2.R.1 Exercises

Concept Check

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.)

1. a. Every square is a rectangle.

b. Every rectangle is a square.

2. a. Every parallelogram is a rectangle.

b. Every rectangle is a parallelogram.

3. A trapezoid has only one pair of parallel lines.

4. The $(b+c)$ in the trapezoid area formula represents the sum of the lengths of the base and the corners.

5. The height of a triangle is the distance between the base and the vertex opposite the base.

6. Every radius on a circle has the same length.

7. The length of the diameter of a circle is half of the length of the radius.

8. To find the volume of a can of corn, the formula $V = \pi r^2 h$ would be used.

9. The area of the paper label on a can of peaches is an example of surface area.

10. To find the volume of a rectangular solid, the areas of each surface are added together.

Match each formula for perimeter to its corresponding geometric figure.

11.	**a.** Square	**A.**	$P = 2l + 2w$
	b. Parallelogram	**B.**	$P = 4s$
	c. Rectangle	**C.**	$P = 2b + 2a$
	d. Trapezoid	**D.**	$P = a + b + c$
	e. Triangle	**E.**	$P = a + b + c + d$

Match each formula for volume to its corresponding geometric figure.

12.	**a.** Rectangular solid	**A.**	$V = \frac{4}{3}\pi r^3$
	b. Rectangular pyramid	**B.**	$V = \frac{1}{3}\pi r^2 h$
	c. Right circular cylinder	**C.**	$V = lwh$
	d. Right circular cone	**D.**	$V = \pi r^2 h$
	e. Sphere	**E.**	$V = \frac{1}{3}lwh$

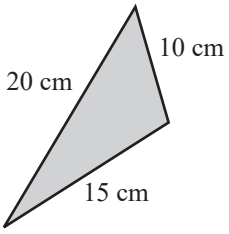
Practice

Calculate the perimeter of each figure.

13. A parallelogram with sides of length 15 cm and 7 cm.

14. A square with sides of length $4\frac{1}{2}$ km.

15.



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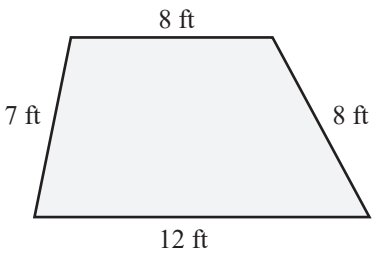

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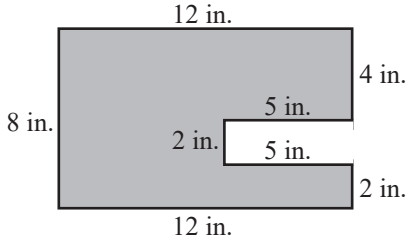
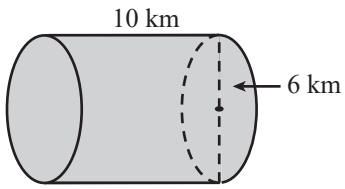


Calculate the volume of the solid. Use $\pi \approx 3.14$

18.



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

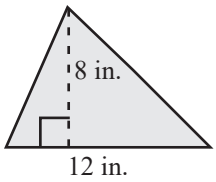
20. A right circular cone 3 mm high with a 2 mm radius.

Calculate the area of each figure.

21. A square with sides of length 9 ft.

22. A parallelogram with height 2.3 ft and base 11.9 ft.

23.



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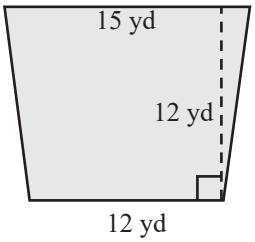

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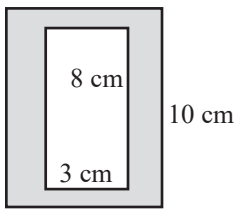
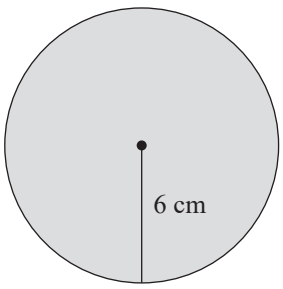


Calculate **a.** the perimeter and **b.** the area of each figure. Use $\pi \approx 3.14$.

26.



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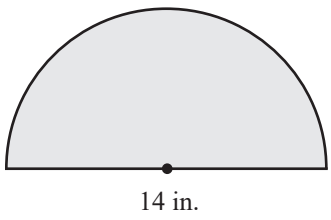

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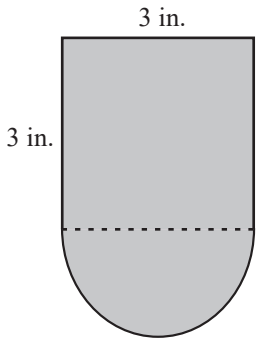
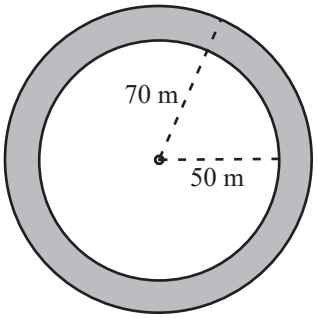


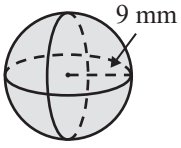
Calculate the area of the shaded portion of the figure. Use $\pi \approx 3.14$.

29.



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

30.



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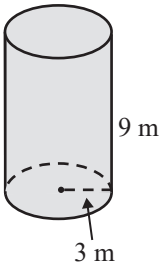


Applications

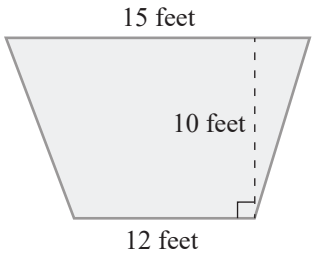
Solve. Use $\pi \approx 3.14$.

32. ***Construction:*** The Pentagon near Washington, D.C., is a five-sided building where each outside wall is 921 feet.

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.

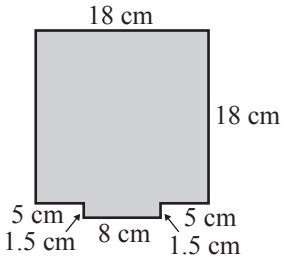
33. ***Construction:*** The main stage at a theater is in the shape of a trapezoid. The owner of the theater is planning to install a new specially designed flooring system on the stage. The stage is 12 feet wide in the front and 15 feet wide in the back. The stage is 10 feet deep. How much flooring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



34. ***Technology:*** A square electronics circuit board is 18 centimeters on each side. On the center of one of the edges is an 8 by 1.5 centimeter rectangular lip for plugging in.

a. What is the total perimeter of the circuit board, including the lip?

b. What is the area of the circuit board?

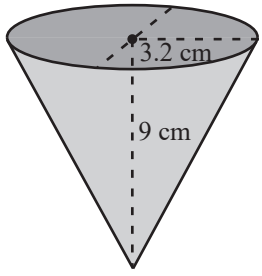


35. ***Sales:*** Papa Luigi's sells a 9-inch diameter pizza for $8.

a. Determine the area of the pizza to the nearest tenth.

b. Determine the price per square inch to the nearest cent per square inch.

36. ***Geometry:*** 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

37. 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).

38. Explain what the value of $(b+c)$ represents in the formula for the area of a trapezoid.

39. Explain why $2\pi r$ is equivalent to πd.

40. Propose a method for calculating the area of a semicircle and justify your method.