



Name _____ Date _____

Practice: For use after Lesson 12.2, Geometry

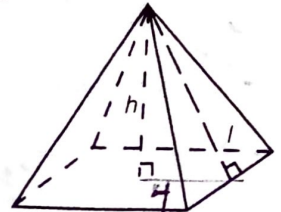
$$L = \frac{1}{2} pL$$

$$T = L + B$$

$$V = \frac{1}{3} Bh$$

Pyramids

Use this regular square pyramid in Exercises 1–5.



$s=8$

	h	Units		Square Units			Cubic Units
		l	p	B	L	T	V
1.	3	5	32	64	80	144	64
2.	4	5	24 ^{s=6}	36	60	96 ⁶⁰⁺³⁶	48
3.	5	13	96 ^{s=24}	576	624	1200	960
4.	6	10	64 ^{s=16}	256	320	576	512
5.	5	52	40 ^{s=10}	100	100√2	100√2 + 100	166.67

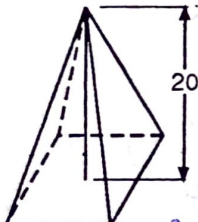
Find the volume of each pyramid.

6. Regular square

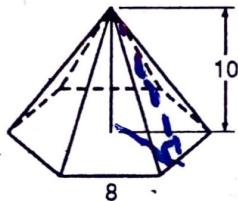
7. Regular hexagonal

8. Oblique triangular (h = 9)

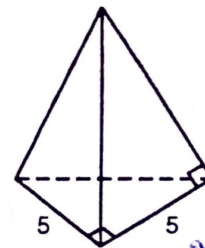
9. Regular triangular $245\sqrt{3}$



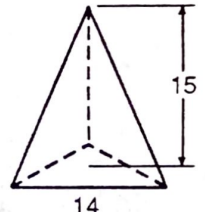
960 units³



554.4 units³



37.5 units³

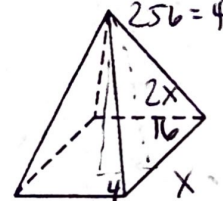


424.2 units³

This regular pyramid has a square base and a lateral area of $256 \text{ in.}^2 = \frac{1}{2} pL \Rightarrow 256 = \frac{1}{2}(4x)(2x)$

10. If the slant height is twice the length of the base edge, find the length of the base. 8 in.

11. Find the height of the pyramid. 15.49 in.



Application

12. Archaeology How much greater was the surface area of the Great Pyramid of Cheops before the outside coating of stone was removed? Originally, it was 480.75 ft high, and each edge of the square base measured 764 ft. The current dimensions are 460' and 720' respectively.

lateral 97,115.3

97,120.32 ft²

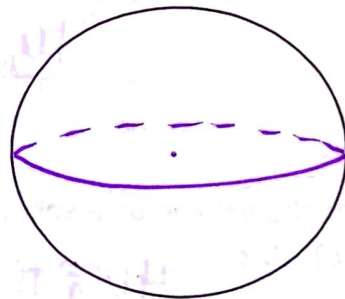
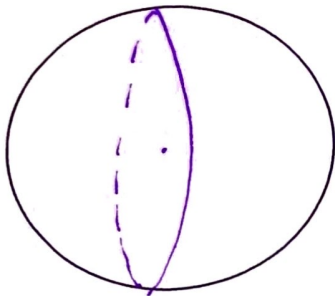
$L = 938,252.42$
 $P = 3056$
 $L = 614.04$
 $B = 583696$
 $T = 1521949.12$
 $L = 841,137.12$
 $P = 2680$
 $L = 584.12$
 $B = 518400$
 $T = 1359532.8$

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Honors Geometry

12.6 Surface Area and Volume Spheres

Sphere-a set of all points in space equidistant from a given point called the center.



- When a plane intersects a sphere in more than one point, the intersection is a circle.
- If the plane intersects the sphere through the center of the sphere then the intersection is a great circle.

Surface Area of a Sphere-The area A of a sphere of radius r is four times the area of a great circle, or $A = 4\pi r^2$.

EXAMPLES:

1. Find the area of a sphere if the radius is 4 inches. $64\pi \text{ in}^2$

2. Find the area of a sphere if the diameter is 6 centimeters. $36\pi \text{ cm}^2$

3. Complete the chart. πr^2 $4\pi r^2$

R	Area of great circle	Area of sphere
2 in.	$4\pi \text{ in}^2$	$16\pi \text{ in}^2$
5 in.	25π square in.	$100\pi \text{ in}^2$
9 in.	$81\pi \text{ cm}^2$	324π square cm.

Volume of a sphere- The volume, V , of a sphere of radius r is $V = \frac{4}{3}\pi r^3$.

EXAMPLES:

4. Find the volume of the sphere if the radius is 14 m.

$$\frac{10,976\pi}{3} \text{ m}^3$$

5. Find the volume of a sphere whose radius is:

a) 10 cm

$$\frac{4000\pi}{3} \text{ cm}^3$$

b) 4 in.

$$\frac{256\pi}{3} \text{ in}^3$$

c) $\frac{\pi}{2}$ in.

$$\frac{\pi^4}{6} \text{ in}^3$$

~~6.~~ If the radius of a sphere is 13 cm and a plane passes through the sphere at a distance of 5 cm from the center, what is the area of the circle of intersection?