

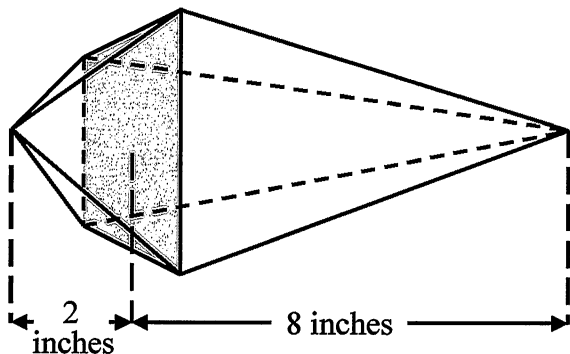
Surface Area and Volume Polyhedra Mixed Problems

Name _____

Date _____

Class/Grade _____

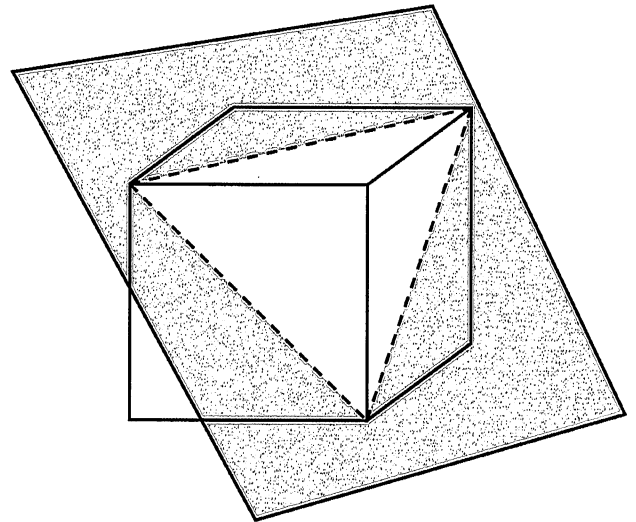
- 1** The solid pictured below is composed of two pyramids with identical square bases.



The area of the shaded cross-section is 3 square inches. What is the volume of the solid in cubic inches?

- A** 10 cubic inches
- B** 16 cubic inches
- C** 15 cubic inches
- D** 8 cubic inches

- 2** For an industrial arts project, Jeremy is going to use a band saw to cut a wooden cube along the plane shown below. The edges of the cube each measure 2 feet.

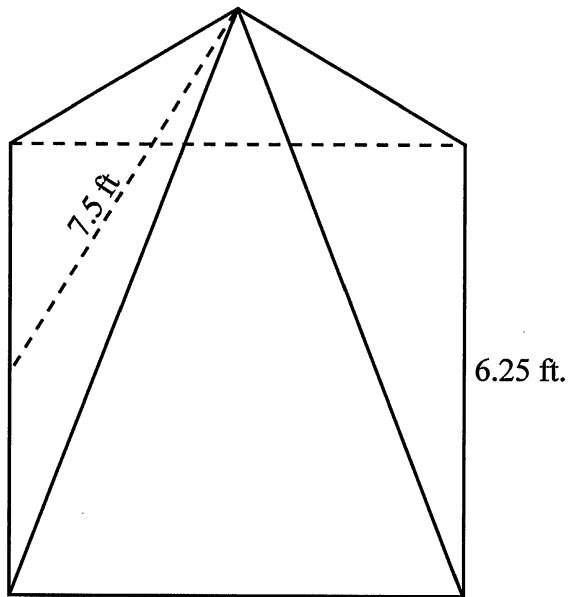


What is the surface area of the pyramid that Jeremy will cut from the cube?

- F** 12 ft.^2
- G** $6 + 4\sqrt{3} \text{ ft.}^2$
- H** 14 ft.^2
- J** $6 + 2\sqrt{3} \text{ ft.}^2$

Surface Area and Volume Polyhedra Mixed Problems

- 3** A square-based pyramid is shown below.



Which is closest to the lateral surface area of this pyramid?

- A** 146.48 ft.²
B 132.8 ft.²
C 93.75 ft.²
D 23.4 ft.²
- 4** A box in the shape of a cube has a volume of 64 cubic inches. What is the length of a side of the box?
- F** 4 in.
G $21\overline{.3}$ in.
H 16 in.
J 8 in.

- 5** If the length of the edge of a cube is $5x$ units, the volume of the cube is —

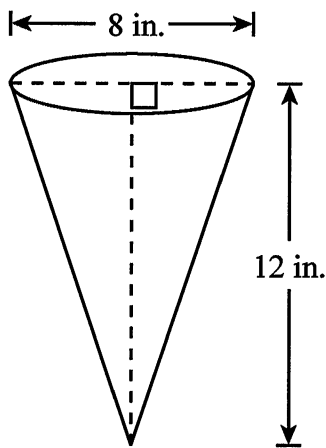
- A** $625x^3$ units³
B $15x^3$ units³
C $125x^3$ units³
D $5x^3$ units³

- 6** If $V = lwh$, what is the value of V when $l = 2$, $w = 3$, and $h = 4x$?

- F** $6 + 4x$
G $5 + 4x$
H $24x$
J $9x$

Surface Area and Volume Polyhedra Mixed Problems

- 7 In the diagram below, a right circular cone has a diameter of 8 inches and a height of 12 inches.



What is the volume of the cone to the nearest cubic inch?

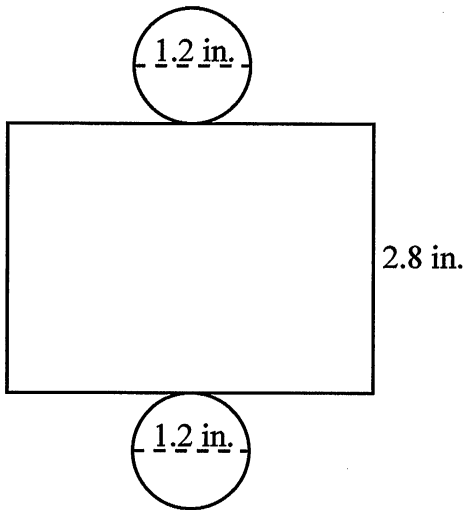
- A 804 in.³
- B 603 in.³
- C 201 in.³
- D 481 in.³

- 8 Evana is painting her living room. She plans to paint all four walls and the ceiling. The walls in the living room are 9 feet tall, and the rectangular room measures 24 feet wide and 25 feet long. The room has a door that is 7 feet tall and 3 feet wide and a window that is 4 feet tall and 3 feet wide. She will not paint the door and the window. How many square feet does Evana plan to paint?

- F 2,049 square feet
- G 1,399 square feet
- H 1,515 square feet
- J 1,449 square feet

Surface Area and Volume Polyhedra Mixed Problems

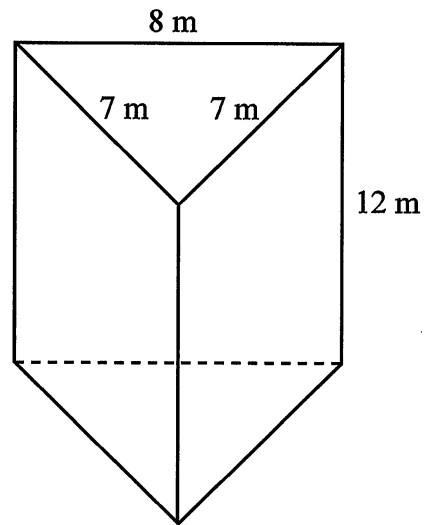
- 9 The Candle Connection makes votive candles from a cylindrical mold. The net of the mold is shown below.



Which is closest to the total surface area of the candle mold?

- A 6.7 in^2
- B 12.8 in^2
- C 10.6 in^2
- D 5.2 in^2

- 10 A triangular prism is shown below.

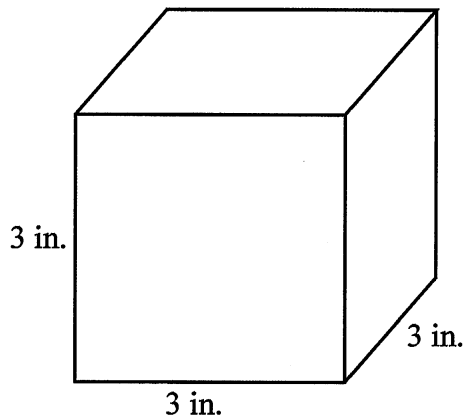


What is the lateral surface area of this prism?

- F 294 m^2
- G 264 m^2
- H 336 m^2
- J 252 m^2

Surface Area and Volume Polyhedra Mixed Problems

- 11** Annie bought 3 containers of modeling clay. The clay came packed in the cubic shape shown below.

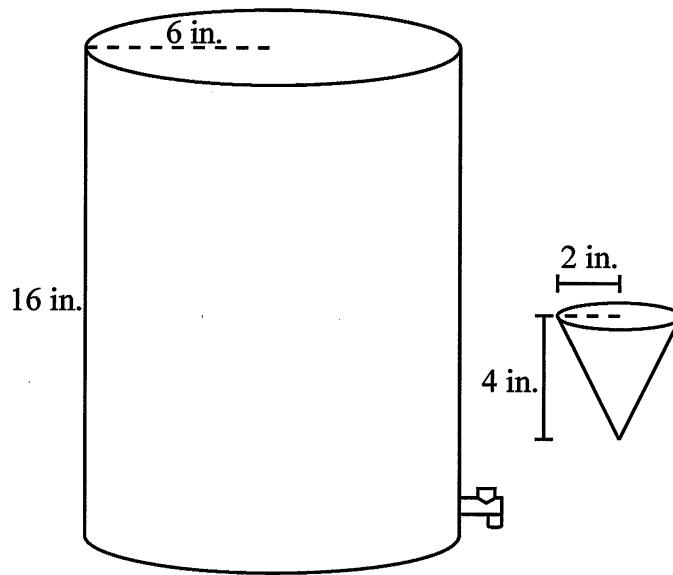


Annie used some of the clay to make a square pyramid. The height of the pyramid was 3 inches, and its base had sides of 3 inches. How many pyramids of this size can Annie make with 3 containers of modeling clay?

- A** 3
- B** 6
- C** 27
- D** 9

Surface Area and Volume Polyhedra Mixed Problems

- 12** At track practice, there is a cylindrical water cooler full of water. The athletes drink the water from conical paper cups. The water cooler and a paper cup are shown below.

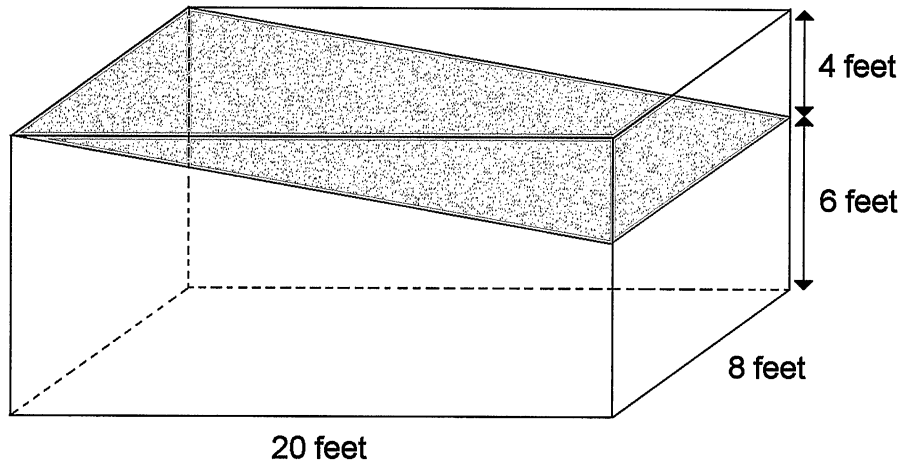


How many paper cups can be filled completely using all of the water from the full water cooler?

- F** 36
- G** 216
- H** 108
- J** 144

Surface Area and Volume Polyhedra Mixed Problems

- 13** An architect is redesigning the top floor of an apartment building. The plan is to replace the flat roof with a sloping roof as shown below.



What will the volume of the top floor be after the change?

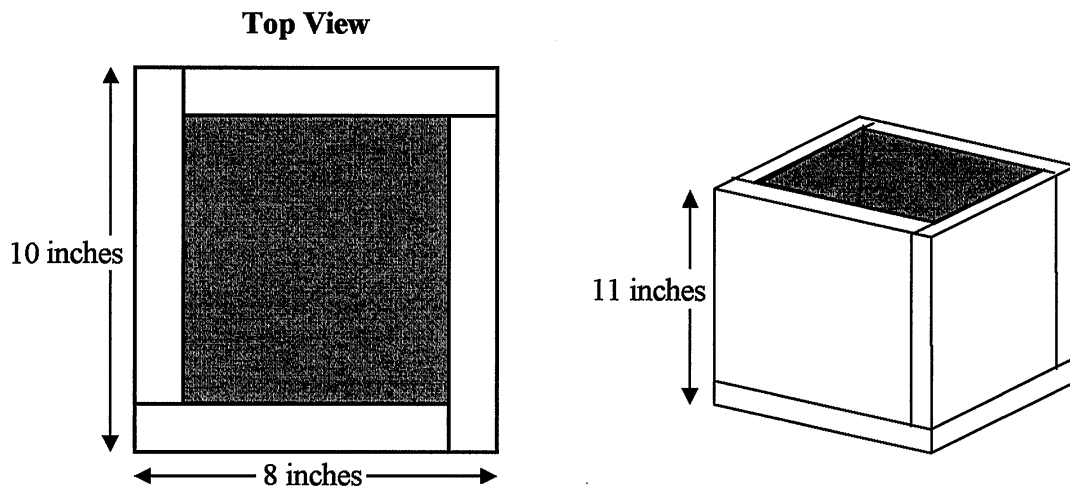
- A** 800 cubic feet
B 320 cubic feet
C 1,280 cubic feet
D 960 cubic feet
-
- 14** A right circular cylinder has an altitude of 11 feet and a radius of 5 feet. What is the lateral area of the cylinder?
- F** 265 sq. ft.
G 172.8 sq. ft.
H 345.6 sq. ft.
J 863.9 sq. ft.
- 15** What is the volume of a rectangular solid with a length of 12 feet, a width of 3 feet, and a height of 4 feet?
- A** 84 ft.^3
B 12 ft.^3
C 19 ft.^3
D 144 ft.^3

Surface Area and Volume Polyhedra Mixed Problems

- 16** If the edge of a cube is 6 centimeters long, and the edge of a second cube is 5 centimeters long, the difference in the volumes of these cubes is —

F 91 cm^3
G 30 cm^3
H 11 cm^3
J 1 cm^3

- 17** Aneesha built a box using 1-inch-thick wooden boards. The dimensions of the box are given in the diagram below.

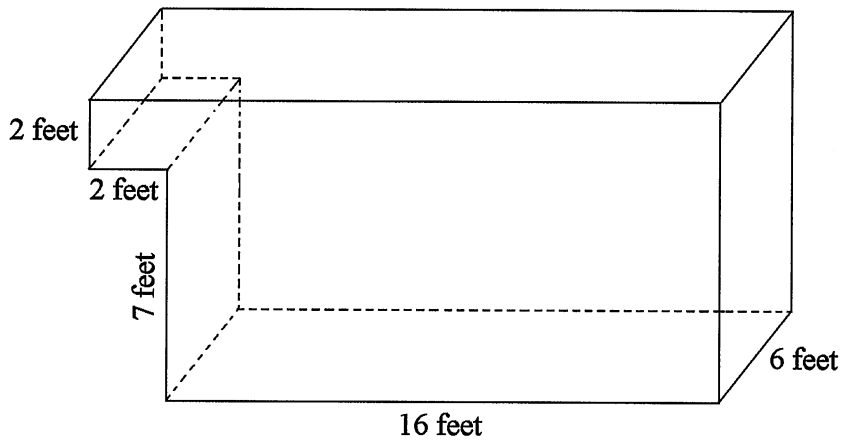


What is the volume of the interior of the box?

- A** 480 cubic inches
B 880 cubic inches
C 630 cubic inches
D 528 cubic inches

Surface Area and Volume Polyhedra Mixed Problems

18 The dimensions of the cargo area of a moving truck are shown in the diagram below.

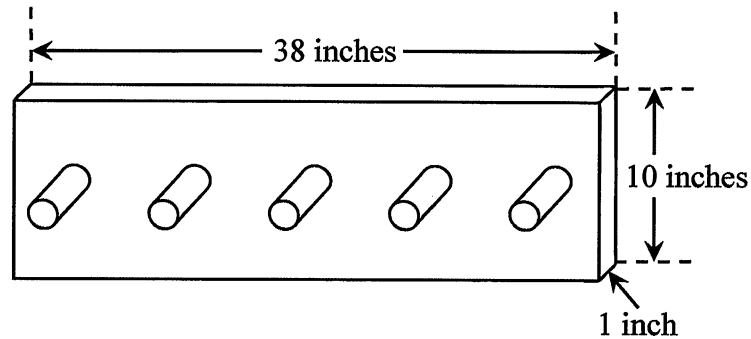


What is the volume of the cargo area of the moving truck?

- F** 888 cubic feet
- G** 824 cubic feet
- H** 756 cubic feet
- J** 696 cubic feet

Surface Area and Volume Polyhedra Mixed Problems

- 19** Randall built a coat rack by affixing five cylindrical pegs to a rectangular board. Each peg is 4 inches long and 1 inch in diameter. The board is 1 inch thick, 10 inches tall, and 38 inches long.

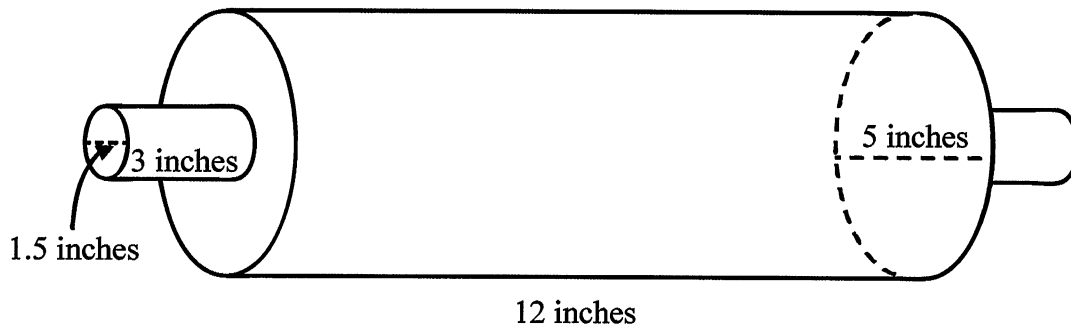


What is the volume of the coat rack in cubic inches? Use 3.14 for π .

- A** 392.56 cubic inches
- B** 395.7 cubic inches
- C** 442.8 cubic inches
- D** 383.14 cubic inches

Surface Area and Volume Polyhedra Mixed Problems

- 20** A rolling pin has two identical cylindrical handles attached to a larger cylinder that is 12 inches long. The large cylinder measures 5 inches in diameter, and the handles measure 1.5 inches in diameter.



What is the volume of the rolling pin in cubic inches?

- F** 92π cubic inches
- G** 88.5π cubic inches
- H** 78.375π cubic inches
- J** 81.75π cubic inches



Surface Area and Volume Polyhedra Mixed Problems

Item Number	Reporting Category	Readiness or Supporting	Content Student Expectation	Correct Answer
1	4	Readiness	G.8(D)	A
2	4	Readiness	G.8(D)	J
3	4	Readiness	G.8(D)	C
4	4	Readiness	G.8(D)	F
5	4	Readiness	G.8(D)	C
6	4	Readiness	G.8(D)	H
7	4	Readiness	G.8(D)	C
8	4	Readiness	G.8(D)	J
9	4	Readiness	G.8(D)	B
10	4	Readiness	G.8(D)	G
11	4	Readiness	G.8(D)	D
12	4	Readiness	G.8(D)	H
13	4	Readiness	G.8(D)	C
14	4	Readiness	G.8(D)	H
15	4	Readiness	G.8(D)	D
16	4	Readiness	G.8(D)	F
17	4	Readiness	G.8(D)	A
18	4	Readiness	G.8(D)	F
19	4	Readiness	G.8(D)	B
20	4	Readiness	G.8(D)	H