Classwork - Volume of Sphere Practice and Quiz Review

Quiz Tomorrow! Grab a Warm from the front table and get to work.

The official size of a men's basketball is 29.5 inches. The official size of a women's basketball is 28.5 inches. The sizes of each basketball are the circumferences of each basketball. Use the sizes of each basketball to find the following information.

$C = \pi d$

Men's Basketball

1) What is diameter of the basketball?

$\frac{29.5}{3.14} = \frac{3.14d}{3.14}$ $d = 9.39$ in

2) What is the radius of the basketball?

$9.39 \div 2 = 4.695$ in

3) How much cubic inches of air can the basketball hold?

$V = \frac{4}{3} \cdot 3.14 \cdot 4.695^3$

$V = 433.27 \text{ in}^3$

Women's Basketball

1) What is diameter of the basketball?

$\frac{28.5}{3.14} = \frac{3.14d}{3.14}$ $d = 9.1$ in

2) What is the radius of the basketball?

$r = 4.55$ in

3) How much cubic inches of air can the basketball hold?

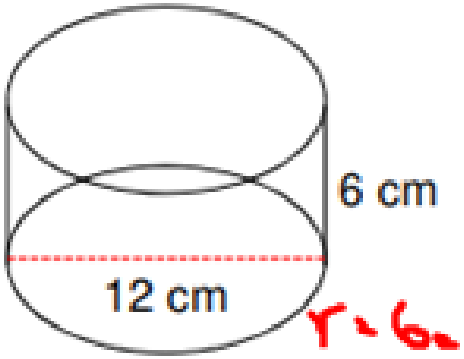
$V = \frac{4}{3} \cdot 3.14 \cdot 4.55^3$

$V = 394.4 \text{ in}^3$

Cone → $V = \frac{1}{3}\pi r^2 \cdot h$ **Cylinder** → $V = \pi r^2 \cdot h$ **Pyramid** → $V = \frac{1}{3}Bh$ **Sphere** → $V = \frac{4}{3}\pi r^3$

Find the volume of the following solids.

1)

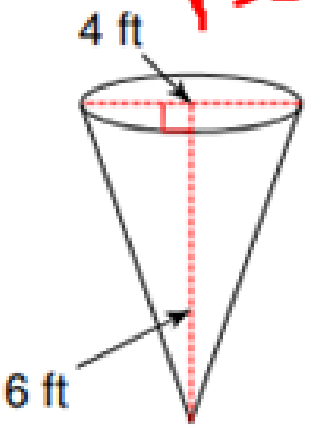


r = 6 cm

$V = 3.14 \cdot 6^2 \cdot 6$

$V = 678.24 \text{ cm}^3$

2)

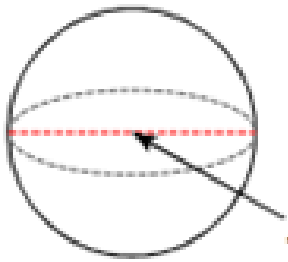


r = 2 ft

$V = \frac{1}{3} \cdot 3.14 \cdot 2^2 \cdot 6$

$V = 25.12 \text{ ft}^3$

3)

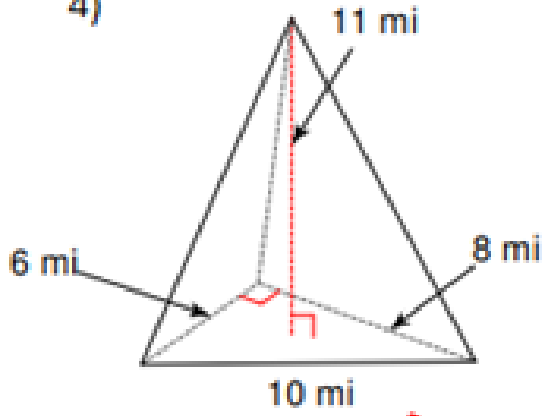


r = 6 in

$V = \frac{4}{3} \cdot 3.14 \cdot 6^3$

$V = 904.32 \text{ in}^3$

4)

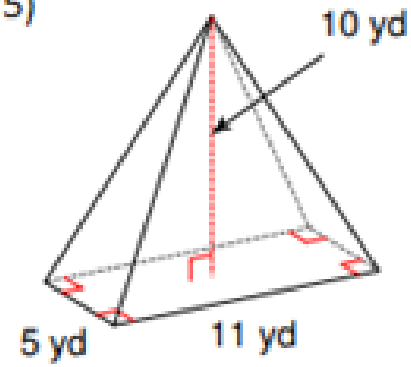


$B = \frac{1}{2}(6)(8) = 24\ mi^2$

$V = \frac{1}{3}(24)(11)$

$V = 88\ mi^3$

5)

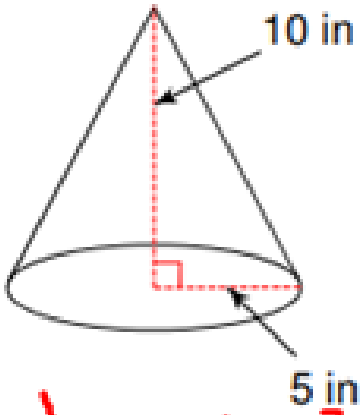


$B = 5 \cdot 11 = 55\ yd^2$

$V = \frac{1}{3}(55)(10)$

$V = 183.\overline{3}\ yd^3$

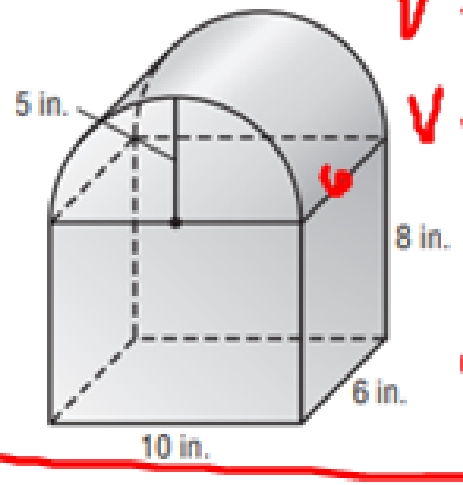
6)



$V = \frac{1}{3} \cdot 3.14 \cdot 5^2 \cdot 10$

$V = 261.\overline{6}\ in^3$

7)



V of □ Prism = 10 · 6 · 8 = 480 in³

V of cyl. = 3.14 · 5² · 6 = 471 in³

471 ÷ 2 = 235.5 in³

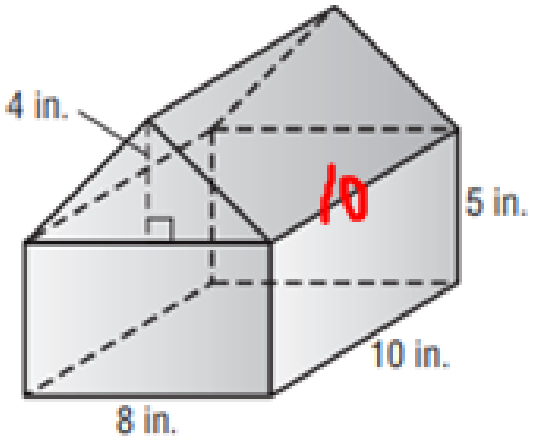
V = 480 + 235.5 V = 715.5 in³

V of □ Prism = 8 · 10 · 5 = 400 in³

V of △ Prism → B = $\frac{1}{2}$ · 4 · 8 = 16 in²

V = 16 · 10 = 160 in³

8)



V = 400 + 160 V = 560 in³

9) A triangular pyramid has a volume of 350 cubic meters. The triangle base has a height of 14 meters and a base length of 10 meters. What is the height of the pyramid?

$V = \frac{1}{3}Bh$ $B = \frac{1}{2}(14 \cdot 10)$

$B = 70\,m^2$

$350 = \frac{1}{3}(70) \cdot h$

$\frac{350}{23.\overline{3}} = \frac{23.\overline{3}h}{23.\overline{3}}$

$15\,m = h$

10) The volume of a cone is 314 cubic centimeters. If the height of the ~~cylinder~~ cone is 12 centimeters, what is the radius of the cone?

$V = \frac{1}{3} \cdot 3.14 \cdot r^2 \cdot h$

$314 = \frac{1}{3} \cdot 3.14 \cdot r^2 \cdot 12$

$\frac{314}{12.56} = \frac{12.56\,r^2}{12.56}$

$\sqrt{25} = \sqrt{r^2}$

$r = 5\,cm$