Margin Exercise Answers
1. 85 ft **2.** 69.08 m **3.** 24.28 ft **4.** 28 mm^2 **5.** 28.26 ft^2 **6. a.** 120 yd **b.** 900 yd^2 **7.** 810 $in.^2$ **8.** 113.04 ft^2 **9.** 28.26 m^2

3.2 Exercises

Concept Check

Fill-in-the-Blank. Complete each sentence using information found in this section.

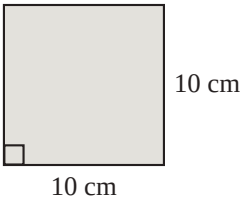
1. A closed plane figure with three or more sides, where each side is a line segment is a/an _____.
2. The perimeter of a circle is called the _____.
3. When measuring area, use _____ units.
4. Volume is measured in _____ units.

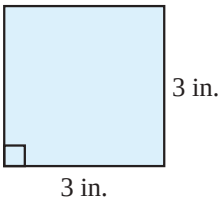
True/False. Determine whether each statement is true or false. If a statement is false, explain how it can be changed so the statement will be true. (**Note:** There may be more than one acceptable change.)

5. Every square is a rectangle.
6. The length of the diameter of a circle is half of the length of the radius.
7. The height of a triangle is the distance between the base and the vertex opposite the base.
8. The $(b + c)$ in the trapezoid area formula represents the sum of the lengths of the base and the corners.
9. To find the volume of a can of corn, the formula $V = \pi r^2 h$ would be used.

Practice

Calculate the perimeter of each figure. Use $\pi \approx 3.14$.

1. A parallelogram with sides of length 15 cm and 7 cm.
2. A square with sides of length $4\frac{1}{2}$ km.
3. A trapezoid with sides of length 14.2 yd, 10.1 yd, 8 yd, and 15.8 yd.
4. A circle with diameter 60 cm.
5. 

6. 

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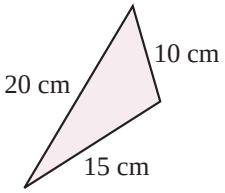

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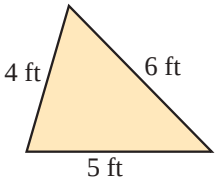

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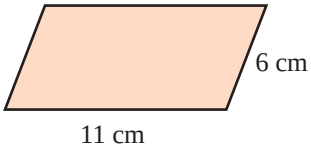

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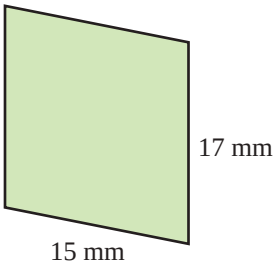

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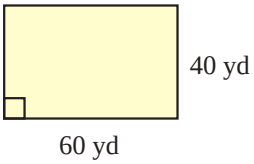

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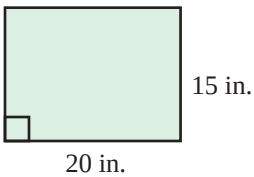

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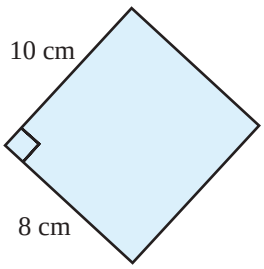

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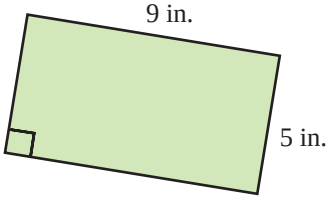

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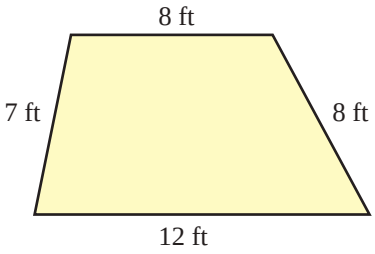

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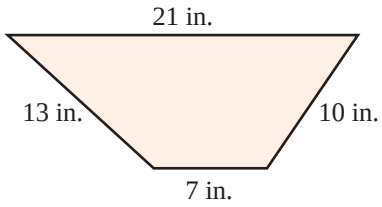

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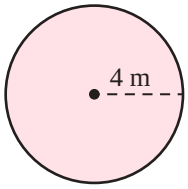

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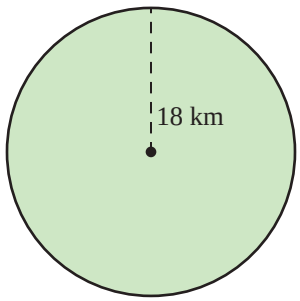

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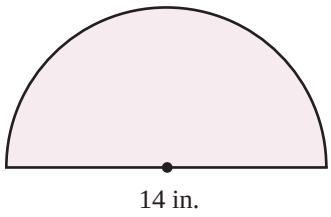

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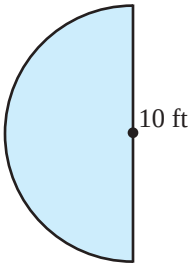

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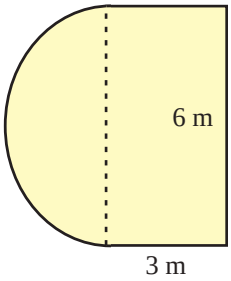

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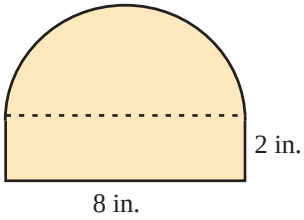


Calculate the area of each figure. Use $\pi \approx 3.14$.

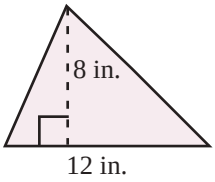
23. A square with sides of length 9 ft.

24. A rectangle with length 21 km and width 25 km.

25. A triangle with height 16.4 cm and base 8.2 cm.

26. A trapezoid with height 30 mm and parallel sides of length 45 mm and 50 mm.

27.



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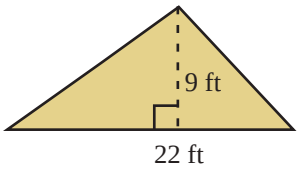

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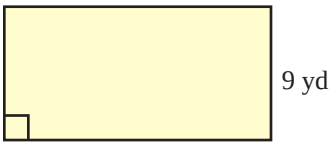

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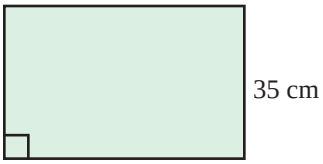

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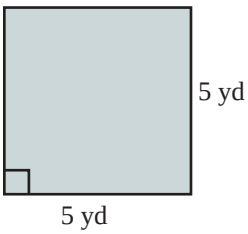

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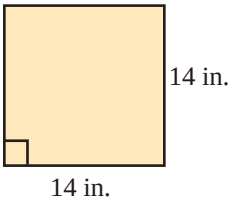

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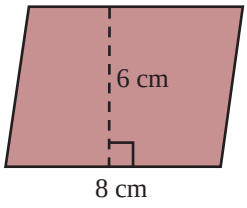

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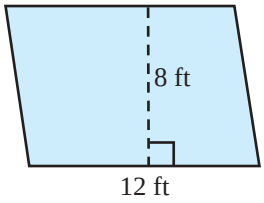

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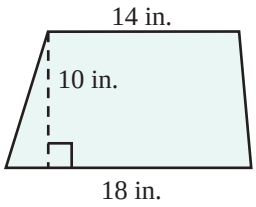

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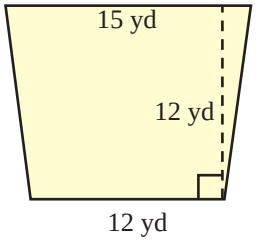

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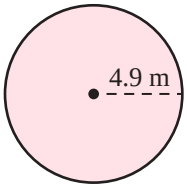

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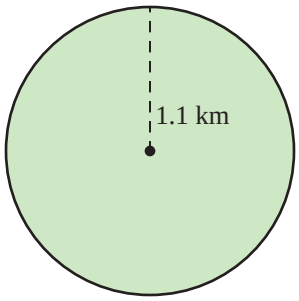

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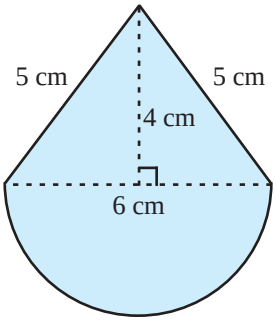

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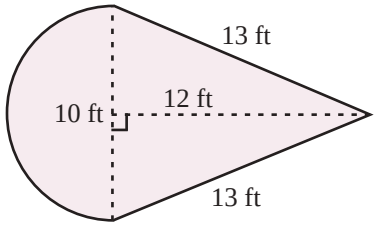

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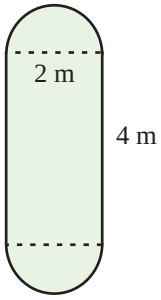

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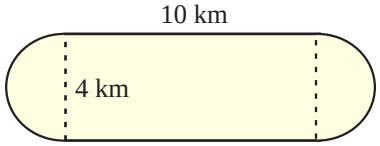


Calculate the volume of each solid. Use $\pi \approx 3.14$.

43. A rectangular solid with length 5 in., width 2 in., and height 7 in.

44. A right circular cylinder 15 in. high and 1 ft in diameter.

45. A sphere with radius 4.5 cm.

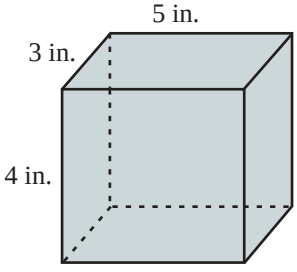
46. A sphere with diameter 12 ft.

47. A right circular cone 3 mm high with a 2 mm radius.

48. A rectangular pyramid with length 8 cm, width 1 cm, and height 30 cm.

Calculate the volume of each solid. See Examples 1 through 5. Use $\pi \approx 3.14$.

49.



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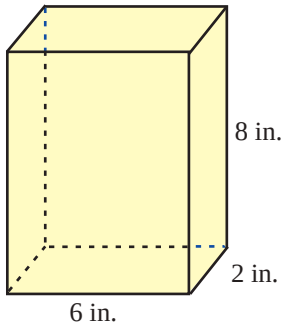

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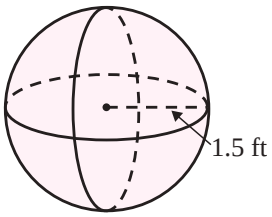

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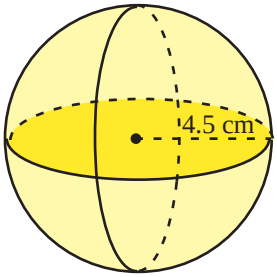

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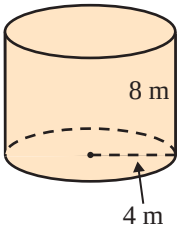

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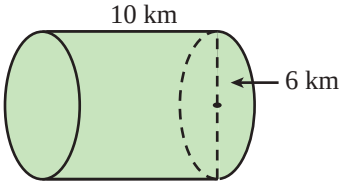

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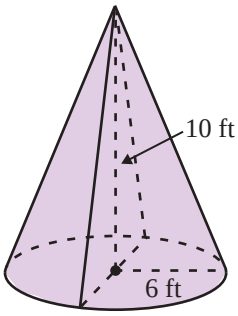

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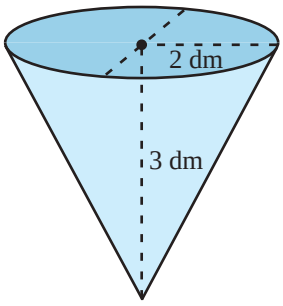

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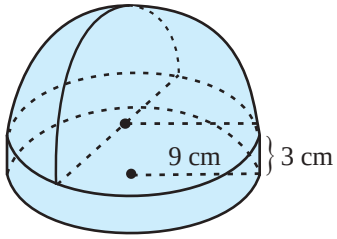

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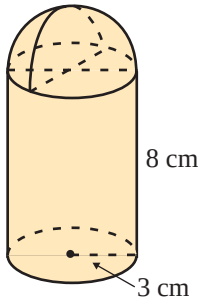

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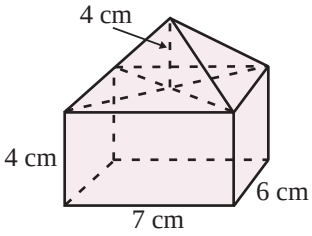

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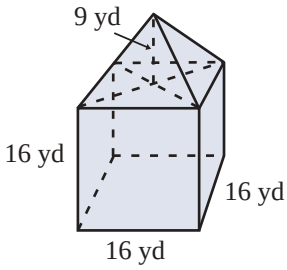


Applications

Solve. Use $\pi \approx 3.14$.

61. The Pentagon near Washington, D.C., is a five-sided building where each outside wall is 921 feet. [1]

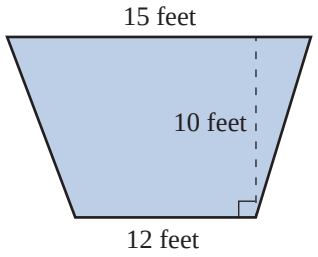
a. What is the perimeter of the building?

b. If it takes a person 0.00341 minutes to walk 1 foot, how long will it take the person to walk completely around the building? Round your answer to the nearest tenth of a minute.

1 Source: www.infoplease.com/spot/pentagon1.html

62. An engineer who is designing a new smartphone decides to add a soft neoprene edging to the phone. The phone itself is $4\frac{1}{2}$ inches tall and $2\frac{2}{5}$ inches wide. How much neoprene edging is needed to go along the outside edge of each smartphone?

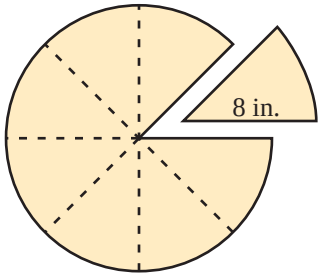
63. The main stage at a theater is in the shape of a trapezoid. The owner of the theater is planning to install a new specially designed flooring system on the stage. The stage is 12 feet wide in the front and 15 feet wide in the back. The stage is 10 feet deep. How much flooring will the manager need?



64. A large 16 in. pizza is cut into eight pieces.

a. What is the perimeter of a single piece?

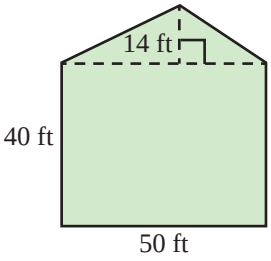
b. What is the area of this piece of pizza?



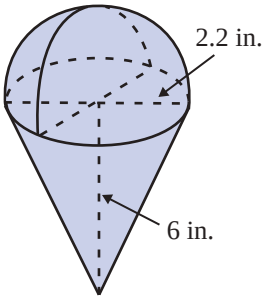
65. David is planting a five-sided lawn as shown in the figure below. The lawn consists of a 50 foot by 40 foot rectangle and an attached 14 foot high triangle.

a. What is the area of the lawn to be planted?

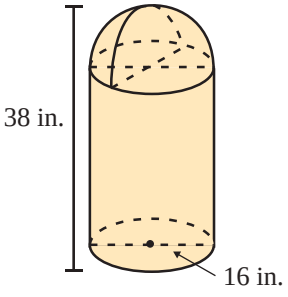
b. If one pound of grass seed will cover 200 square feet, how many pounds will be necessary to cover the entire lawn? (**Hint:** Divide the area by the number of square feet that one pound of seed will cover.)



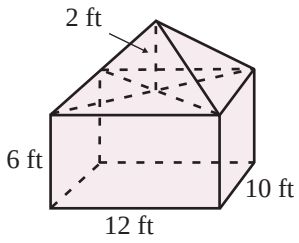
66. A 6 in. tall ice cream cone is filled solid with ice cream where the final scoop of ice cream forms a perfect hemisphere above the top of the cone. What is the total volume of ice cream in the cone if the top of the cone has a 2.2 in. opening? Round your answer to the nearest hundredth.



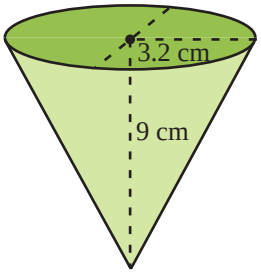
67. A cylindrical trash can has a hemispherical top (with a trap door for the trash). If the diameter of the can is 16 in. and its total height is 38 in., find its volume. (**Hint:** Begin by finding the height of the straight part of the can.)



68. A rectangular tent with straight sides has a pyramidal shaped roof. The dimensions of the rectangular portion are 12 ft long, 10 ft wide, and 6 ft high. The peak of the pyramid is 2 ft above the top edge of the walls. What is the volume of the inside of the tent?



69. Disposable paper drinking cups, like those used at water coolers, are often cone-shaped. Find the volume of such a cup that is 9 cm high with a 3.2 cm radius. Express the answer to the nearest milliliter.



Writing & Thinking

70. Name as many polygons as you can and include the number of sides for each one.

71. Draw a rectangle and choose any point on one side of the rectangle. Draw line segments to the vertices on the opposite side (forming three triangles). Now cut out the two triangles on each end. Place these triangles inside the remaining triangle to show that the total of the two areas is equal to the area of the remaining triangle. Do this three different times choosing a different point each time. What fact does this illustrate about the area of a triangle?

72. List the steps and formulas you would use to find the volume of an ice cream cone (assuming the ice cream itself forms a perfect half sphere).