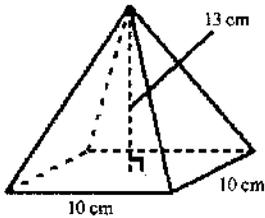


**Welding  
Volume Quiz**

Name Key

1. Find the volume.



Not drawn to scale

$$V = \frac{1}{3} Bh$$

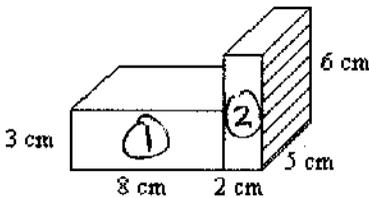
$$V = \frac{1}{3} (10 \cdot 10)(13)$$

$$V = \frac{1}{3} (100)(13)$$

$$V = 433.\bar{3}$$

- a. 650 cm<sup>3</sup>      b. 43.3 cm<sup>3</sup>      c. 104.3 cm<sup>3</sup>      d. 433.3 cm<sup>3</sup>

2. Find the volume of the composite space figure.



$$V_1 = lwh$$

$$V = (8)(5)(3)$$

$$V = 120 \text{ cm}^3$$

$$V_2 = lwh$$

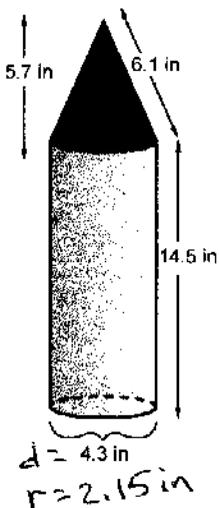
$$V = (2)(6)(5)$$

$$V = 60 \text{ cm}^3$$

$$V = 120 + 60$$

$$V = 180 \text{ cm}^3$$

3. Students in Mrs. Spain's physics class are building a rocket for a national competition. The main fuselage of the rocket is a cylinder with a diameter of 4.3 inches and a height of 14.5 inches. The nosecone of the rocket is a cone with a diameter of 4.3 inches, a height of 5.7 inches, and a slant height of approximately 6.1 inches as shown below. What is the volume of the rocket?



$$V_{\text{cylinder}} = \pi r^2 h$$

$$V = \pi (2.15)^2 (14.5)$$

$$V = \pi (4.6225)(14.5)$$

$$V = 210.6 \text{ in}^3$$

$$V_{\text{cone}} = \frac{1}{3} \pi r^2 h$$

$$V = \frac{1}{3} \pi (2.15)^2 (5.7)$$

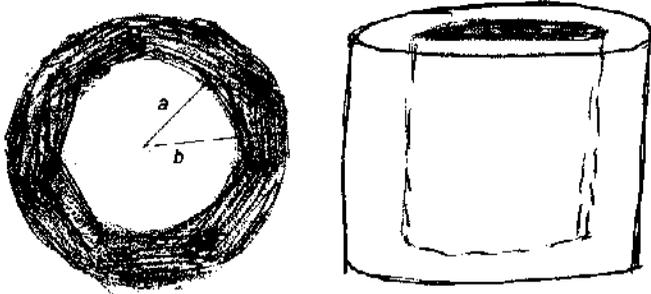
$$V = \frac{1}{3} \pi (4.6225)(5.7)$$

$$V = 27.6 \text{ in}^3$$

$$V = 210.6 + 27.6$$

$$V = 238.2 \text{ in}^3$$

4. The picture below shows a cylindrical sleeve from its end.



**Part A** Write an expression that can be used to find the volume of the cylindrical sleeve (the shaded area).

**Part B** What is the volume of the sleeve if  $a = 1$  inch,  $b = 2.5$  inches, and the length of the sleeve,  $h = 5$  inches?

PART A

Cylinder  $r = a$       Cylinder  $r = b$

$$V = \pi r^2 h \quad V = \pi r^2 h$$

$$V = \pi a^2 h \quad V = \pi b^2 h$$

$$V = \pi b^2 h - \pi a^2 h$$

or

$$V = \pi h (b^2 - a^2)$$

PART B

$$V = \pi (1)^2 5$$

$$V = \pi \cdot 1 \cdot 5$$

$$5\pi$$

$$V = 15.7$$

$$V = \pi (2.5)^2 (5)$$

$$V = \pi (6.25)(5)$$

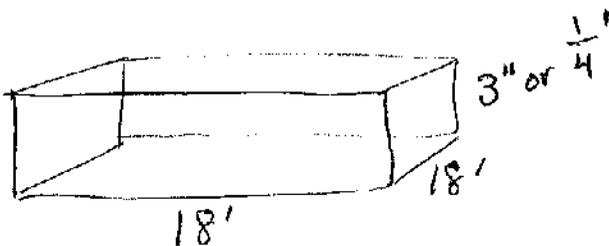
$$31.25\pi$$

$$V = 98.2$$

$$V = 98.2 - 15.7$$

$$V = 82.5 \text{ in}^3$$

5. Concrete can be purchased by the cubic yard. How much will it cost to pour a slab 18 feet by 18 feet by 3 inches for a patio if the concrete costs \$53.00 per cubic yard?



$$3 \text{ in} \cdot \frac{1 \text{ ft}}{12 \text{ in}} = \frac{1}{4} \text{ ft}$$

$$1 \text{ yd} = 3 \text{ ft}$$

$$1 \text{ yd}^3 = 27 \text{ ft}^3$$

$$V = lwh$$

$$V = (18)(18)\left(\frac{1}{4}\right)$$

$$V = 81 \text{ ft}^3$$

$$81 \text{ ft}^3 \cdot \frac{1 \text{ yd}^3}{27 \text{ ft}^3} = 3 \text{ yd}^3$$

$$3 \text{ yd}^3 \times \$53 = \$159$$