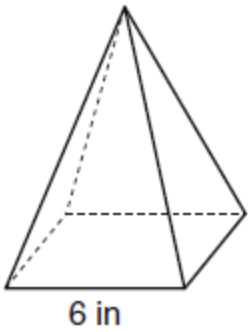
1. As shown in the diagram below, a regular pyramid has a square base whose side measures 6 inches.



If the altitude of the pyramid measures 12 inches, its volume, in cubic inches, is

(1) 72 (2) 144 (3) 288 (4) 432

2. A right circular cone has a diameter of $10\sqrt{2}$ and a height of 12. What is the volume of the cone in terms of π?

(1) 200π (2) 600π (3) 800π (4) 2400π

3. The Great Pyramid of Giza was constructed as a regular pyramid with a square base. It was built with an approximate volume of 2,592,276 cubic meters and a height of 146.5 meters. What was the length of one side of its base, to the *nearest meter*?

(1) 73 (2) 77 (3) 133 (4) 230

4. If an equilateral triangle is continuously rotated around one of its medians, which 3-dimensional object is generated?

(1) cone (2) pyramid (3) prism (4) sphere

5. Walter wants to make 100 candles in the shape of a cone for his new candle business. The mold shown below will be used to make the candles. Each mold will have a height of 8 inches and a diameter of 3 inches. To the *nearest cubic inch*, what will be the total volume of 100 candles?

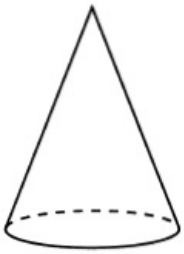
Walter goes to a hobby store to buy the wax for his candles. The wax costs $0.10 per ounce. If the weight of the wax is 0.52 ounce per cubic inch, how much will it cost Walter to buy the wax for 100 candles?

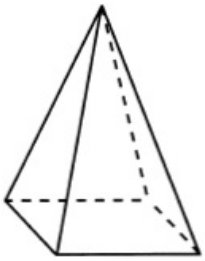
If Walter spent a total of $37.83 for the molds and charges $1.95 for each candle, what is Walter's profit after selling 100 candles?

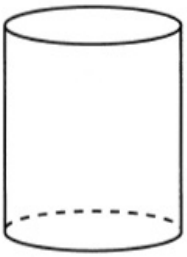
6. A side of a cube measures 4 centimeters and a side of a smaller cube measures 2 centimeters. The volume of the larger cube is how many times the volume of the smaller cube?

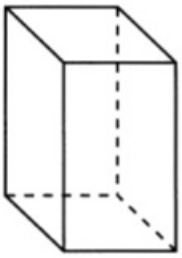
(1) 6 (2) 2 (3) 8 (4) 4

7. A student has a rectangular postcard that he folds in half lengthwise. Next, he rotates it continuously about the folded edge. Which threedimensional object below is generated by this rotation?

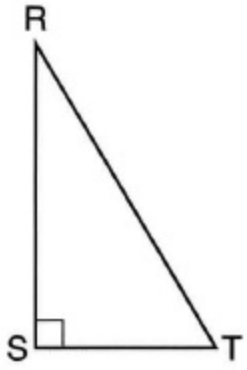
(1) 

(2) 

(3) 

(4) 

8. Which object is formed when right triangle RST shown below is rotated around leg $\overline{RS}$?



(1) a pyramid with a square base
(2) an isosceles triangle
(3) a right triangle
(4) a cone

9. If the edge of a cube is doubled, the volume is multiplied by

(1) 6 (2) 2 (3) 3 (4) 8

10. The diameter of a basketball is approximately 9.5 inches and the diameter of a tennis ball is approximately 2.5 inches. The volume of the basketball is about how many times greater than the volume of the tennis ball?

(1) 3591 (2) 65 (3) 55 (4) 4

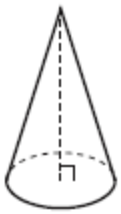
11. A hemispherical water tank has an inside diameter of 10 feet. If water has a density of 62.4 pounds per cubic foot, what is the weight of the water in a full tank, to the *nearest pound*?

(1) 16,336 (2) 32,673 (3) 130,690 (4) 261,381

12. Molly wishes to make a lawn ornament in the form of a solid sphere. The clay being used to make the sphere weighs .075 pound per cubic inch. If the sphere's radius is 4 inches, what is the weight of the sphere, to the *nearest pound*?

(1) 34 (2) 20 (3) 15 (4) 4

13. William is drawing pictures of cross sections of the right circular cone below.



Which drawing can *not* be a cross section of a cone?

(1) 

(2) 

(3) 

(4)