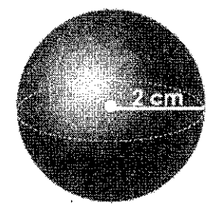
Volume of Spheres

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

- If you cut a sphere right down the middle you would create two congruent halves called hemisphere.
- A circle is the cross section that is formed when you cut a sphere in half.

13. V = 33.5 cm^3

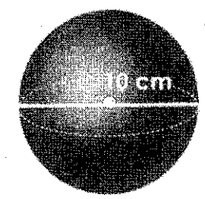


$V = \frac{4}{3}\pi r^3$

$\frac{4}{3}\pi(2)^3$

$\frac{32\pi}{3}$

14. V = 523.6 cm^3

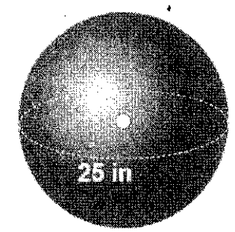


$r=5$

$\frac{4}{3}\pi(5)^3$

$\frac{500\pi}{3}$

15. The circumference of a great circle is 25 inches. Find the volume. V = 263.86 in^3

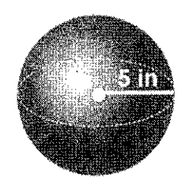


$25 = 2\pi r$

$r = 3.98$

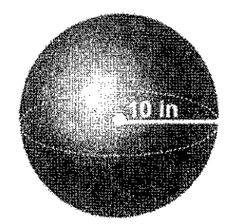
$V = \frac{4}{3}\pi(3.98)^3$

16. A spherical balloon has an initial radius of 5 inches. When more air is added, the radius becomes 10 inches. Explain how the **volume** changes as the radius changes.



$\downarrow$

$\frac{500\pi}{3}$



$\downarrow$

$\frac{4000\pi}{3}$

8 times bigger

Volume of Composite Figures:

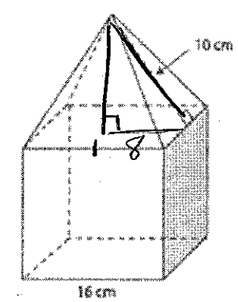
Find the volume of each individual solid and then combine the volumes together.

Practice:

1.)

$10^2 - 8^2 = x^2$

$x = 6$



Volume of Square pyramid:

$V = \frac{1}{3} B \cdot H$

$\frac{1}{3}(256)(6) = \boxed{512 \text{ cm}^3}$

Volume of rectangular prism:

$V = B \cdot H$

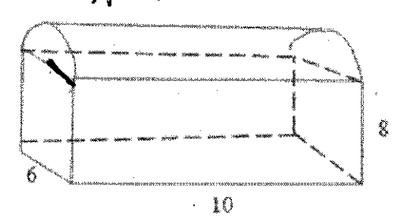
$V = (16^2) \cdot (16) = \boxed{4096 \text{ cm}^3}$

Total Volume:

$4096 + 512 =$

2.)

$A = \pi r^2$



Volume of Rectangular Prism:

$V = 10(6)(8) = 480$

Volume of Cylinder (half):

$B \cdot H \Rightarrow (9\pi)(10) = 90\pi$

$(\pi r^2)(H)$

$\frac{90\pi}{2}$

Total Volume:

$480 + 45\pi = \boxed{621.37 \text{ u}^3}$

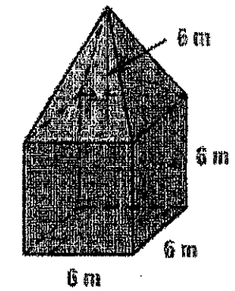
HW (SKIP #3, 6, 7)

Name_____ Date_____ Period_____

Geometry EOC Volume of Composite Shapes

Directions: Find the total volume of each composite shape.

1)



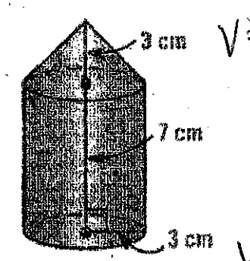
$\frac{1}{3}(\overset{12}{\cancel{36}})(6)$

$V_{square\ pyramid}$ = $\frac{1}{3} B \cdot H = 72 m^3$

V_{cube} = $6^3 = 216 m^3$

V_{total} = $72 + 216 = \boxed{288 m^3}$

2)



$V = \frac{1}{3} B \cdot H$

$\frac{1}{3}(9\pi)(3)$

$V = 9\pi$

$V = B \cdot H$

$9\pi(7)$

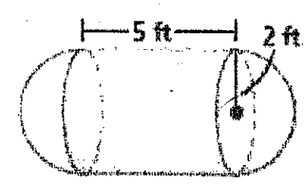
V_{cone} = 9π

$V_{cylinder}$ = 63π

V_{total} = $9\pi + 63\pi = 72\pi$

$\boxed{226.19 cm^3}$

3)



$V = \frac{4}{3}\pi(2)^3$

$\frac{32\pi}{3}$

$4\pi(5)$

V_{sphere} = 33.5

$V_{cylinder}$ = 62.8

V_{total} = $\boxed{96.33 ft^3}$

34

ometry

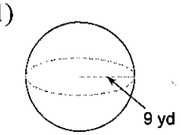
Name_____ ID: 1

Assignment

Date_____ Period____

Find the volume of each figure. Round your answers to the nearest hundredth, if necessary.

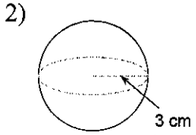
1)



$\frac{4}{3}\pi(9)^3$

$V = 3053.63\ yd^3$

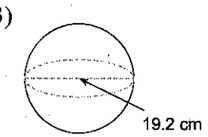
2)



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

$V = 113.1\ cm^3$

3)

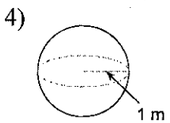


$r = 9.6$

$V = \frac{4}{3}\pi(9.6)^3$

$V = 3705.97\ cm^3$

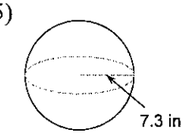
4)



$\frac{4}{3}\pi(1^3)$

$\frac{4\pi}{3} = 4.19\ m^3$

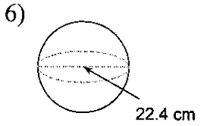
5)



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

$V = 1629.51\ in^3$

6)



$r = 11.2$

$V = \frac{4}{3}\pi(11.2)^3$

$V = 5884.95\ cm^3$