AGENDA - Unit 10-4

Spheres and Quiz

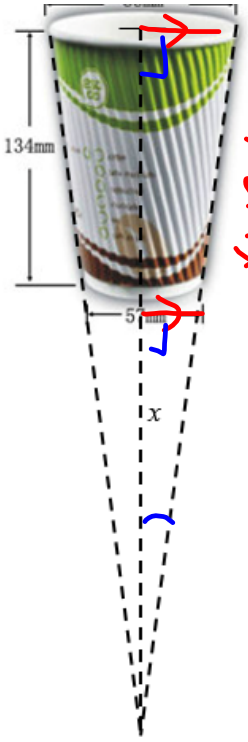
- Go over HW 10.3
- Quiz
- Notes 10.4

- HW - 10.4

5. A Dixie cup is like a truncated cone with bases of 88 mm and 57 mm and a height of 134 mm.

A. Determine the height H of the full cone to the nearest tenth of a mm.

B. Explain how you arrived at your answer.



44
134
28.5
x
x+134
AA~

$\frac{\Delta I}{\Delta II} \cdot \frac{x}{x+134} = \frac{28.5}{44}$

6) Backsolving: If the volume of a right cone is 320π ft^3 with an altitude of 5 ft, what is the radius of the cone?

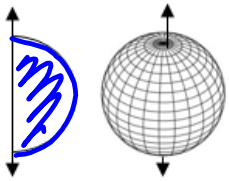
7) A pyramid has a volume of 24 ft^3 with a height of 6 ft. What is the area of the base?

8) Suppose you fill a conical paper cup with a height of 6" with water. If all the water is then poured into a cylindrical plastic cup with the same radius and same height as the conical paper cup, to what height will the water reach in the cylindrical plastic cup?

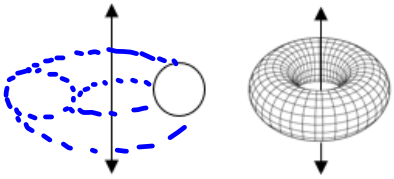
Geometry + LAB Name _____ Section _____ Date_____

10-4R & 10-7L Notes: Spheres

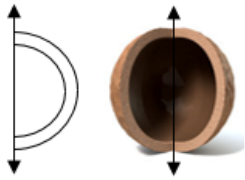
Creation of Other Solids by Rotation:



SPHERE



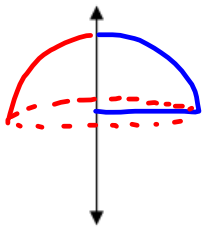
TORUS



HOLLOW CORE SPHERE

What 2-D shape could be rotated to produce just the Northern Hemisphere? What role does the Equator play?

Look at other slices as well:

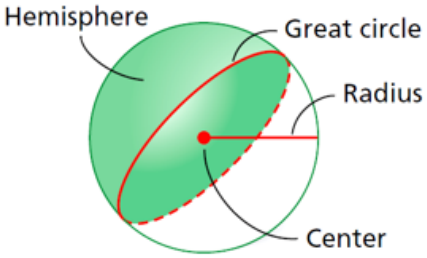


GREAT CIRCLE

SLICES ARE ○'S

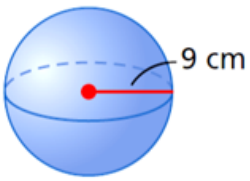
Definition of a Sphere:
The set of all points equidistant from a central point. A solid sphere therefore is the set of all points less than or equal to the radius.

Surface Area Formula	Volume Formula
$SA = 4\pi r^2$	$V = \frac{4}{3}\pi r^3$



Practice:

1) Find the volume of the sphere in terms of π:



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

$= \frac{4}{3}\pi (729)$

$= 972\pi \text{ cm}^3$

C
A
$R = 9$ cm
D

2) Find the radius of the sphere with a volume of 125π in^3.

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

$\left(\frac{3}{4}\right) 125\pi \text{ IN}^3 = \frac{4}{3}\pi r^3 \left(\frac{3}{4}\right)$

$\frac{3}{4}(125) = r^3$

$\sqrt[3]{\frac{375}{4}} = \sqrt[3]{r^3}$

MATH : 4 $\sqrt[3]{375/4}$

4.5428

$4.5 \text{ IN} = r$

3) Find the volume of the sphere with a great circle that has an area of 49π in^2.

C

$A = 49\pi \text{ IN}^2$

$R = 7 \text{ IN}$

D

$= \pi r^2$

$49\pi = \pi r^2$

$49 = r^2$

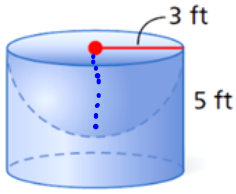
$\pm\sqrt{49} = r$

$7 = r$

$V = \frac{4}{3}\pi r^3 = \frac{4}{3}\pi(7)^3$

$= \frac{1372\pi}{3} \text{ IN}^3$

4) Find the volume of the composite solid to the nearest tenth of a cubic foot:



$V_{comp} = V_{CYL} - \frac{1}{2}V_{SPH}$

$V_{CYL} = BH$
$= (9\pi)5$
$= 45\pi$

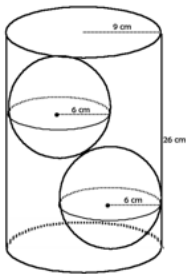
$V_{SPH} = \frac{4}{3}\pi r^3$
$= \frac{4}{3}\pi(3^3)$
$= 36\pi$

C
$A = \pi r^2 = \pi 3^2$
$R = 3$
D
$= 9\pi$ FT²

$V_{COMPOSITE} = 45\pi - \frac{1}{2}(36\pi)$
$= 45\pi - 18\pi$
$= 27\pi$
$= 84.8230$
≈ 84.8 FT³

$100 - 3\pi \neq 97\pi$

5) Find the fraction of the can's volume taken up by the two spheres:



$\frac{2V_{SPH}}{V_{CAN}}$ = FRACTION

$\frac{2\left(\frac{4}{3}\pi r_s^3\right)}{\pi r_c^2 H} = \frac{2\left(\frac{4}{3}\pi 6^3\right)}{\pi 9^2(26)}$

$\frac{\frac{8}{3}\pi 216}{2106\pi} = \frac{576\pi}{2106\pi}$

0.2735

MATH 1: FRAC $\frac{32}{117}$

$r \rightarrow 3r$

6) The radius of a sphere is tripled. Will this produce a similar sphere? Describe the effect on the

a. Volume $\frac{4}{3}\pi r^3$ $\frac{4}{3}\pi(3r)^3$

b. Surface Area $1r^3$ $27r^3$

27 TIMES AS BIG

$k = 3$

$k^3 = 27$

$k^2 = 9x$ THE AREA