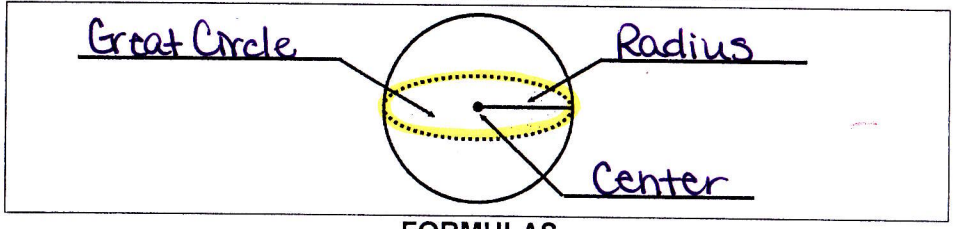
NOTES 12.6
SURFACE AREA & VOLUME OF SHPERES



FORMULAS

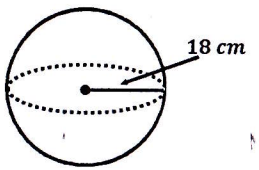
SURFACE AREA:	VOLUME:
$SA = 4\pi r^2$	$V = \frac{4}{3}\pi r^3$

EXAMPLE 1: Find the EXACT *Surface Area* of a sphere with a *radius* of 4 *cm*.

$SA = 4\pi r^2$
$= 4\pi(4)^2$
$= 64\pi$

SA = $64\pi\ cm^2$

EXAMPLE 2: Find the EXACT *Volume* of the sphere below.



$V = \frac{4}{3}\pi r^3$
$= \frac{4}{3}\pi(18)^3$
$= 7776\pi$

V = $7776\pi\ cm^3$

EXAMPLE 3: A sphere has a *diameter* of 12 *cm*. Find its *Surface Area* and *Volume*.

$r = 6$

$SA = 4\pi r^2$
$= 4\pi(6)^2$

SA = $144\pi\ cm^2$

$V = \frac{4}{3}\pi r^3$
$= \frac{4}{3}\pi(6)^3$

V = $288\pi\ cm^3$

EXAMPLE 4: If a sphere has a *volume* of $\frac{4000\pi}{3}$ *cubic units*. Find its *radius*, *diameter*, and *Surface Area*.

$V = \frac{4}{3}\pi r^3$
$\frac{4000\pi}{3} = \frac{4}{3}\pi r^3$
$4000\pi = 4\pi r^3$
$1000 = r^3$
$10 = r$

$SA = 4\pi r^2$
$= 4\pi(10)^2$
$= 400\pi$

r = 10

d = 20

SA = 400π

EXAMPLE 5: If a sphere has a *Surface Area* of 64π *square units*, find its *radius*, *diameter*, and *Volume*.

$SA = 4\pi r^2$
$64\pi = 4\pi r^2$
$16 = r^2$
$4 = r$

$V = \frac{4}{3}\pi r^3$
$= \frac{4}{3}\pi(4)^3$
$= \frac{4}{3}\pi(64)$
$= \frac{256}{3}\pi$

r = 4

d = 8

V = $\frac{256}{3}\pi$

EXAMPLE 6: If the great circle of a sphere has a *circumference* of 32π *units*. Find the *Surface Area* and *Volume* of the sphere.

$C = 2\pi r$
$32\pi = 2\pi r$
$16 = r$

$SA = 4\pi r^2$
$= 4\pi(16)^2$

$V = \frac{4}{3}\pi r^3$
$= \frac{4}{3}\pi(16)^3$
$= \frac{16384}{3}\pi$

SA = 1024π

V = $\frac{16384}{3}\pi$