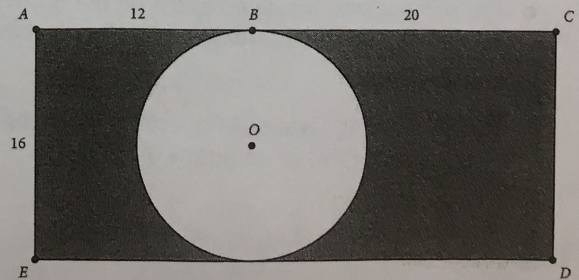Name _____ Date _____

8-2 Read a Floor Plan

Exercises

1. The length of a room is $19\frac{1}{2}$ feet. When using $\frac{1}{4}$ inch = 1 foot scale, what would be the length of the wall on a floor plan?

2. Kim is building a large gazebo for her backyard. It is in the shape of a regular hexagon. Each side of the gazebo is 12 feet long. The apothem is 10.4 feet. She needs to purchase stones for the floor. It costs $9.50 per square foot for a special type of interlocking stone. Find the cost of the gazebo's floor. Round to the nearest ten dollars.

3. Find the volume of a rectangular room that measures 13 feet by 15.5 feet, with an 8-foot ceiling.

4. A rectangular room has length L and width W. Its volume is 2,455 cubic feet. Express the height of the ceiling algebraically in terms of x.

5. A regular heptagon (7 sides) has perimeter 126 and area A. Express the apothem a of the heptagon algebraically in terms of the area A.

6. An irregular plane figure drawn on graph paper is framed inside of a 15 by 40 rectangle. To find its area, 10,000 random points are generated, and 5,710 of them land inside the irregular region. What is the area of the irregular region, to the nearest integer?

7. The main meeting room of the Glen Oaks Community Center measures 46 feet by 34 feet and has a 12-foot ceiling. It is well-insulated and faces the east side of his house. The manager wants to purchase an air conditioner. How large of an air conditioner should he purchase? Round up to the next thousand BTUs.

8. Circle O is situated in rectangle $ACDE$ as shown.
   a. Find the area of the rectangle.

   b. Find the radius of the circle.

   c. Find the area of the circle to the nearest integer.

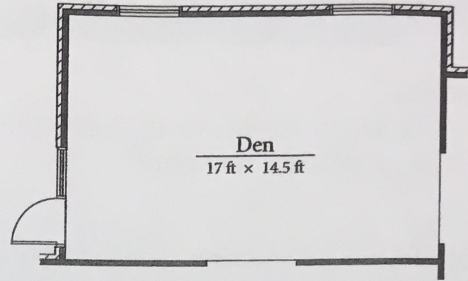   d. Find the area of the shaded region.

9. Kyoko plans to put a new wood floor in her den, which is shown in the floor plan.

   a. What is the area of the floor?

Den
17 ft × 14.5 ft

   b. At a cost of $11 per foot, how much will it cost to put down the new floor?

   c. Kyoko plans to put an *area rug* in the room. The rug will be large enough so that only a 2-foot wide section of the wood floor will be exposed. Find the dimensions of the area rug.

   d. What is the area of the area rug?

   e. Find the area of the wood floor that will be exposed once the area rug is laid down.

10. A rectangular room has length *L*, width *W*, and height *H*, where *L*, *W*, and *H* are measured in feet.

   a. Express the volume in cubic feet algebraically.

   b. If carpeting costs $72 per square yard, write an expression for the cost of carpeting the floor of this room.

11. A rectangular room measures 16 feet by 18 feet. The ceiling is 9 feet high.

   a. Find the total area of the four walls in the room.

   b. If a gallon of paint costs $37.99 and it covers 400 square feet on average, what is the cost of painting the room, including the ceiling, with two coats of paint? Explain your answer.

   c. This room is well-insulated and is on the north side of the house. How large of an air conditioner would this room require? Round to the next highest thousand BTUs.

   d. A scale drawing is made of this room using the scale 1 sq ft $= \frac{1}{4}$ sq in. What are the dimensions of this room on the drawing?

12. A rectangular room measures *L* feet by *W* feet. The ceiling is 8 feet high. The walls and the ceiling will be painted the same color. Express the total area of the walls and ceiling algebraically.