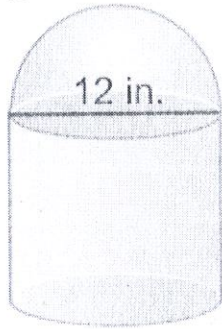


Name: key Date: _____

Homework - Volume of Composite Solids

Find the volume of each of the following composite functions.

1.

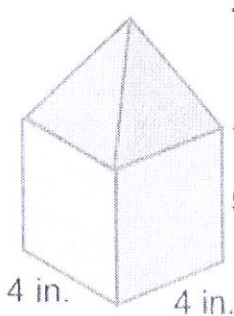


$$A_{\text{hemisphere}} = \frac{4}{3} \pi 6^3 = \frac{904.8}{2} = 452.4 \text{ in}^3$$

$$A_{\text{cylinder}} = \pi 6^2 \cdot 13 = 1470.3 \text{ in}^3$$

$$A_{\text{TOTAL}} = 452.4 + 1470.3 = \boxed{1922.7 \text{ in}^3}$$

2.

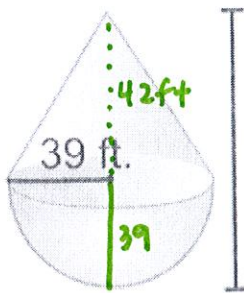


$$A_{\text{pyramid}} = \frac{1}{3} (4 \cdot 4) \cdot 6 = 32 \text{ in}^3$$

$$A_{\text{prism}} = 4 \cdot 4 \cdot 5 = 80 \text{ in}^3$$

$$A_{\text{TOTAL}} = 32 + 80 = \boxed{112 \text{ in}^3}$$

3.

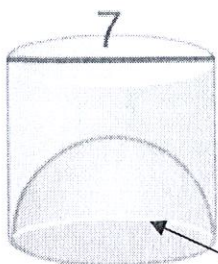


$$A_{\text{cone}} = \frac{1}{3} \pi 39^2 \cdot 42 = 66897.1 \text{ ft}^3$$

$$A_{\text{nemi}} = \frac{4}{3} \pi 39^3 = \frac{248474.8}{2} = 124237.4 \text{ ft}^3$$

$$A_{\text{TOTAL}} = 66897.1 + 124237.4 = \boxed{191134.5 \text{ ft}^3}$$

4.



$$A_{\text{cylinder}} = \pi 3.5^2 \cdot 5.5 = 211.7 \text{ u}^3$$

$$A_{\text{nemi}} = \frac{4}{3} \pi 3.5^3 = \frac{179.6}{2} = 89.8 \text{ u}^3$$

$$A_{\text{TOTAL}} = 211.7 - 89.8 = \boxed{121.9 \text{ u}^3}$$

open hemisphere

Tennis balls with a 3 inch diameter are sold in cans of three. The can is a cylinder.

5. What is the volume of one tennis ball?

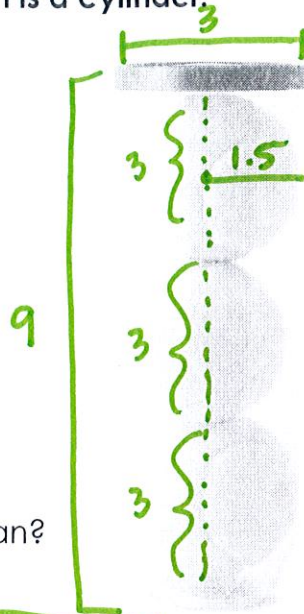
$$V_{\text{one tennis ball}} = \frac{4}{3} \pi 1.5^3 = \boxed{14.1 \text{ in}^3}$$

6. What is the volume of the cylinder?

$$V_{\text{cylinder}} = \pi 1.5^2 \cdot 9 = \boxed{63.6 \text{ in}^3}$$

7. How much space is not occupied by the tennis balls in the can?

$$V_{\text{empty space}} = 63.6 - 3(14.1) = 63.6 - 42.3 = \boxed{21.3 \text{ in}^3}$$



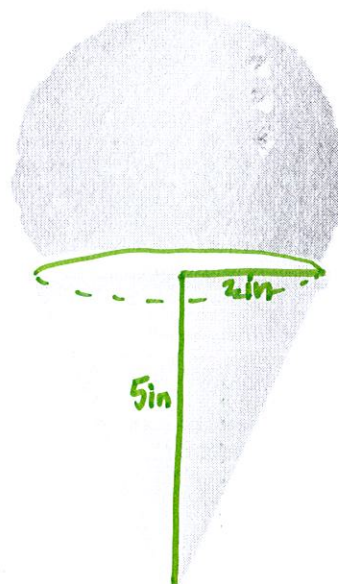
One hot day at a fair you buy yourself a snow cone. The height of the cone shaped container is 5 in and its radius is 2 in. The shaved ice is perfectly rounded on top forming a hemisphere.

8. What is the volume of the ice in your frozen treat?

$$V_{\text{hemi}} = \frac{4}{3} \pi 2^3 = \frac{33.5}{2} = \boxed{16.8 \text{ in}^3}$$

$$V_{\text{cone}} = \frac{1}{3} \pi 2^2 \cdot 5 = \boxed{20.9 \text{ in}^3}$$

$$V_{\text{TOTAL}} = 16.8 + 20.9 = \boxed{37.7 \text{ in}^3}$$



The volume of one ball is $288\pi \text{ in}^3$. $V = \frac{4}{3} \pi r^3 \cdot \frac{3}{4} \cdot 288 = \frac{4}{3} r^3 \cdot \frac{3}{4}$

9. What is the radius of the ball?

$$\frac{288\pi}{\pi} = \frac{\frac{4}{3} \pi r^3}{\pi} \quad \frac{216}{r^3} = \frac{r^3}{r^3} \quad \boxed{r = 6 \text{ in}}$$

10. If 4 of the balls were stacked on top of each other, how tall would the stack be?

