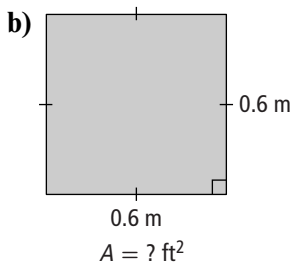
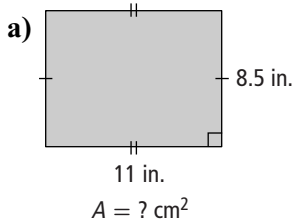


Chapter 2 Review

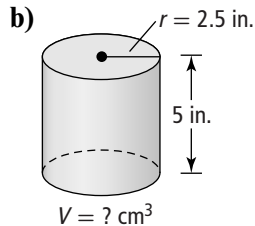
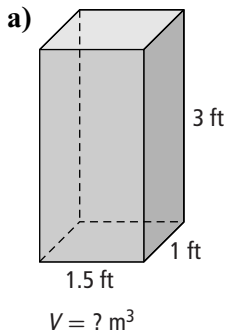
2.1 Units of Area and Volume

Express your answers to the nearest hundredth of a unit where necessary. You may need to refer to the table of conversion factors on page 21.

1. Calculate each area using the indicated unit.



2. Calculate each volume using the indicated unit.



3. Cassidy wants to replace her kitchen countertop. The dimensions are 65 cm by 1.5 m. The building supply store sells countertop material by the square foot. Determine the area of her countertop, in square feet.

- ★4. Ken is researching the cost of topsoil for his lawn. One supplier quotes a price of

\$50 per cubic yard, and another quotes a price of \$62 per cubic metre. Which supplier offers a better price? Justify your answer mathematically.

2.2 Surface Area

Express your answers to the nearest hundredth of a unit where necessary.

5. Sketch each solid and determine its surface area.
- A right cone has radius 3.5 m and slant height 12 m.
 - A right cone has diameter 12 cm and slant height 10 cm.
 - A sphere has diameter 8.5 in.
 - A pyramid has a square base with sides 4 ft and slant height 5.5 ft.
6. Calculate the unknown dimension in each of the following.
- A sphere has surface area 450 in.^2 .
 - The base of a right pyramid has sides 12 cm by 10 cm. The slant height of the face with base 10 cm is 10 cm. The surface area is 333.2 cm^2 .
 - A right cone has surface area 20 ft^2 and radius 2 ft.
 - A right cone has surface area 500 m^2 and the base of the cone has area 314 m^2 .
- ★7. The floor of a storage shed has sides 8 ft by 10 ft. The height of the walls is 7 ft. The roof is shaped like a pyramid. The slant height of the face with the shorter side of the shed is 5.4 ft. The slant height of the face with the longer side is 4.5 ft. Sketch the shed and determine the total surface area of the shed.
8. A concrete pillar has a diameter of 12 in. If the pillar is 10 ft tall, what is its surface area?

9. The surface of a sphere with diameter 50 cm is composed of small mirrors. The construction company purchased 5% extra material to cover the sphere. If the mirrors cost \$10 per square foot, how much did it cost to cover the sphere?
10. A conical sculpture has diameter 10 ft and height 12 ft.
- Sketch and label a cross-section of the cone.
 - Determine the radius and slant height of the cone.
 - Determine the surface area of the cone.
13. Mike is building a patio with an area of 700 ft^2 . The concrete pad will have a thickness of 4 in.
- Determine the volume of concrete required for the patio, in cubic feet.
 - Mike estimates that for every 35 ft^3 , he will need 1 m^3 of concrete. How many cubic metres of concrete will he need? Convert from cubic feet to cubic metres and check the accuracy of his estimate.
- ★14. Astrid has a cylindrical compost bin with a height of 1.1 m and a diameter of 1.25 m.
- Determine the volume of compost in a full bin.
 - Astrid's garden is rectangular and measures 12 ft by 20 ft. If she spreads the compost uniformly on her garden, how deep will the compost be, in inches?

2.3 Volume

Express your answers to the nearest hundredth of a unit where necessary.

11. Calculate the volume of each solid.
- A right cylinder has radius 9 in. and height 4 ft.
 - A right pyramid has a base with sides 2 m by 2.5 m and a height of 3.2 m.
 - A sphere has diameter 1 m.
 - A right cone has height 18 cm and radius 6.5 cm.
12. What is the unknown dimension of each solid?
- A square-based prism has volume $33\,750 \text{ m}^3$ and height 50 m.
 - A right cone has height 12.5 cm and volume 325 cm^3 .
 - A sphere has volume 905 in.^3 .
 - A right pyramid has a base with sides 1 ft by 1.5 ft and a volume of 3 ft^3 .
15. Liam made a ceramic mug with a diameter of 8 cm and a height of 10 cm. Determine the capacity of the mug.
16. Suppose Liam makes a cylindrical mug with twice the capacity of the mug in #15.
- If the diameter stays the same, predict the height of a mug with the desired capacity. Check your prediction.
 - If the height stays the same, predict the diameter of a mug with the desired capacity. Check your prediction.
17. A pile of gravel is shaped like a cone. It has a diameter of 12 ft and a height of 4.5 ft.
- What is the volume of gravel in the pile?
 - Gravel is often sold in cubic yards. If one cubic yard sells for \$15, determine the value of the gravel pile.
Hint: $1 \text{ yd}^3 = 27 \text{ ft}^3$.