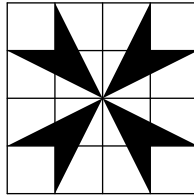# Basics of Area

Hope Chinese School Week 4
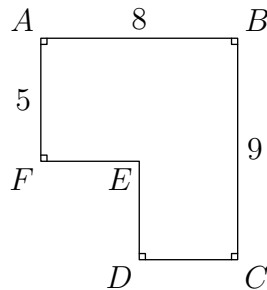
September 9, 2017

Problems

1. A 4-unit by 4-unit grid has this pattern shaded in the design of a company's logo. What is the area of the shaded portion of the logo?


2. The area of polygon $ABCDEF$ is 52 with $AB = 8$, $BC = 9$ and $FA = 5$. What is $DE + EF$?


3. The square quilt block shown is used in a larger quilt. The four small squares in the block are congruent, and the four small vertical rectangles in the block that are not squares are also congruent. The total area of the shaded regions is what fraction of the total area of the block?
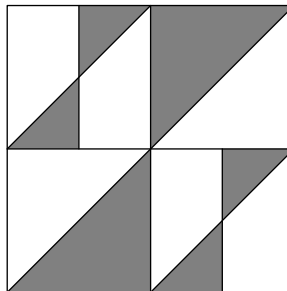
4. A convex quadrilateral $ABCD$ is shown, with $AB = 3$, $BC = 4$, $CD = 12$, and $DA = 13$. Also, $\angle CBA$ is a right angle. What is the area of $ABCD$?
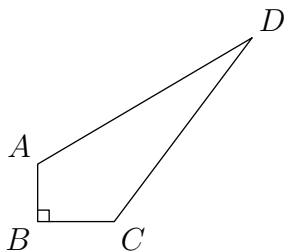

5. A triangle has area 100. The midpoints of each side are connected to form another triangle. What is the area of this triangle?

6. Given the square in the figure with side length 4 and four semicircles which have the sides of the square as diameters, find the area of the shaded "leaves" in the diagram.
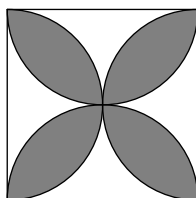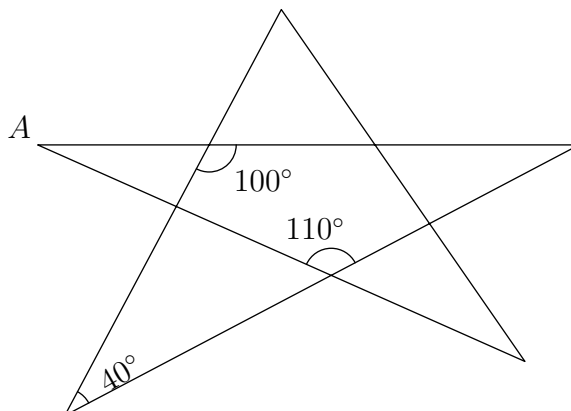

7. A semicircle is constructed along each side of a triangle with legs 6 inches and 8 inches. What is the total area of the two shaded crescent-shaped regions?
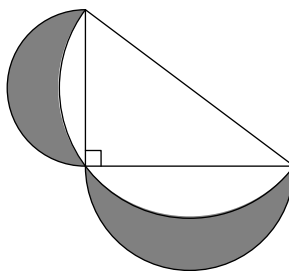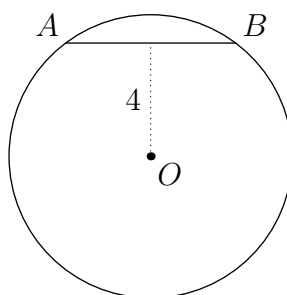

8. $ABCD$ is a square and $AE = AF = CG = CH$. Given $AB = 5$ and the shaded region is five-ninths the area of $ABCD$, find AF.
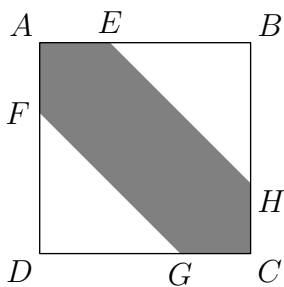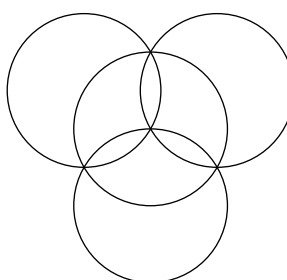
9. Find the degree measure of angle A.

10. Chord AB of circle O is 6 units long and 4 units from center O. What is the area of circle O?

11. ⋆ Each of the circles shown has a radius of 6 cm. The three outer circles have centers that are equally spaced out on the middle circle. Find the total area of the regions in common with three of the four circles.

12. ⋆ A small square is constructed inside a square of area 1 by dividing each side of the unit square into n equal parts, and then connecting the vertices to the division points closest to the opposite vertices. Find the value of n if the the area of the small square is exactly 1/1985.

A $1/n$ B

D C