of inches in the height of an equilateral triangle whose perimeter is 30 inches? Express your answer in simplest radical form.
6. \_\_\_\_\_  $\triangle ABC$  and  $\triangle DEF$  are similar right triangles. The two legs of  $\triangle ABC$  are 5 cm and 6 cm in length. If the area of  $\triangle DEF$  is  $135 \text{ cm}^2$ , what is the number of centimeters in the length of the longer leg of  $\triangle DEF$ ?
7. \_\_\_\_\_ What is the number of square units in the area of the regular hexagon ABCDEF if segment DE is equal to 4 units? Express your answer in simplest radical form.
8. \_\_\_\_\_ Segment AB has endpoints at A (-1, 2) and B (3, 1). Segment AB is reflected over the y-axis such that A becomes A' and B becomes B'. What is the positive difference between the lengths of segment AA' and segment BB'?
9. \_\_\_\_\_ If the length of the edge of a cube is increased by 50%, what is the percent increase in the volume of the cube? Express your answer to the nearest whole number.

10. \_\_\_\_\_ A flag pole is placed in the sand with the top of the flag pole standing 10 feet above the ground. A 26-foot string is attached to the top of the flag pole at point A. Holding the string to the ground, what is the number of square feet in the area of the largest circle that can be drawn in the sand with the end of the string? Express your answer in terms of  $\pi$ .

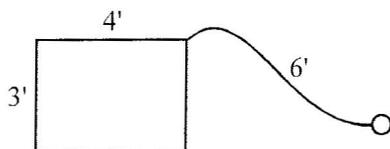


# Geometry Stretch

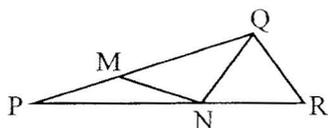
- Find the number of meters in the perimeter of a square whose area is  $100\text{m}^2$ .
- What is the number of square centimeters in the area of a rectangle whose length is 9 cm and whose width is 8 cm?
- The radius of circle O is 8 cm. How many centimeters are in the length of the diagonal of the rectangle?



- If the length of each side of a rectangular garden must be a multiple of 3 ft, how many different perimeters are possible that yield an area of  $360\text{ft}^2$ ?
- John ties the leash of his dog to the corner of the doghouse. The dimensions of the dog house are  $3' \times 4'$ , and the leash is 6' long. Over how many square feet can John's dog wander? Express your answer as a decimal to the nearest hundredth.



- A triangle with sides 40 cm, 41 cm and 9 cm is inscribed in a circle. How many centimeters are in the length of a diameter of the circle?
- The hypotenuse of a right triangle is 37 m and one leg is 12 m. How many square meters are in the area of the triangle?
- How many square centimeters are in the area of an equilateral triangle whose perimeter is 30 cm? Express your answer in simplest radical form.
- In triangle PQR,  $PM = MN = NQ = QR$ , and  $m\angle PQR = 140^\circ$ . What is the degree measure of  $\angle R$ ?



- The alternate interior angles formed by the transversal of two parallel lines are complementary. What is the positive difference in the degree measures of these two angles?