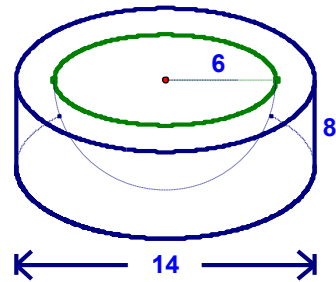


4.

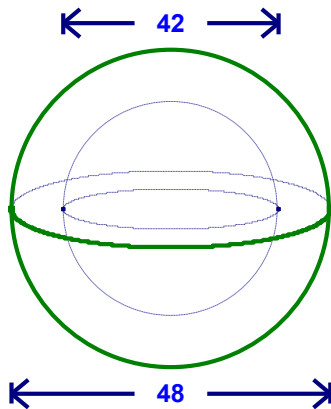
A plastic bowl is in the shape of a cylinder with a hemisphere cut out. The dimensions are shown.

- a. What is the volume of the cylinder?
- b. What is the volume of the hemisphere?
- c. What is the volume of the plastic used to make the bowl?



6.

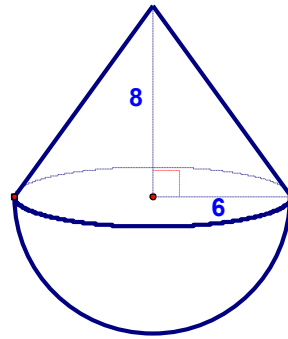
A rubber ball is formed by a rubber shell filled with air. The shell's outer diameter is 48 mm, and its inner diameter is 42 mm. Find, to the nearest cubic centimeter, the volume of rubber used to make the ball.



7.

Given a cone and a hemisphere as marked, find

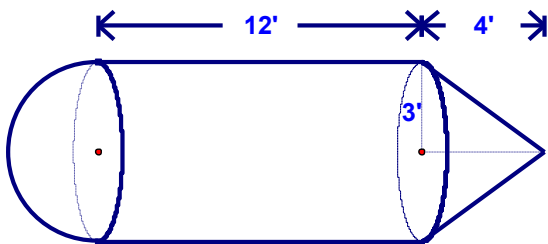
- a. The total volume of the solid
- b. the total surface area of the solid



11.

A minisubmarine has the dimensions shown.

- a. What is the sub's total volume?
- b. Knowing the sub's surface area is important in determining how much pressure it will withstand. What is the sub's total surface area?



12.

An ice-cream cone is 9 cm deep and 4 cm across the top. A single scoop of ice cream, 4 cm in diameter, is placed on top. If the ice cream melts into the cone, will it overflow? (assume that the ice cream is spherical and that its volume does not change as it melts.) Justify your answer.

13.

The volume of a cube is 1000 cu m.

- a. To the nearest cubic meter, what is the volume of the largest sphere that can be inscribed inside the cube?
- b. To the nearest cubic meter, what is the volume of the smallest sphere that can be circumscribed about the cube?

14.

Find the ratio of the volume of a sphere to the volume of the smallest right cylinder that can contain it.