Math-2A Lesson 10-6: Volumes of Spheres, Cylinders, Cones, Pyramids, and Prisms

## What does "volume" mean?



What is the "volume" of the shape? "<u>how many 1 inch cubes will fit in the shape</u>."



 $Volume_{rect.prism} = Area_{base} * height$ 

## What is the "volume" of the shape? "how many 1 inch cubes will fit in the shape."



volume = 8 cubic inches

volume 
$$= 8 \operatorname{inch}^3$$

 $Volume_{rect.prism} = Area_{base} * height$ 



volume = (2 inch)(4 inch)(6 inch)

volume =  $48 \text{ inch}^3$ volume = 48 "cubic inches"

## What is the "volume" of the prism?



volume = 24 inch<sup>3</sup>





 $Vol_{cyl} = 502.7 \ in^3$ 







The <u>volume</u> of a sphere is....?

volume <sub>sphere</sub> = 
$$\frac{4}{3}\pi r^3$$

What part of the formula gives us the "cubic" units?

volume 
$$=\frac{4}{3}\pi\left(\frac{6}{2}\right)^3$$

$$vol = 36\pi in^3$$

 $vol = 113.1 in^{3}$ 



The <u>volume</u> of a sphere is....?

volume <sub>sphere</sub> = 
$$\frac{4}{3}\pi r^3$$

volume 
$$=\frac{4}{3}\pi(2.6)^3$$

$$vol = 73.6 in^{3}$$

volume<sub>prism</sub> = (area of base)\*h  
volume<sub>rectangular pyramid</sub> = 
$$\frac{1}{3}$$
 (base area)*h*  
volume<sub>cylinder</sub> = (area base)\**h*  
volume<sub>cone</sub> =  $\frac{1}{3}$  (area base)\**h*  
surf. area<sub>sphere</sub> =  $4\pi r^2$   
volume<sub>sphere</sub> =  $\frac{1}{3}$ \* $4\pi r^3$ 

## Where is the center of the circle?

 $x^2 + y^2 = 25$  Has not been shifted left/right  $\rightarrow$  center is (0, 0).

 $(x+3)^2 + y^2 = 25$  Left 3 shift  $\rightarrow$  center is (-3, 0)

 $(x-5)^{2} + (y+2)^{2} = 25$  center is (5, -2)

What is the radius of the circle?  $x^2 + y^2 = 25$  $x^2 + y^2 = r^2$  radius is 5

 $(x-7)^2 + y^2 = 49$  radius is 7

 $(x+2)^2 + y^2 = 64$  radius is 8