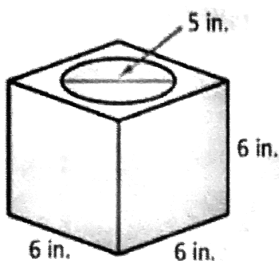


- There are 750 toothpicks in a regular-sized box. If a jumbo box is made by doubling all the dimensions of the regular-sized box, how many toothpicks will the jumbo box hold?
 $750 \times 8 = 6000$
- A cylinder with a 4-in diameter and a 6-in height holds 1 lb of oatmeal. To the nearest ounce, how much oatmeal will a similar 10-in high cylinder hold?
 $6:10$ so volume is $216:1000$ so $\frac{216}{1000} = \frac{1}{x}$ $x = 4.63$ lbs
- A clown's face on a balloon is 4 in tall when the balloon holds 108 in^3 of air. How much air must the balloon hold for the face to be 8 in tall?
 $\frac{8}{4} = 2$
 864 in^3

- A cylinder has been cut out of the solid. Find the volume of the remaining solid. Round your answer to the nearest tenth.

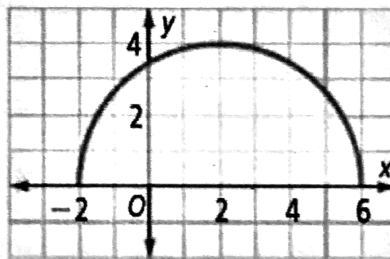


$$\begin{aligned}
 V &= lwh - \pi r^2 h \\
 &= 6 \cdot 6 \cdot 6 - \pi (2.5)^2 (6) \\
 &= 98.19
 \end{aligned}$$

- The region enclosed by the semicircle shown is revolved completely about the x-axis.
 - Describe the solid of revolution that is formed.
 - Find its volume in terms of π .

Sphere

$$\begin{aligned}
 V &= \frac{4}{3} \pi r^3 \\
 V &= \frac{4}{3} \pi (4)^3 \\
 V &= \frac{256\pi}{3} \text{ or } 85.3\pi
 \end{aligned}$$



- What is the volume of a cone that has an area of 214 ft^2 and height of 21 ft?
 $V = \frac{1}{3} \pi r^2 h = 4494 \text{ ft}^3$
- What is the volume of a cylinder that has a circumference of 189 in and height of 5 in?
 $C = 2\pi r$ $189 = 2\pi r$ $r = 30.08$ $V = \pi (30.08)^2 (5) = 14212.67 \text{ in}^3$
- A child has an ice cream cone with a spherical scoop of ice cream on the top, but the cone is empty. The cone has a diameter of 5 cm and is 7 cm deep. If the ice cream all melts, will it all fit inside the cone or will the cone overflow? Explain.

$$\begin{aligned}
 V &= \frac{4}{3} \pi r^3 & V &= \pi r^2 h \\
 V &= \frac{4}{3} \pi (5)^3 & V &= \pi (5)^2 (7) \\
 &= 523.6 & V &= 549.77
 \end{aligned}$$

Overflow

9. A manufacturer is shipping a spherical globe that fits exactly in a box shaped like a cube. The globe is touching all six sides of the box. If the volume of the box is 343 in³, what is the volume of the globe?

$$\sqrt[3]{343} = 7 \quad V = \frac{4}{3}\pi(7)^3 = 1436.76$$

10. A storage tank has a circumference of 175 meters. What is the area of the base of the tank?

$$175 = 2\pi r \quad r = 27.85 \quad A = \pi r^2 = \pi(27.85)^2 = 2436.69$$

11. A honey farmer has two options for plastic honey jars: a cylindrical one with a radius of 2.5 cm and height of 7 cm, and a square prism with a base length of 4.5 cm per side and a height of 6.5 cm. For shipping, the jars will be placed into a box that measures 25 cm by 25 cm by 41 cm. Find the volume of both jar shapes. If it is more economical to ship a larger volume of honey per box, which jar model should the farmer choose?

$$V = \pi(2.5)^2 \cdot 7$$

$$V = 137.44$$

$$V = (4.5)^2(6.5)$$

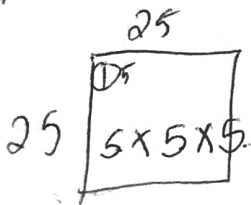
$$131.625$$

$$V = (25)(25)(41)$$

$$=$$

$$A = \pi(2.5)^2$$

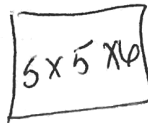
$$A = 19.63 \times 125 = 2454.37$$



$$A = (4.5)^2 = 20.25$$

$$\times 150$$

$$\hline 3037.5$$



↑
Choose