7.2 Perimeter and Area Applications

Focus: scale, measurement, problem solving

Warm Up

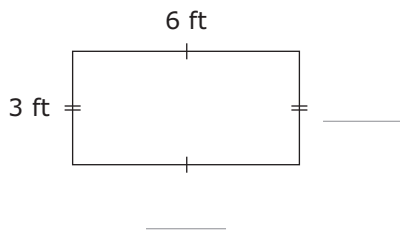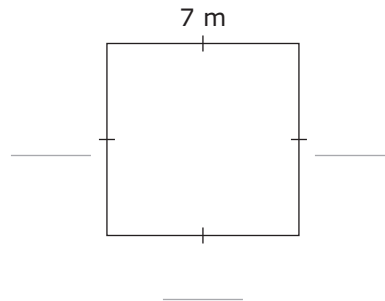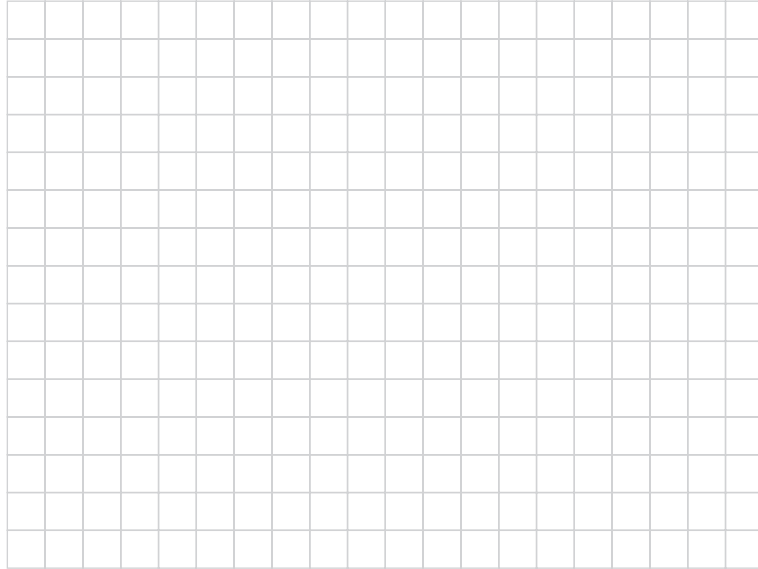|	
1. Define perimeter.	**2.** Define area.
3. a) If the dimensions of a garden are given in feet, then the unit for expressing perimeter is _____ . **b)** The abbreviation for this unit of measure is _____ .	**4. a)** If the dimensions of a playground are given in metres, then the unit for expressing area is _____ _____ . **b)** The abbreviation for this unit of measure is _____ .
5. Calculate $3^2 + 4^2$.	**6.** Calculate 5^2.
7. Fill in the missing dimensions. 6 ft 3 ft _____ _____	**8.** Fill in the missing dimensions. 7 m _____ _____ _____
9. a) Determine the perimeter of the rectangle in #7. **b)** Determine the area of the rectangle in #7.	**10. a)** Determine the perimeter of the square in #8. **b)** Determine the area of the square in #8.

Date _____

Applying Scale Diagrams

Chapter 7

1. A bathroom floor is 8 ft long by 5 ft wide.

a) On the grid below, draw a scale diagram of the bathroom using a scale of 1 square to 6 inches.
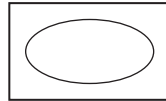
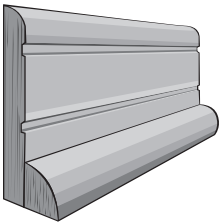> You worked with this bathroom in #1 on page 235.

[grid]

> For an interactive bathroom planner, go to **www.mcgrawhill.ca/books/workplace12** and follow the links.

b) A bathtub is 5' × 3'. Draw a bathtub to scale. Use this symbol to draw the tub:

c) Mark a 2-ft wide door on your diagram.

d) Baseboard trim rests on the floor and is nailed to the base of the walls. Use a coloured pencil to show where there is baseboard in your diagram. How much baseboard do you need for the bathroom?
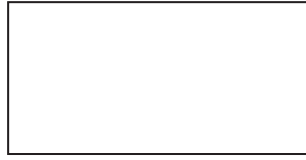
e) How many 8-foot lengths will you need? _____

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f) If one 8-foot length costs $14.99, calculate the before-tax cost of all of the baseboard.

g) Calculate the cost of the baseboard, including tax.

h) Some bathrooms have vinyl flooring. On the diagram on page 244, colour the area that will be covered. Calculate the area of the floor.

i) Some bathrooms have ceramic tile flooring. How many 6" × 6" tiles would you need for this area?

j) Tiles come in boxes of 12. How many boxes do you need?

k) If a box of tiles costs $17.99, calculate the before-tax cost of the tiles you need to cover the room.

l) How much would the tiles cost after tax?

- Not all jobs or projects use just squares or rectangles.
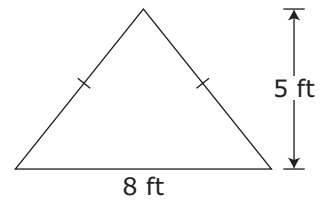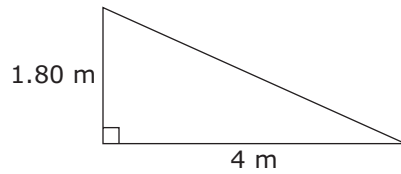
2. a) Draw a diagonal line across the rectangle.

b) How does the area of each triangle relate to the area of the rectangle?
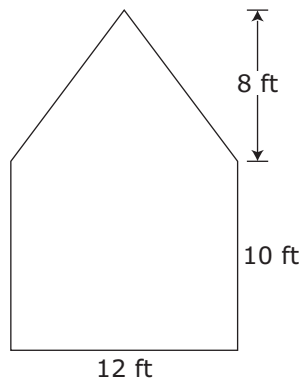
_____

_____

c) Determine the area of each of the following triangles.

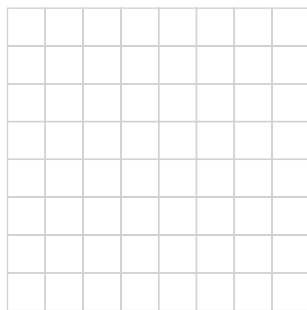**d)** Calculate the area of the back of a garage that needs to be painted.
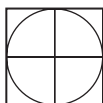
- Three friends have volunteered to paint their hockey team's logo at centre ice of the local rink.
- The outside edge of the circular crest must be 3 m from centre ice.
- The friends want to know the area of the ice that needs to be painted.

Estimating Circular Area

3. a) The distance between the centre of a circle and

the outside edge is called the _____. Make a sketch of the circle on the grid below.

b) You can use the radius of a circle to help estimate the area of the circle. Draw 4 squares on the diagram above as shown below.

c) Calculate the area of each square.

d) Calculate r^2.

e) Calculate the area of the 4 squares.

f) Since the area of the circle is less than 4 times the radius squared, an estimate for the area of the circle to
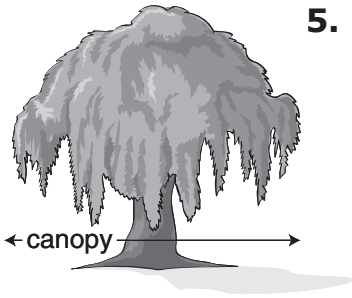
be painted is _____.

Calculating Circular Area

• The exact area of a circle is π times the radius squared, or $A = \pi r^2$.

• Use 3.14 to approximate π.

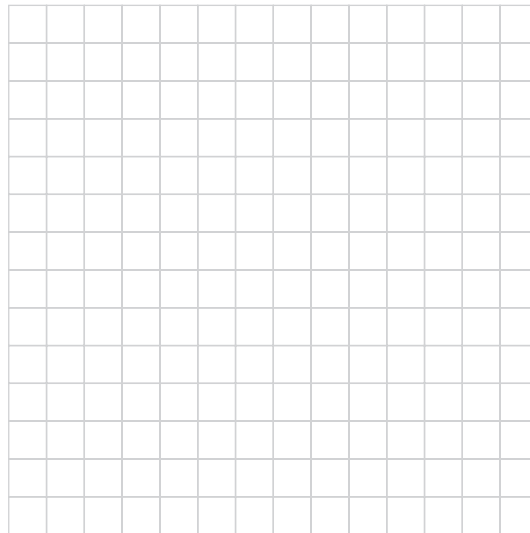**4.** Calculate the area of the ice that will need to be painted.

$A = \pi r^2$

= _____ $\times$ _____ $\times$ _____

= _____

Rounded to the nearest square unit, the area to be

painted is _____.

5. Suki is having a diseased willow tree removed. The grass beneath the canopy is dead, so she will put sod in its place. The tree canopy has an approximate diameter of 12 feet.

a) The radius of the tree canopy is _____ feet.

b) Make a sketch of the tree canopy as seen from above.

What is the scale of your diagram? _____

c) Estimate the area of the sod that Suki needs to buy.

d) Calculate the area of the sod needed. Round your answer up to the nearest square foot.

☑ Check Your Understanding

1. A city landscaper wants to put 3 flower beds in a rectangular grass area.

   a) The rectangle is 75 ft wide and 30 ft long. Draw a scale diagram of the rectangle on the grid below.

   What is the scale of your diagram? _____

   b) Each circular flower bed has a radius of 12 ft. Draw the flower beds to scale on the diagram.

   c) Calculate the area of each flower bed.

   d) Calculate the total area of the 3 flower beds.

   e) Calculate the area of the rectangle that is covered by grass.