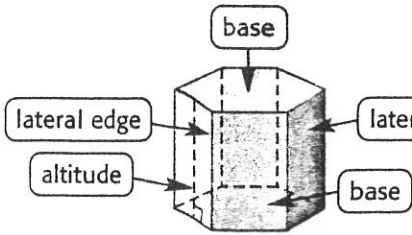
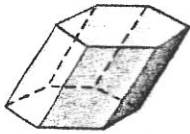


Properties of Prisms:



right hexagonal prism



oblique hexagonal prism

1. The bases are _____.
 2. The rectangular faces that are not bases are called _____.
 3. The **lateral faces** intersect at the _____ which are _____.
 4. An **altitude** is _____.
 5. In a **right prism**, _____.
- In an **oblique prism** _____.

The **lateral area (LA or L)** is _____.

Key concept: _____

The **surface area (TA or T)** is _____.

Key concept: _____

The **volume (V)** is _____.

Key concept: _____

Examples:

a) LA = _____

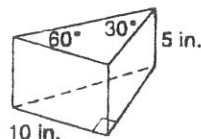
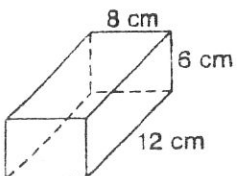
b) LA = _____

TA = _____

TA = _____

V = _____

V = _____

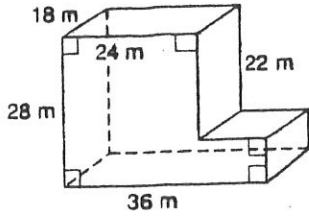


Geometry: LA, TA, V of prisms

c) LA = _____

TA = _____

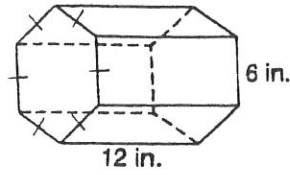
V = _____



d) LA = _____

TA = _____

V = _____



e) LA = _____

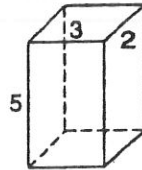
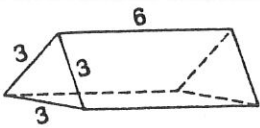
TA = _____

V = _____

f) LA = _____

TA = _____

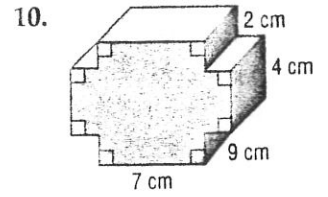
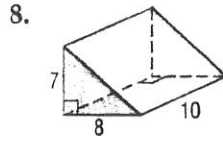
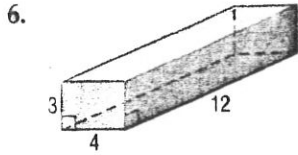
V = _____



Example: The lateral area of a rectangular prism is 156 square inches. What are the possible whole number dimensions of the prism if the height is 13 inches?

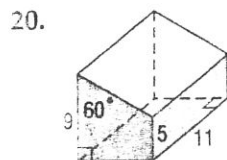
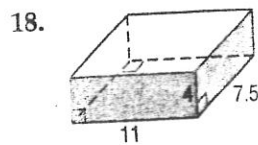
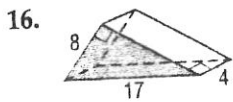
Example: The volume of a rectangular prism is 198 cubic centimeters, the length is 11 centimeters, and the height is 9 centimeters. Find the width. _____

FIND LA, TA, and V for all figures in EXACT FORM!

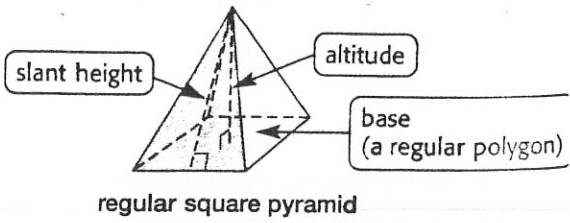
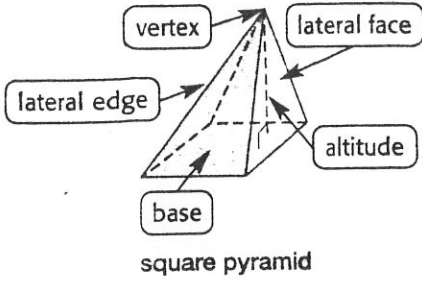


12. The surface area of a cube is 864 square inches. Find the length of the lateral edge of the cube.

14. The lateral area of a rectangular prism is 156 square inches. What are the possible whole-number dimensions of the prism if the height is 13 inches?



Properties of Regular Pyramids:



1. All the faces, except the base, _____.
2. The base is _____.
3. Lateral faces are _____ and always form _____.
4. The slant height (ℓ) is _____.
4. Lateral edges are _____.
5. The altitude (h) is _____.

Key concept: Lateral Area (LA or L): _____

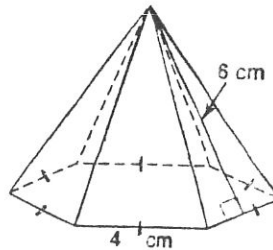
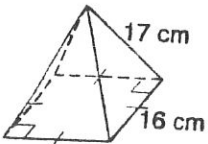
Key concept: Surface area (TA or T): _____

Key concept: Volume (V): _____

Examples:

a) LA = _____
TA = _____
V = _____

b) LA = _____
TA = _____
V = _____



Geometry : Surface Area and Volume of Pyramids

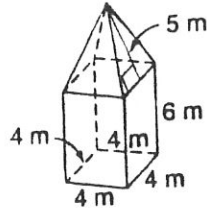
c) This shape is a composite of a cube and square pyramid. The base of the solid is the base of the cube. Find:

a) the height (h) _____

b) LA _____

c) TA _____

d) V _____



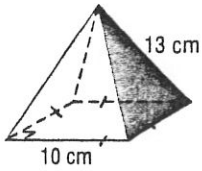
GEOMETRY HOMEWORK Pyramids
Sections 12.5 and 13.2

NAME _____
MOD _____

1. Find the LA and TA of each regular pyramid.

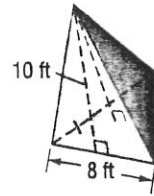
a) LA = _____

TA = _____



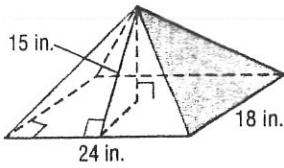
b) LA = _____

TA = _____

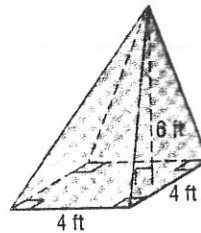


2. Find the volume of each pyramid.

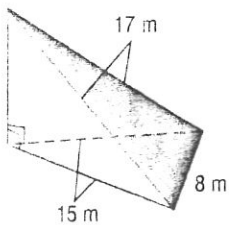
a) V = _____



b) V = _____

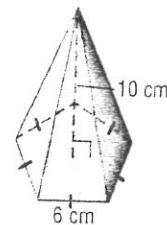


c) V = _____



d) V = _____

(round to nearest tenth)



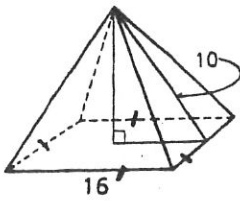
HOMEWORK Pyramids

3. Find the LA, TA, and V of each regular pyramid.

a) LA = _____

TA = _____

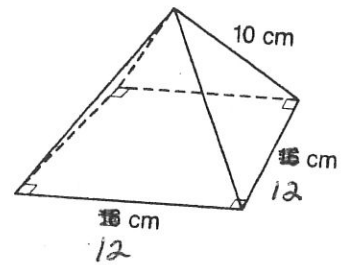
V = _____



b) LA = _____

TA = _____

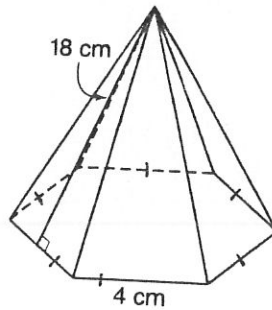
V = _____



c) LA = _____

TA = _____

V = _____



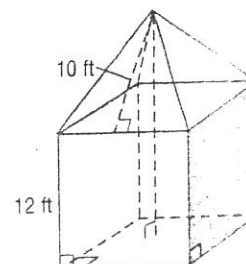
4. This solid is a composite of a cube and square pyramid. The base of the solid is the base of the cube. Find:

a) the height = _____

b) LA = _____

c) TA = _____

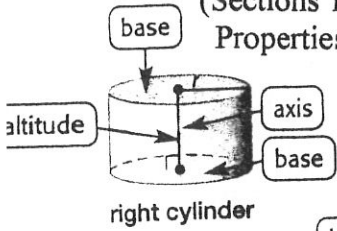
d) V = _____



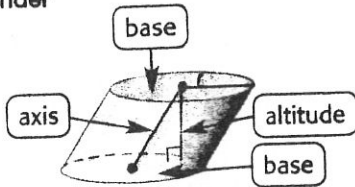
GEOMETRY Cylinders and Cones
(Sections 12.4, 12.6, 13.1, 13.2)

NAME _____
MOD _____

Properties of Cylinders:



right cylinder



oblique cylinder

1. The bases are _____.
2. The axis is _____.
3. In a right cylinder, _____.
Otherwise, the cylinder is _____.
4. The length of the altitude is the _____.

Key concept: The LA, TA, and V of a right cylinder relate to the formulas we use for right prisms except P means _____ and B is _____.

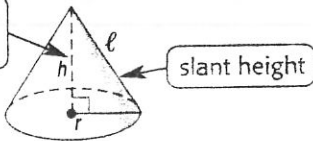
LA = _____ = _____

TA = _____ = _____

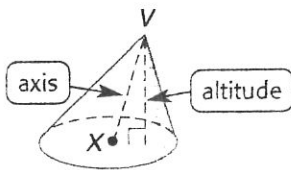
V = _____ = _____

Properties of Cones:

The axis is also an altitude.



right cone



oblique cone

1. The base is a _____ and the _____ is the point V.
2. The axis is _____.
3. The segment with one endpoint at the vertex and also perpendicular to the base is called the _____ and the length of this segment is its _____.
Any segment joining the vertex to the edge of the base is called the _____.
4. In a right cone _____.
Otherwise, the cone is _____.

Key concept: The LA, TA, and V of a right cone relate to the formulas we use for a regular pyramid except P means _____ and B is _____.

LA = _____ = _____

TA = _____ = _____

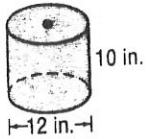
V = _____ = _____

GEOMETRY Cylinders and Cones
 Examples:

a) LA = _____

TA = _____

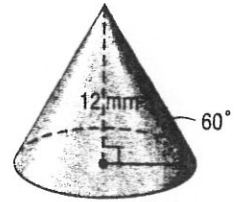
V = _____



b) LA = _____

TA = _____

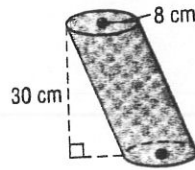
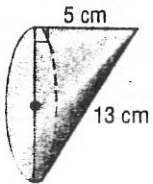
V = _____



c) Find the volume of each oblique cone or cylinder.

V = _____

V = _____



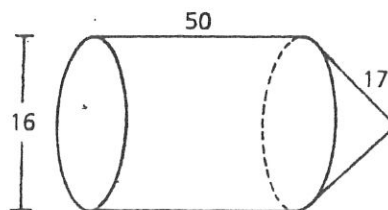
d) Find the radius of the base of a cylinder with surface area 48π square centimeters and height 5 centimeters.

r = _____

e) Find the total surface area and volume of the shape below:

TA = _____

V = _____

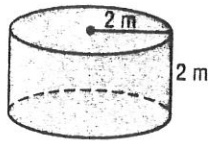


GEOMETRY HOMEWORK Cylinders and Cones
 (Sections 12.4, 12.6, 13.1, 13.2)

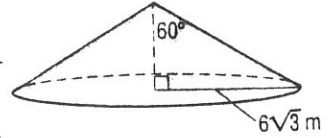
NAME _____
 MOD _____

1. FIND the LA, TA, and V of each Right Cylinder or Right Cone in EXACT FORM.

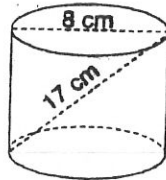
a) LA = _____
 TA = _____
 V = _____



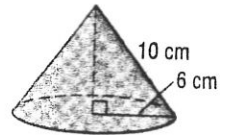
b) LA = _____
 TA = _____
 V = _____



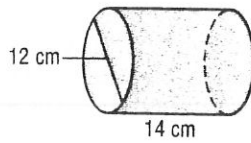
c) LA = _____
 TA = _____
 V = _____



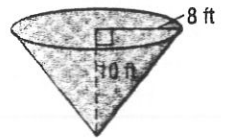
d) LA = _____
 TA = _____
 V = _____



e) LA = _____
 TA = _____
 V = _____

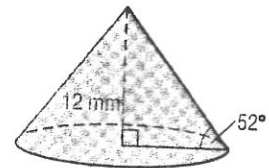


f) LA = _____
 TA = _____
 V = _____



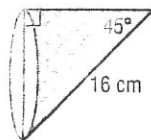
2. Find the LA, TA, and V of this right cone rounded to nearest tenth.

LA = _____ TA = _____ V = _____

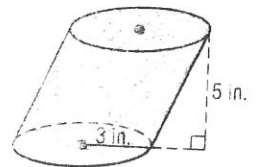


3. Find the V of each oblique cone or cylinder in EXACT FORM.

a) V = _____



b) V = _____



4. Find the radius of the base of a right cylinder whose total surface area is 140π square foot and whose height is 9 feet.

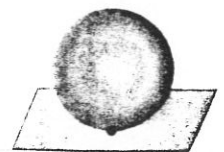
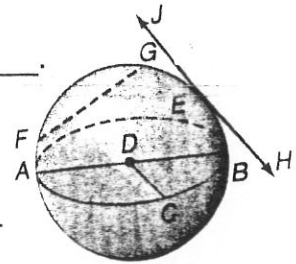
$r =$ _____

Properties of Spheres:

A sphere is _____.

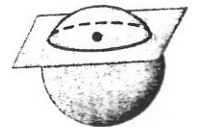
Special segments and lines related to spheres:

- 1) radius: _____
examples: _____
- 2) chord: _____
examples: _____
- 3) diameter: _____
example: _____
- 4) tangent: _____
example: _____



a point

The intersection of a plane and a sphere can be a _____ or a _____.
When a plane intersects a sphere so that it contains the center of the sphere, the intersection is called a _____. (its center and radii are the same as the sphere) Each great circle separates a sphere into two congruent halves, each called a _____.

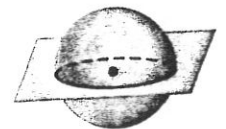


a circle

Key concept:

The surface area (TA) of a sphere = _____.

The volume (V) of a sphere = _____.

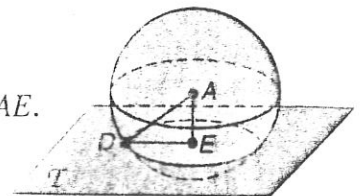


a great circle

Examples:

1) If $AE = 8$ and $DE = 15$, find the radius of sphere. (A is the center)
 $r =$ _____

2) If the radius of the sphere is 12 units and the radius of OE is 6 units, find AE .
 $AE =$ _____



3. Find the surface area (TA) and volume (V) of each sphere in exact form.

a) diameter = 10 in.

b) radius = $2\sqrt{2}$ ft.

TA = _____ V = _____

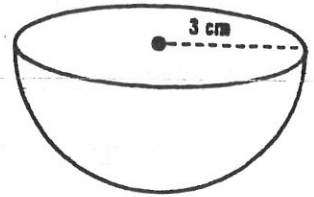
TA = _____ V = _____

GEOMETRY Spheres 12.7 and 13.3

4. Find the surface area (TA) and volume (V) of the hemisphere in exact form.

TA = _____

V = _____



5. Find the TA of a sphere with the area of a great circle approximately 18.1 square meters. Round to the nearest tenth.

TA = _____

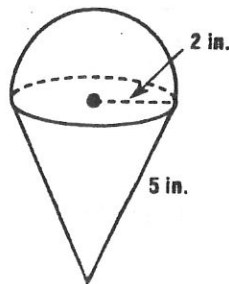
6. The surface area of a sphere is 784π square inches. Find its volume in exact form.

V = _____

7. Find the total surface area on the volume of the solid in exact form.

TA = _____

V = _____



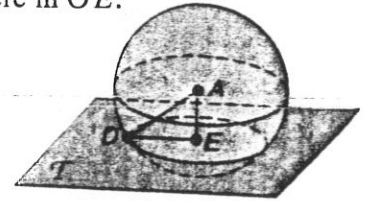
GEOMETRY 12.7 and 11.3 HOMEWORK
Surface area and Volume of spheres

NAME _____
MOD _____

1. In the figure, A is the center of the sphere, and plane \mathcal{J} intersects the sphere in OE .

a) If $AE = 5$ and $DE = 12$, find AD . _____

b) If the radius of the sphere is 18 units and the radius of OE is 17 units, find AE . _____



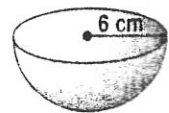
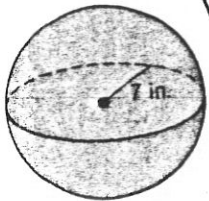
2. Find the surface area (TA) and volume (V) of each sphere or hemisphere in exact form.

a) TA = _____

b) TA = _____

V = _____

V = _____



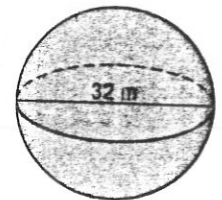
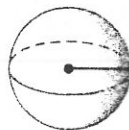
c) a sphere with radius $6\sqrt{3}$ cm.

d) TA = _____

TA = _____

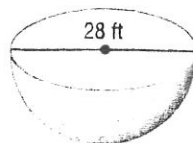
V = _____

V = _____



e) TA = _____

V = _____



3. Find the total surface area of a sphere with great circle 28.6 inches. _____

4. Find the surface area and volume of a hemisphere with the circumference of a great circle 8π centimeters. TA = _____ V = _____

GEOMETRY HOMEWORK

(spheres 12.7 and 13.3)

5. If a golf ball has a diameter of 4.3 centimeters and a tennis ball has a diameter of 6.9 centimeters, find the difference between the volumes of the two balls.
(round to the nearest tenth)

6. Find the exact volume of a hemisphere whose surface area is 18.75π square meters.

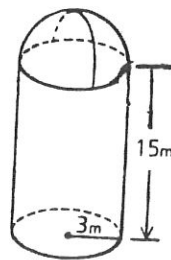
V = _____

7. An NCAA basketball has a radius of $4\frac{3}{4}$ inches. Find the surface area to the nearest tenth. _____

8. Find the total surface area and volume of the solid in exact form.

TA = _____

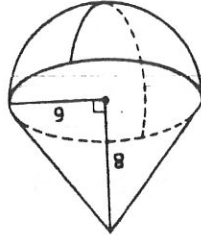
V = _____



1. Given a cone and a hemisphere as marked. Find the total surface area and the volume of the solid in exact form.

TA = _____

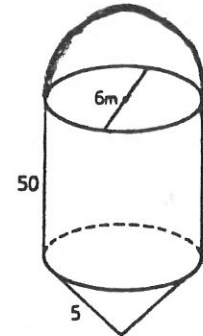
V = _____



2. Find the total surface area and volume of the solid in exact form.

TA = _____

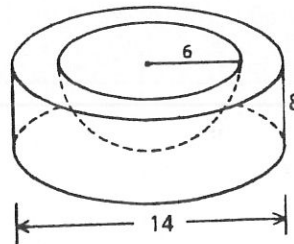
V = _____



3. A plastic bowl is in the shape of a cylinder with a hemisphere cut out. What is the volume of plastic used to make the bowl? (Hint: subtract the volume of the hemisphere from the volume of the cylinder) Give both the exact answer and the answer rounded to the nearest tenth.

exact volume = _____

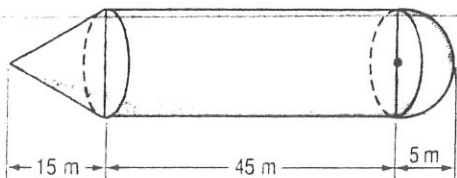
rounded volume = _____



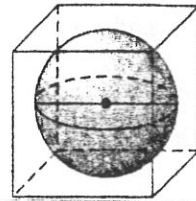
4. Engineering students designed an enlarged external fuel tank for a space shuttle as part of an assignment.

a) What is the exact volume of the entire tank? _____
What is the volume rounded to the nearest cubic meter? _____

b) If the students plan to paint the fuel tank, determine the exact amount of surface area the students must paint. _____
What is the total surface area rounded to the nearest square meter? _____



HOMEWORK #2 Spheres (12.7 and 13.3)



5. A sphere is inscribed in a cube whose sides are 12 cm.

a) Find the exact surface area of the sphere. _____

b) Find the exact volume of the sphere. _____

c) Find the amount of space outside the sphere but inside the cube. _____

6. Compare the volumes of a sphere with a radius of 5 inches and a cone with a height of 20 inches and a base with a diameter of 10 inches.

7. Suppose a sugar cone is 10 centimeters deep and has a diameter of 4 centimeters. A spherical scoop of ice cream with a diameter of 4 centimeters rests on the top of the cone.

a) If all the ice cream melts into the cone, will the cone overflow? Explain. _____

b) If the cone does not overflow, what percent of the cone will be filled? _____

8. If the radius of a sphere is increased from 3 units to 5 units, what percent would the volume of the smaller sphere be of the volume of the larger sphere? _____

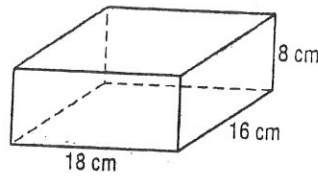
GEOMETRY REVIEW PROBLEMS: LA, TA, V

NAME _____
 MOD _____

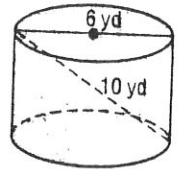
ALL WORK MUST BE SHOWN FOR CREDIT. LEAVE ALL ANSWERS AS EXACT VALUES. (leave π or $\sqrt{\quad}$ in your answers)

FIND LATERAL AREA (LA), TOTAL AREA (TA) and VOLUME (V) for each right prism, right cylinder, regular pyramid, or right cone.

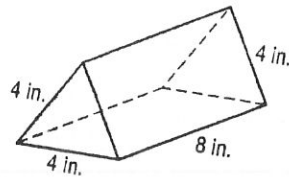
1. LA = _____
 TA = _____
 V = _____



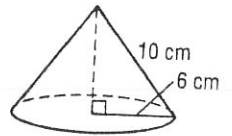
2. LA = _____
 TA = _____
 V = _____



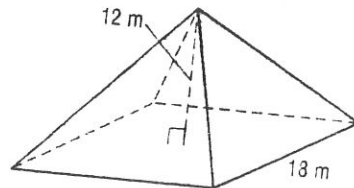
3. LA = _____
 TA = _____
 V = _____



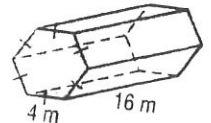
4. LA = _____
 TA = _____
 V = _____



5. LA = _____
 TA = _____
 V = _____



6. LA = _____
 TA = _____
 V = _____

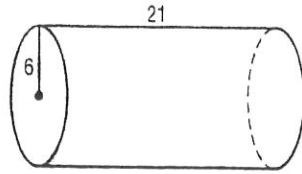


OVER →

7. LA = _____

TA = _____

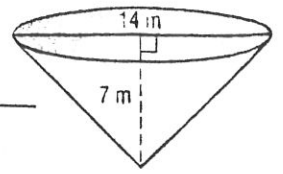
V = _____



8. LA = _____

TA = _____

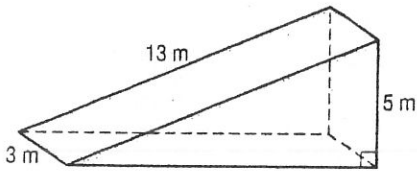
V = _____



9. LA = _____

TA = _____

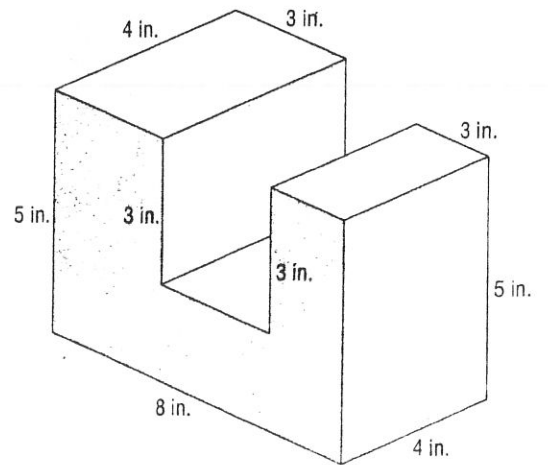
V = _____



10. LA = _____

TA = _____

V = _____

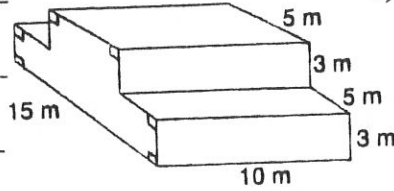


GEOMETRY
(Prisms, Pyramids, Cylinders, Cones)

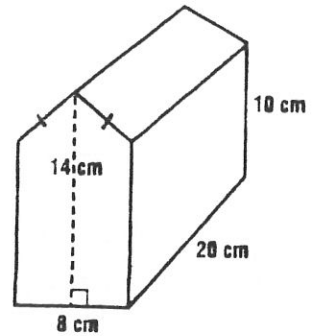
NAME _____
MOD _____

1. Find the LA, TA, and V of each prism .

a) LA = _____
TA = _____
V = _____

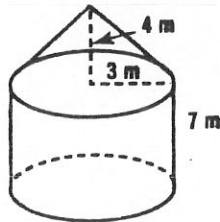


b) LA = _____
TA = _____
V = _____

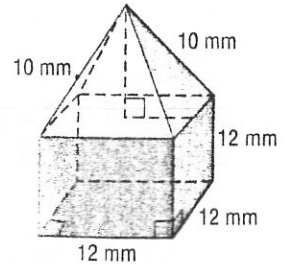


2. Find the total surface area and volume of each combined solid in EXACT FORM.

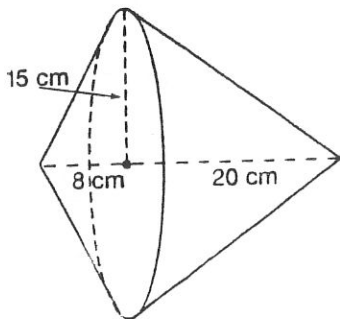
a) TA = _____
V = _____



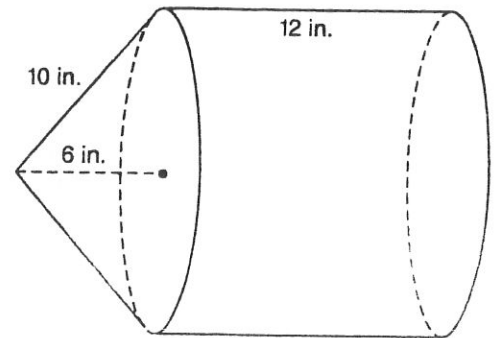
b) TA = _____
V = _____



c) TA = _____
V = _____

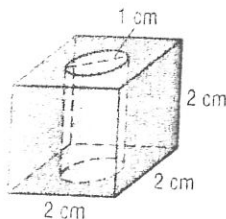


d) TA = _____
V = _____

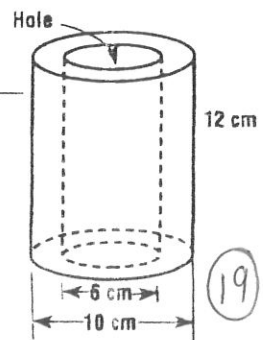


3. Find the volume of each solid in both EXACT FORM and ROUNDED to the NEAREST CENTIMETER.

a) EXACT = _____
rounded = _____



b) EXACT = _____
rounded = _____



Surface Area and Volume Formulas

PRISMS:

$$L = Ph$$

$$T = L + 2B$$

$$V = Bh$$

PYRAMIDS:

$$L = \frac{1}{2}P\ell$$

$$T = L + B$$

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

CYLINDERS:

$$L = 2\pi r h$$

$$T = L + 2\pi r^2$$

$$V = \pi r^2 h$$

CONES:

$$L = \pi r \ell$$

$$T = L + \pi r^2$$

$$V = \frac{1}{3}\pi r^2 h$$

SPHERES:

$$T = 4\pi r^2$$

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