Name:_____

2005, Mathematics - Grade 10
Question 27: Multiple Choice

Measurement

Tiffany wants to calculate the volume of her globe. The globe is in the shape of a sphere, as represented by the picture below. She measured the circumference of the globe along the equator to be 24 inches.

Which of the following measures is closest to the volume of Tiffany's globe?

A. 46 cubic inches

B. 61 cubic inches

C. 183 cubic inches

D. 234 cubic inches

Name:_____

2004, Mathematics - Grade 10
Question 19: Short Answer

Number Sense and Operations

A cube has a volume of 64 cubic inches. What is the length, in inches, of each edge of the cube?

2004, Mathematics - Grade 10
Question 41: Open Response

Measurement

A glass containing water is in the shape of a right circular cylinder with a radius of 3 centimeters. The height of the water in the glass is 10 centimeters.

a. What is the volume of the water in the glass? Be sure to include units of measure in your answer. Show or explain how you obtained your answer.

b. Five spherical marbles of equal size are dropped into the glass. The water in the glass rises to a height of 11 centimeters. What is the **increase** in the volume of the contents of the glass? Be sure to include units of measure in your answer. Show or explain how you obtained your answer.

c. What is the volume of one of the marbles? Be sure to include units of measure in your answer. Show or explain how you obtained your answer.

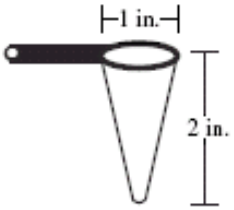
d. What is the radius of one of the marbles? Be sure to include units of measure in your answer. Show or explain how you obtained your answer.

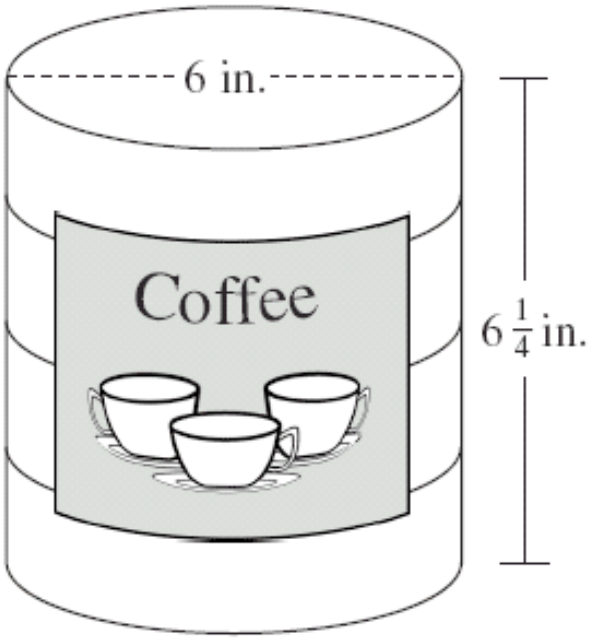
Name:_____

2003, Mathematics - Grade 10
Question 42: Open Response

Measurement

A can shaped like a right circular cylinder holds 2 pounds of coffee and has a diameter of 6 inches and a height of $6\frac{1}{4}$ inches.





a. What is the total surface area of the coffee can? Show or explain how you obtained your answer.

b. What is the volume of the can? Show or explain how you obtained your answer.

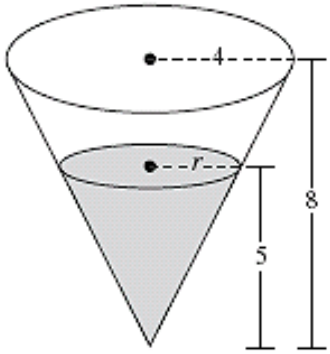
c. A conical scoop is used to remove coffee from the can and place it into a coffee maker. The scoop has a 1-inch diameter and a 2-inch height. If one level scoop is used to make each cup of coffee, how many cups of coffee can be made from a full 2-pound can of coffee? Show or explain how you obtained your answer.

Name:_____

2003, Mathematics - Grade 10
Question 40: Multiple Choice

Geometry

A cup in the shape of a cone has a height of 8 units and a radius of 4 units as shown in the figure below. The water in the cup reaches a height of 5 units.



What is the value of r, the radius of the surface of the water?

A. 1.6 units

B. 2.5 units

C. 6.4 units

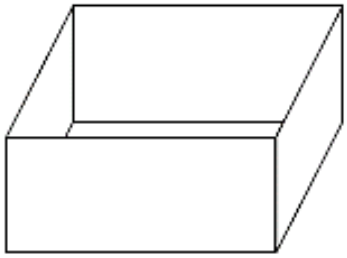
D. 10.0 units

Name:_____

2003, Mathematics - Grade 10
Question 35: Multiple Choice

Measurement

Jennifer keeps a box under her bed to store clothes. The box is in the shape of a rectangular prism as shown in the figure below.



Jennifer's sister, Molly, made a box that had the same height as Jennifer's box. Molly, however, realized that she could triple the length and double the width and it would still fit under her bed.

What is the ratio of the volume of Molly's box to the volume of Jennifer's box?

A. 6:1

B. 12:1

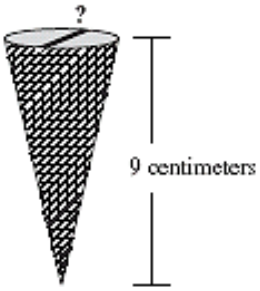
C. 36:1

D. 216:1

2003, Mathematics - Grade 10
Question 16: Short Answer

Patterns, Relations, and Algebra

The volume of the ice cream cone in the diagram below is 12π cubic centimeters. If the height of the ice cream cone is 9 centimeters, what is the diameter of the opening of the cone?

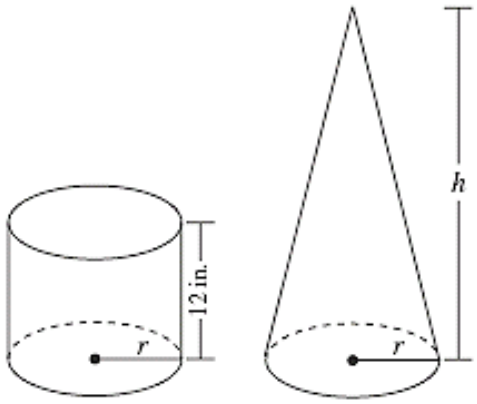


Name:_____

2003, Mathematics - Grade 10
Question 12: Multiple Choice

Measurement

The right cylinder and right cone shown below have the same radius and volume. The cylinder has a height of 12 inches.



What is h, the height of the cone?

A. 18 inches

B. 24 inches

C. 36 inches

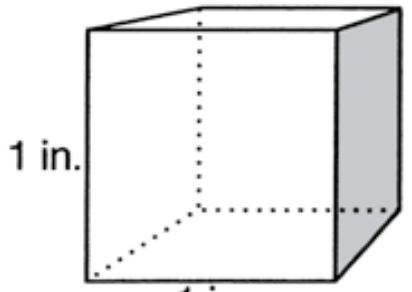
D. 42 inches

Name:_____

2002, Mathematics - Grade 10
Question 41: Open Response

Number Sense and Operations

Cube A is a 1-inch solid cube. Figure B shows a 1-inch solid cube after a cylindrical hole has been drilled through its center. The diameter of the cylindrical hole is $\frac{1}{2}$ inch, and its height is perpendicular to two opposite faces of the original cube, as shown in the diagram.



Cube A

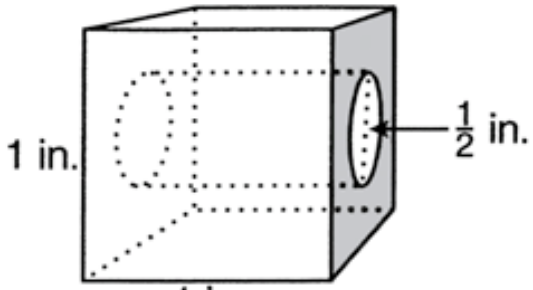


Figure B

a. What is the total surface area of Cube A?

b. What is the total surface area of Figure B? Show your work or explain how you obtained your answer.

2002, Mathematics - Grade 10
Question 40: Multiple Choice

Measurement

What is the effect on the circumference of a circle if the circle's radius is doubled?

A. The circumference is multiplied by 2.

B. The circumference is multiplied by 4.

C. The circumference is multiplied by 8.

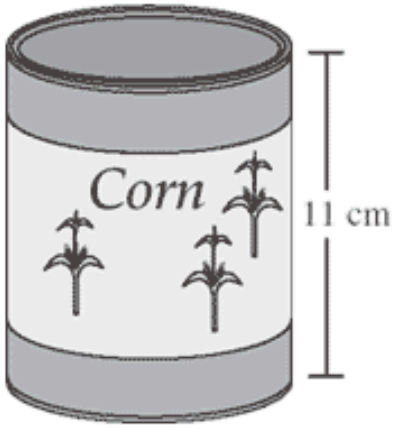
D. The circumference stays the same.

Name:_____

2002, Mathematics - Grade 10
Question 33: Multiple Choice

Number Sense and Operations

The can of corn shown below is a right circular cylinder with a height of 11 cm. The volume of the can is 486 cubic centimeters.



What is the approximate radius of the can of corn?

A. 1.3 cm

B. 3.8 cm

C. 7.0 cm

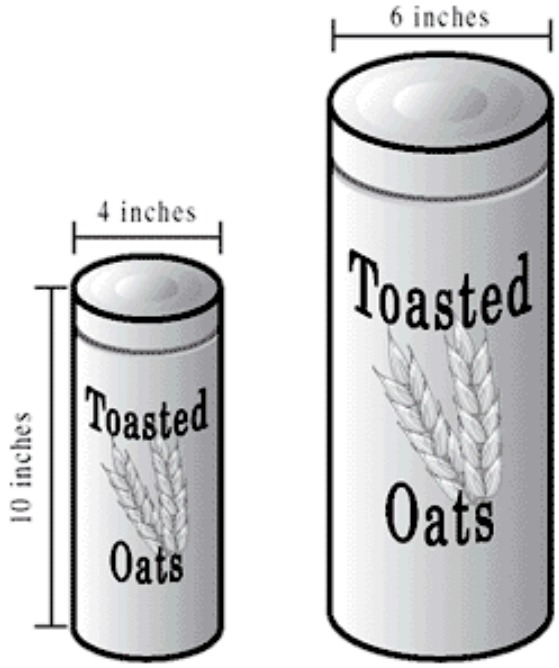
D. 14.1 cm

Name:_____

2002, Mathematics - Grade 10
Question 4: Multiple Choice

Measurement

A company packages breakfast cereal in the two sizes of right cylindrical containers shown below. The containers are similar in shape.



How many cubic inches does the large container hold?

A. 90π cubic inches

B. 135π cubic inches

C. 360π cubic inches

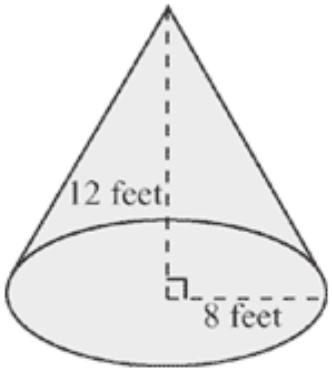
D. 540π cubic inches

Name:_____

2002, Mathematics - Grade 10
Question 1: Multiple Choice

Measurement

The cone shown below has a radius of 8 feet and a height of 12 feet.



What is the volume of the cone?

A. 32π cubic feet

B. 256π cubic feet

C. 374π cubic feet

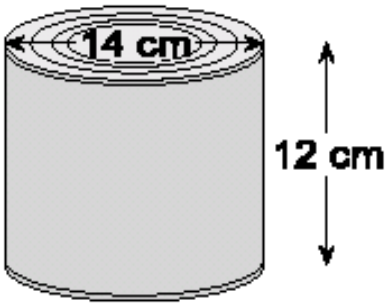
D. 768π cubic feet

Name:_____

2001, Mathematics - Grade 10
Question 38: Multiple Choice

Measurement

CanCorp is determining the cost of labels for new cans with the dimensions shown below.



The label for each can will wrap around the side of the can with no overlap.
What is the approximate area of one label?

A. 1847 cm^2

B. 264 cm^2

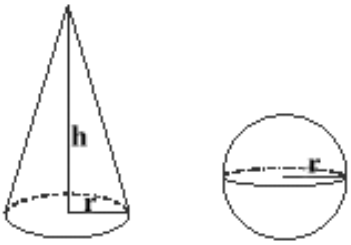
C. 528 cm^2

D. 924 cm^2

2000, Mathematics - Grade 10
Question 13: Open Response

Geometry

Use the cone and sphere below to answer question 13.



a. If the height of the cone is **doubled**, the volume of the cone is how many times larger?

b. If the radius of the cone is **doubled**, the volume of the cone is how many times larger?

c. If the radius of the sphere is **doubled**, the volume of the sphere is how many times larger?

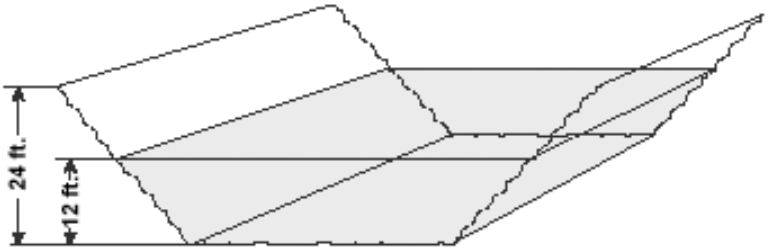
d. A manufacturing company wants to make one cone-shaped container and one sphere-shaped container that each have the **same** radius and the **same** volume. What must be the height of the cone in terms of its radius? Explain your reasoning.

Name:_____

2000, Mathematics - Grade 10
Question 4: Multiple Choice

Geometry

Use the diagram below to answer question 4.



A canal is 24 feet deep and has slanted sides as shown in the cross section of the canal above. The water level is at 12 feet now. How does the amount of water in the canal now compare to the amount in the canal when it is full?

A. It is more than half as much.

B. It is half as much.

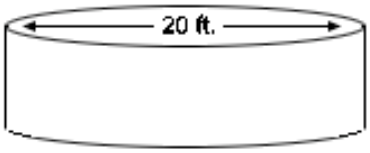
C. It is less than half as much.

D. It is twice as much.

1999, Mathematics - Grade 10
Question 42: Open Response

Geometry

Mr. Daniels bought an above-ground cylindrical swimming pool that has a diameter of 20 feet.



He wants to find how long it will take to fill his pool to a depth of 4 feet using his garden hose.

a. It takes him 15 seconds to fill a one-gallon jug. What is the rate of flow of the water from the hose in cubic inches per minute? (Note: 1 gal = 231 cubic inches)

b. Explain how to convert cubic inches to cubic feet.

c. If water is running at the same rate as in part a, how many hours will it take Mr. Daniels to fill his circular swimming pool to a depth of 4 feet? Explain or show how you found your answer.

Name:_____

1998, Mathematics - Grade 10
Question 27: Multiple Choice

Geometry

The ratio of the volume of a square pyramid with the dimension of the base y units on a side and $3y$ units high, compared to the volume of a square prism y units on a side and $\frac{y}{3}$ units high

A. is greater than one.

B. is equal to one.

C. is less than one.

D. cannot be determined.