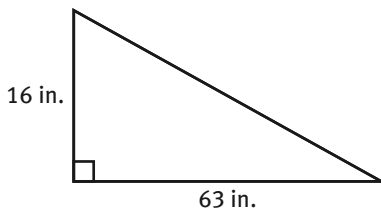# Course 3 Unit 3 Practice

LESSON 22-1

1. **Attend to precision.** A right triangle has leg lengths of 3.4 cm and 6.7 cm. Which answer below shows the length of the triangle's hypotenuse rounded to the nearest tenth?

   A. 8.5 cm

   B. 7.5 cm

   C. 5.5 cm

   D. none of the above

2. **Make use of structure.** Which set of side lengths below will not form a right triangle? (Side lengths rounded to the nearest tenth.)

   A. 12, 16, 20

   B. 5.3, 6.1, 8.1

   C. 7, 24, 25

   D. 10, 11, 14

3. A computer monitor has a width of 12 in. and a height of 9 in. What is the diagonal length of the monitor?

4. Marlyn built a ramp for his toy cars. What is the distance his cars travel from the top of the ramp to the table as they go down the ramp?

16 in.

63 in.

5. **Critique the reasoning of others.** Jon and Don were asked to find the length of the hypotenuse of the right triangle below. Which student found the length correctly? Justify your choice.

8 mm

c

12 mm
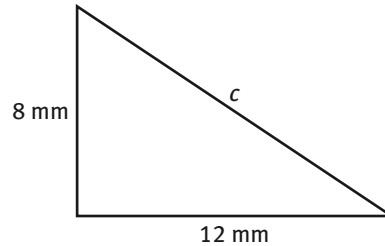
| Jon:	Don:
$8^2 + 12^2 = c^2$	$8^2 + 12^2 = c^2$
$64 + 144 = 208$	$64 + 144 = 208$
$\sqrt{208} = 14.4$ mm	208 mm

LESSON 22-2

6. **Reason abstractly.** For which of the triangles below can the Pythagorean Theorem be used to find the missing side length? Justify your answer.
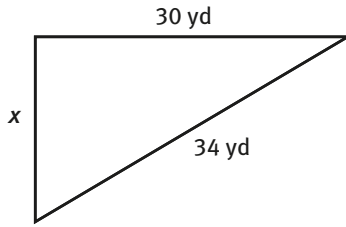

7. **Make sense of problems.** A 24-foot ladder is leaned against a brick wall so that 2 feet of the ladder extends above the wall. The base of the ladder is 6 feet from the wall. What is the height of the wall?
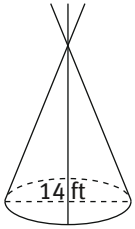
8. Find x.



x

60 ft

48 ft

9. Find x.

30 yd

x

34 yd
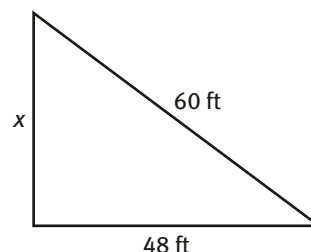
10. Persevere in solving problems. A tipi is set up with tipi poles that are 36 feet long. The poles extend 3 feet above the top of the tipi. The diameter of the tipi is 14 feet. How tall is the tipi, rounded to the nearest tenth?


14 ft

LESSON 23-1

11. Reason quantitatively. Which of these lengths is the shortest?

A. the diagonal of a square with 16 in. sides

B. the hypotenuse of a right triangle with leg lengths of 14 in. and 17 in.

**C.** the diagonal of a rectangle with side lengths of 20 in. and 10 in.

12. A ribbon is placed diagonally across a gift box as shown below. What is the length of the ribbon?

28 in.

45 in.
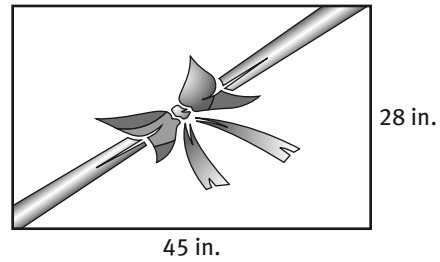
13. Model with mathematics. Joline made a map of her city as shown below. To walk from her house to the movie theater, Joline walks 15 blocks on Elm Street from her house to the diner. From the diner she walks 8 blocks on Birch Street to the movie theater. If Joline could walk a direct line diagonally from her house to the movie theater, how much less distance would she have to walk?

Birch Street

DINER

Elm Street

14. Find x.

28 in.

53 in.

x

(2)
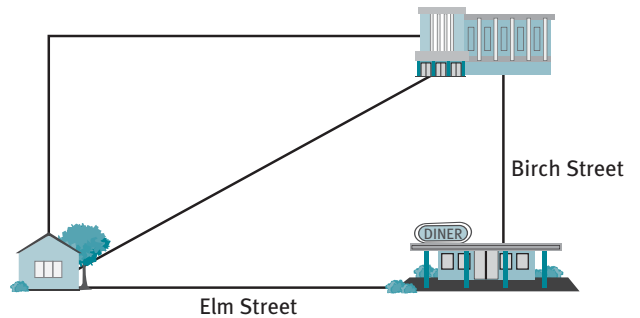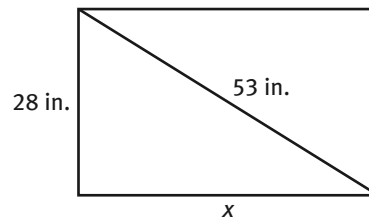
15. Make sense of problems. A student made several shapes on a Geoboard as shown below. The leg lengths of the right triangle are 28 mm and 195 mm. What is the length of the hypotenuse of the right triangle the student made?
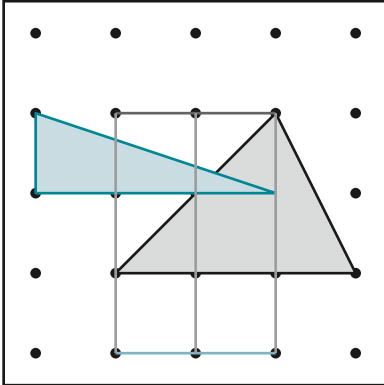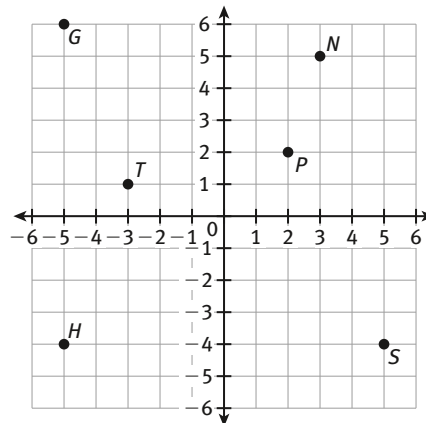

LESSON 23-2

16. Attend to precision. Which of the following is the length of the hypotenuse of a right triangle with vertices at the points (0, 5), (0, 0), and (6, 0), rounded to the nearest tenth?

A. 61 units

B. 8.2 units

C. 7.8 units

D. none of the above

17. Which of the following is the distance between the points $(-2, 4)$ and $(3, -1)$ rounded to the nearest tenth?

A. 7.1 units

B. 50 units

C. 7.6 units

D. none of the above

18. Reason quantitatively. How far from the origin is the point (4, 2) rounded to the nearest tenth?

19. What is the distance from points N and H rounded to the nearest tenth?

20. What is the distance from points S and G rounded to the nearest tenth?

21. What is the distance from points T and P rounded to the nearest tenth?

LESSON 24-1

22. Make use of structure. Tell which of the following sets of side lengths forms a right triangle.

A. 11, 60, 61

B. 12, 35, 38

C. 18, 76, 82

D. 36, 300, 325

23. Tell which of the following sets of side lengths does *not* form a right triangle.

A. 21, 220, 221

B. 15, 112, 113

C. 7, 20, 25

D. 13, 84, 85

24. Construct viable arguments. A quilter stitched a triangle on a quilt. The side lengths of the triangle he stitched were 9 inches, 20 inches and 40 inches. Did he stitch a right triangle? Explain why or why not.

25. A triangle has side lengths of 0.6 mm, 0.8 mm, and 1 mm. Do these three side lengths form a right triangle?

26. A triangle has side lengths of 0.9 mm, 1.1 mm, and 1.5 mm. Do these three side lengths form a right triangle?

LESSON 24-2

27. What number forms a Pythagorean triple with 14 and 48?

28. Which of the following is not a Pythagorean triple?

    A. 3, 4, 5

    B. 8, 15, 17

    C. 10, 35, 37

    D. 9, 40, 41

29. Make use of structure. The numbers 5, 12 and 13 form a Pythagorean triple. Give three other Pythagorean triples that can be generated from this set.

Construct viable arguments. Tell whether the following statements are always, sometimes, or never true. Explain your reasoning.

30. Pythagorean triples can be created by multiplying the side lengths of a right triangle by a constant.

31. Pythagorean triples can be created by adding a constant to the side lengths of a right triangle.
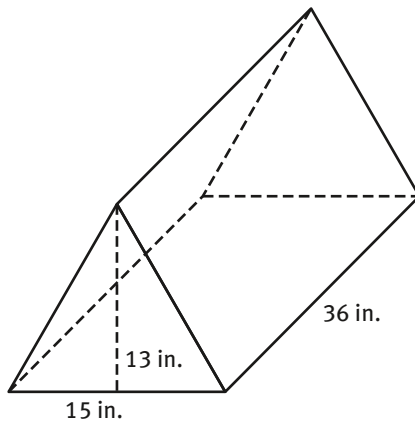
32. Pythagorean triples can be created by multiplying the side lengths of a triangle by a constant.

LESSON 25-1

Find the lateral and surface areas of each figure below.

33.

13 m, 4 m, 2 m

34.

2.4 cm, 1.6 cm, 14.2 cm

35.

36 in.

13 in.

15 in.
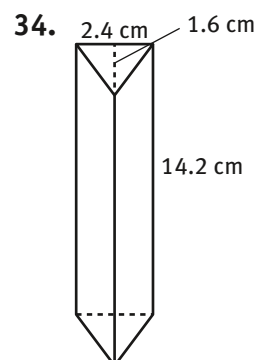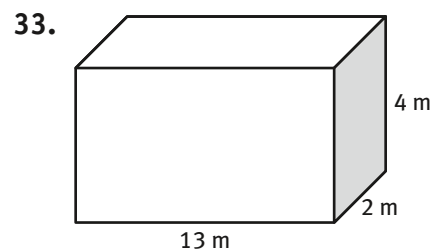
36. Reason quantitatively. Scotty wants to put wallpaper on three walls of a playroom that do not have windows. If the room is 22 feet wide, 26 feet long, and 8 feet high, what is the area of the three walls that Scotty wants to put wallpaper on?

37. Josie is putting labels on candy boxes in the shape of triangular prisms as shown below. What is the area of a label that covers the three rectangular faces?

Candy Bar

6 in.

2 in.

LESSON 25-2

38. Make sense of problems. A farmer is building a grain silo as shown below. The silo will have a radius of 13 feet and a height of 25 feet to the top of the cylindrical portion. What is the area of the metal sheet needed to form the cylindrical part of the silo rounded to the nearest tenth?

25 ft
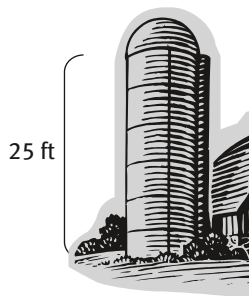
39. A cylinder has a radius of 8 yd. and a height of 4 yd. Determine which answer below is the surface area of this cylinder, rounding to the nearest tenth. Use the π key for *pi*.

A. 603.2 yd^2

B. 100.5 yd^2

C. 251.2 yd^2

D. none of the above

40. Use appropriate tools. Which answer below shows the lateral area of a cylinder with a diameter of 16 m and a height of 4 m, rounded to the nearest tenth? Use the π key for *pi*.

A. 100.48 m^2

B. 64 m^2

**C.** 201.1 m^2

D. none of the above

Construct viable arguments. Determine whether each statement is true or false. Justify your choice.

41. The lateral area of a cylinder can be determined given the circumference and radius of the cylinder.
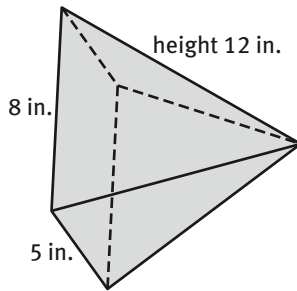
42. The lateral area of a cylinder can be determined given the diameter and height of the cylinder.

LESSON 26-1

43. Find the volume of this rectangular prism.

26.5 ft.

5.5 ft.

3 ft.
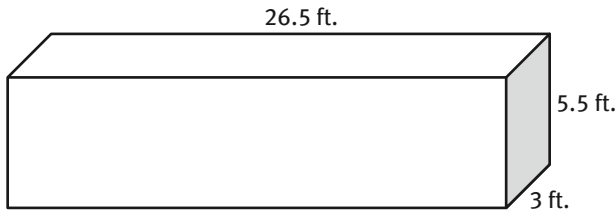
44. Find the volume of this rectangular pyramid.

height 12 in.

8 in.

5 in.

45. Find the volume of a square pyramid that has edge lengths of 169 m and an altitude of 145 m.

46. Attend to precision. Which answer below shows the volume of a rectangular prism with the following dimensions: length 4.25 cm, width 5.75 cm, and height 2 cm? (Round to the nearest tenth.)

A. 103.9 cm³

B. 12 cm³

C. 64.4 cm³

D. 48.9 cm³

47. Which answer below shows the volume of a rectangular pyramid with dimensions of length $7\frac{1}{2}$ in, width $8\frac{1}{4}$ in, and altitude of 9 in?

A. $67\frac{1}{2}$ in³

B. $556\frac{7}{8}$ in³

C. $185\frac{5}{8}$ in³

D. none of the above

LESSON 26-2

48. Find the volume of a cylinder with a radius of 3 in. and a height of 4.5 in.

49. Attend to precision. Find the volume of a cylinder with a diameter of 8 ft. and a height of $2\frac{1}{4}$ ft. Use $\frac{22}{7}$ for π.

50. Which answer below is the volume of a cone with a radius of 65 mm and a height of 12 mm? Use 3.14 for π.

A. 2450.4 mm³

B. 159,278.7 mm³

C. 13,273.2 mm³

D. 53,066 mm³

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51. Critique the reasoning of others. Kim says that the volume of a cone with a diameter of 4 cm and a height of 9 cm is 37.68 cm³. Is Kim correct? Explain why or why not.

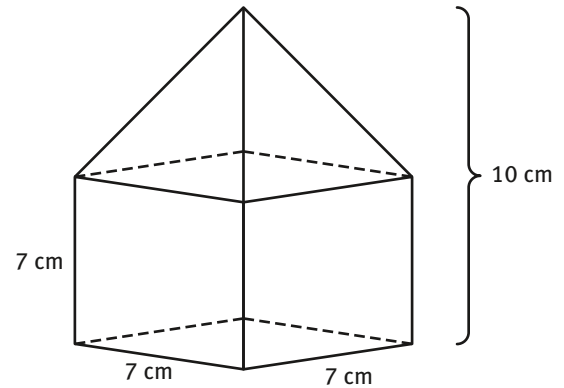**52.** What is the volume of a sphere with a diameter of 18 ft?

LESSON 26-3

53. Find the volume of a composite solid composed of two congruent right triangular pyramids with heights of 12 mm and edge lengths of 3 mm, 4 mm and 5 mm.

54. Model with mathematics. Sketch a composite figure of a toy rocket consisting of a cylinder with radius of 2 in. and height of 6 in., and a cone with the same radius and a height of 2 in.
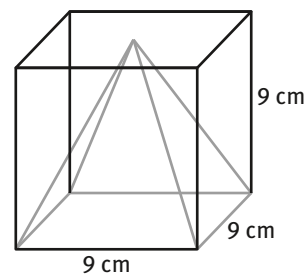
55. Determine the volume of the composite solid you sketched in Item 2. Round to the nearest tenth.

56. Persevere in solving problems. Which of the following solids has the greatest volume?

A.

10 cm

7 cm

7 cm   7 cm

B.

9 cm

9 cm

9 cm

C.

10 cm

4 cm

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