

Unit 4C Review: Circles and Volume

1. Find the volume of a cone with a diameter of 10 in. and a height of 15 in.. Leave in terms of pi.

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

$$= \frac{1}{3} \pi 5^2 \cdot 15$$

$$= 125\pi$$

2. What is the volume of a cylinder with a radius of 9 inches and a height of 15 in.? Leave in terms of pi.

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

$$V = \pi 9^2 \cdot 15$$

$$V = 1215\pi$$

3. What is the radius of a sphere with volume $972\pi \text{ cm}^3$?

$$V = \frac{4}{3} \pi r^3$$

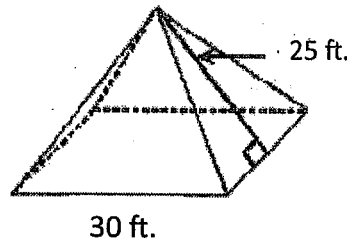
$$972 = \frac{4}{3} \pi r^3$$

$$\frac{4}{3} \quad \frac{4}{3}$$

$$729 = \pi r^3$$

$$9 = r$$

4. Which is the volume of the square pyramid shown? Round to nearest tenth.



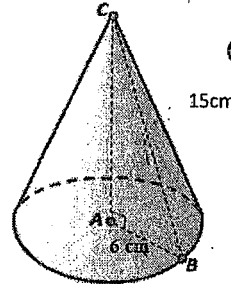
5. The cone shown has a base with a radius of AB. The length of radius AB is 6 cm and the length of slant height BC is 15 cm. What is the volume of the cone? Leave in terms of pi.

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

$$\frac{1}{3} \pi \cdot 6^2 \cdot 13.75$$

$$V = 189\pi$$

Do first $\rightarrow A^2 + b^2 = c^2$



$$6^2 + b^2 = 15^2$$

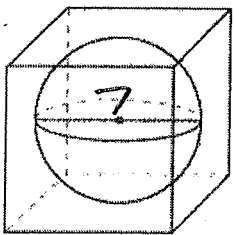
$$36 + b^2 = 225$$

$$-36 \quad -36$$

$$\hline b^2 = 189$$

$$b = 13.75$$

6. A sphere is inscribed in a cube with side lengths of 7 inches. What is the volume of the sphere?



$$V = \frac{4}{3} \pi r^3$$

$$V = \frac{4}{3} \pi (3.5)^3$$

$$V = 57.2\pi$$

7. Find the volume of a cylinder with a diameter of 14 ft, and a height of 2 miles. 1 mile = 5280 ft

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

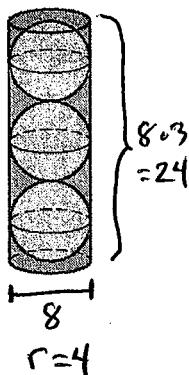
$$V = \pi (7)^2 \cdot 10560$$

$$V = 517440$$

8. Cavalieri's principle: Below is a right cylinder and an oblique cylinder using solid metal washers. The cylinders have the same height. The cylinders have the same volume because they have the same height & their cross sections have equal areas.

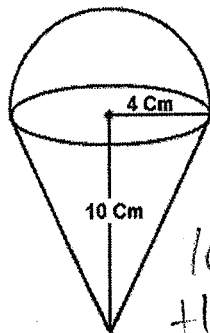


9. The figure below shows 3 tennis balls stacked tightly in a cylindrical can. The circumference of one tennis ball is 8 inches. What is the volume of the can?



$$\begin{aligned} V &= \pi r^2 h \\ &= \pi (4)^2 (24) \\ &= 384\pi \\ &\approx 1206.4 \text{ in}^3 \end{aligned}$$

10. What is the volume of the composite figure? Round to nearest tenth.



$$\begin{aligned} V_{\text{cone}} &= \frac{1}{3} \pi (4)^2 \cdot 10 \\ &= \frac{160}{3} \pi \\ &= 167.6 \\ V_{\text{sphere}} &= \frac{4}{3} \pi (4)^3 \\ &= \frac{256}{3} \pi \\ &= 134.04 \end{aligned}$$

$$\begin{array}{r} 167.6 \\ + 134.04 \\ \hline 301.64 \end{array}$$

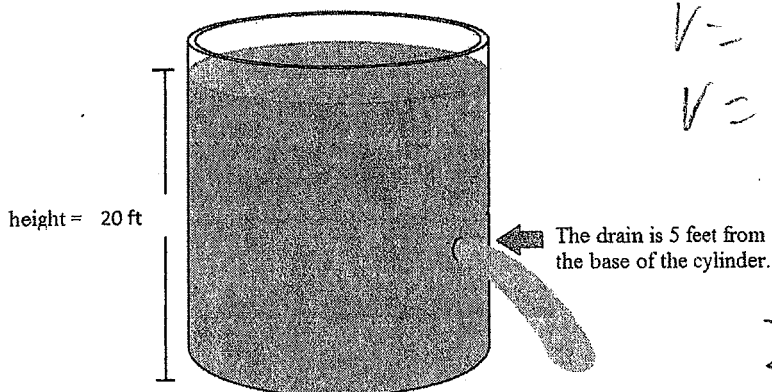
11. A cylindrical tank has a radius of 8 feet. The height of the water in the tank is 20 feet. When the drain plug is pulled, the water will drain at a rate of 40 gallons per minute. The water will stop draining when the water level reaches the height of the drain. Approximately how long will it take for the water to stop draining? $1 \text{ ft}^3 \approx 7.5 \text{ gallons}$

$$\begin{aligned} V &= \pi r^2 h \\ V &= \pi (8)^2 \cdot 15 \\ V &= 3015.9 \text{ gallons} \end{aligned}$$

$$3015.9 \times 7.5 = 22619.25$$

$$22619.25 \div 40 = 565.5 \text{ m}$$

$$9.4 \text{ hours}$$



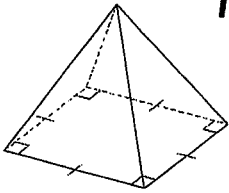
Unit 4C Review

Date _____

Period _____

Name each figure.

1)



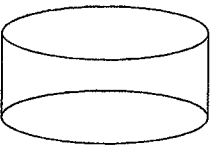
Rectangular
Pyramid

2)



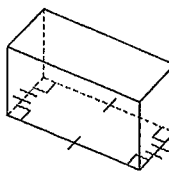
triangular
Pyramid

3)



cylinder

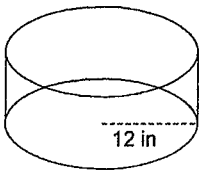
4)



Prism

Find the volume of each figure. Round your answers to the nearest tenth.

5)

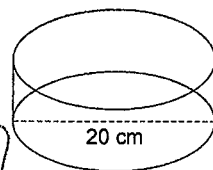


$$V = \pi r^2 h$$

$$V = \pi (12)^2 \cdot 9$$

$$1296\pi \text{ or } 4071.5$$

6)

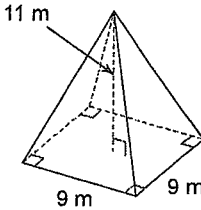


$$V = \pi r^2 h$$

$$V = \pi (10)^2 \cdot 6$$

$$600\pi \text{ or } 1884$$

7)

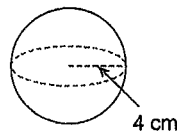


$$V = \frac{1}{2} (L \cdot W) \cdot h$$

$$V = \frac{1}{3} (9 \cdot 9) \cdot 11$$

$$V = 297\pi$$

8)

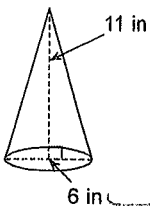


$$V = \frac{4}{3} \pi r^3$$

$$V = \frac{4}{3} \pi (4)^3$$

$$\frac{256\pi}{3} \text{ or } 268.1$$

9)

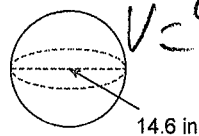


$$V = \frac{1}{3} \pi r^2 h$$

$$V = \frac{1}{3} \pi (3)^2 \cdot 11$$

$$33\pi \text{ or } 103.7$$

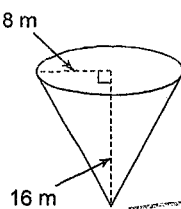
10)



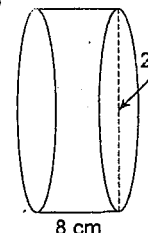
$$V = \frac{4}{3} \pi r^3$$

$$V = \frac{4}{3} \pi (7.3)^3$$

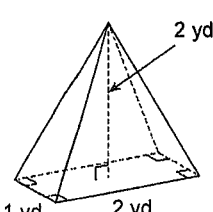
$$1629.5$$

11)  $V = \frac{1}{3} \pi r^2 h$
 $V = \frac{1}{3} \pi (8)^2 \cdot 16$

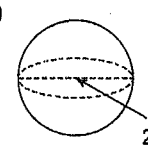
$\frac{1024}{3} \pi$ or 1072.3

12)  $V = \pi r^2 h$
 $V = \pi (8)^2 \cdot 20$

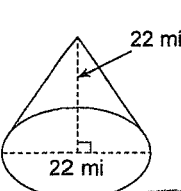
800 π or 2513.3

13)  $V = \frac{1}{3} (L \cdot w) h$
 $V = \frac{1}{3} (1 \cdot 2) \cdot 2$

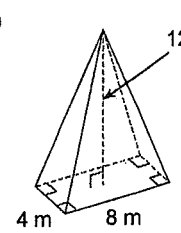
$V = \frac{4}{3}$ or 1.3

14)  $V = \frac{4}{3} \pi r^3$
 $V = \frac{4}{3} \pi (10.2)^3$

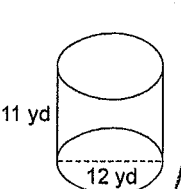
$V = 4445.2$

15)  $V = \frac{1}{3} \pi r^2 h$
 $V = \frac{1}{3} \pi (22)^2 \cdot 22$

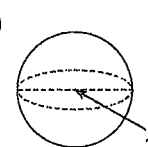
2662 π or 8362.9

16)  $V = \frac{1}{3} (L \cdot w) h$
 $V = \frac{1}{3} (4 \cdot 8) \cdot 12$

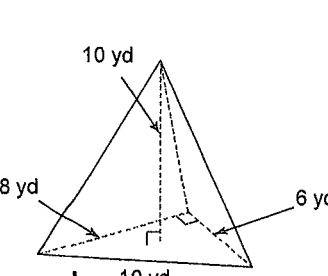
$V = 128$

17)  $V = \pi r^2 h$
 $V = \pi (12)^2 \cdot 11$

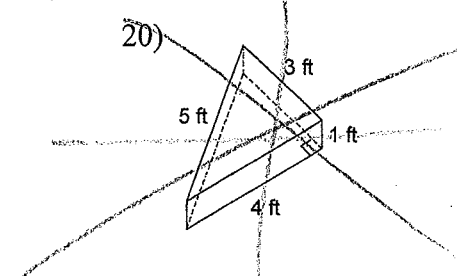
1584 π or 4976.3

18)  $V = \frac{4}{3} \pi r^3$
 $V = \frac{4}{3} \pi (14)^3$

$\frac{1372}{3} \pi$ or 1436.8

19)  $V = \frac{1}{3} Bh$
 $V = \frac{1}{3} (\frac{1}{2} b \cdot h) h$
 $V = \frac{1}{3} (\frac{1}{2} \cdot 10 \cdot 6) \cdot 10$

$V = 80$

20)  $V = \frac{1}{3} Bh$
 $V = \frac{1}{3} (\frac{1}{2} b \cdot h) h$
 $V = \frac{1}{3} (\frac{1}{2} \cdot 5 \cdot 4) \cdot 3$