Applications of Volume Formulas

1. Annie has a cylindrical container, but she does not know its radius or height. She does know that the radius and the height are the same and that the volume of the container is 512π cubic inches. Find the radius of Annie’s container.
2. A cone with a radius of 6 centimeters and a height of 12 centimeters is filled to capacity with liquid. Find the minimum height of a cylinder with a 4 centimeter radius that will hold the same amount of liquid.
3. The volume of a cylinder is 980 in.. The height of the cylinder is 20 in. What is the radius of the cylinder?
4. Taken from:<http://www.curriki.org/xwiki/bin/view/Coll_edc1/CylindersSpheresandCones>

Igloos are common types of homes in some places in North America above or north of the Arctic Circle. Marcel, an Inuit, built his igloo in the shape of a hemisphere with a diameter of 12 feet, as shown below. Now, he needs your help to calculate the volume of his igloo. Using what you know about spheres, explain to Marcel a strategy or method to calculate the volume of his igloo. Use words, drawings, and/or symbols to make your explanation clear to him.



**d = 12 feet**

1. tennisTaken from <http://teachers.henrico.k12.va.us/math/igo/09AreaVolume/9_4.html> Tennis balls are stored in a cylindrical container with height 8.625 inches and radius 1.43 inches.  
   a. The circumference of a tennis ball is 8 inches. Find the volume of a tennis ball.  
   b. There are 3 tennis balls in the container. Find the amount of space within the cylinder not taken up by the tennis balls.