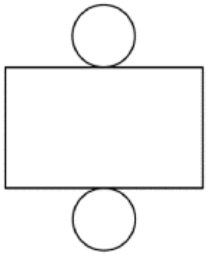
Name: _____ **Date:** _____

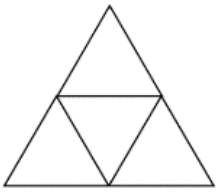
Geometry A U1D4 Pyramids WARM UP

The shapes below have been "unfolded" to create a "net" of a 3D solid. Determine the original 3D solid.

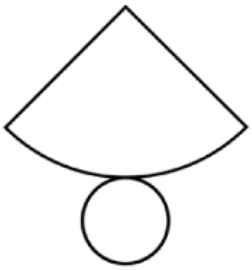
1) _____



2) _____



3) _____



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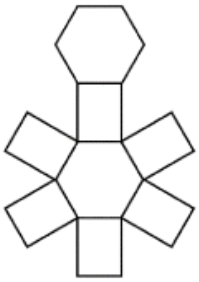
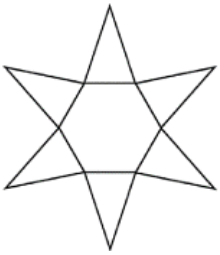
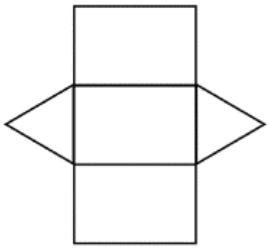
4) _____



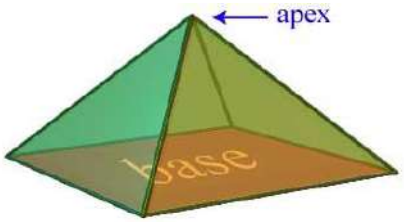
5) _____

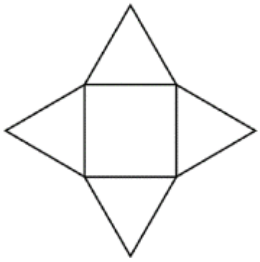


6) _____



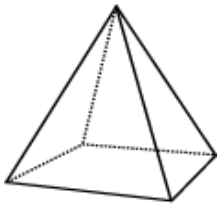
When we think of pyramids we think of the **Great Pyramids of Egypt**.
They are actually ***Square Pyramids***, because their base is a Square.

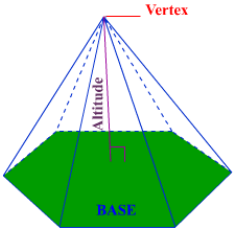


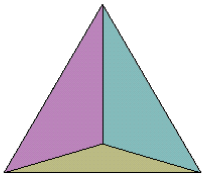


3) A pyramid is typically described by the shape of its base.
A pyramid is made by connecting a base to an apex

<u>YOU:</u> Name each type of pyramid:



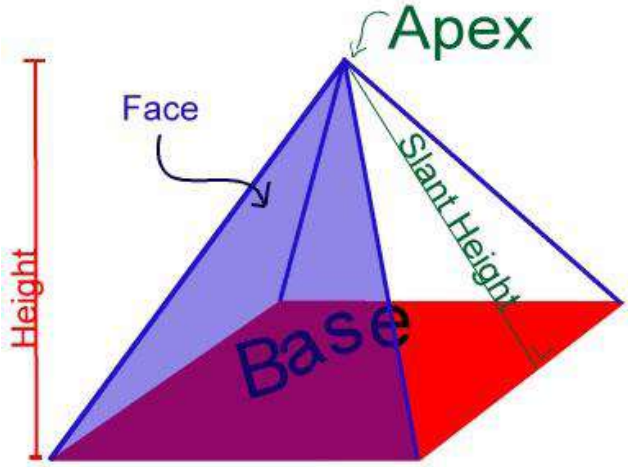


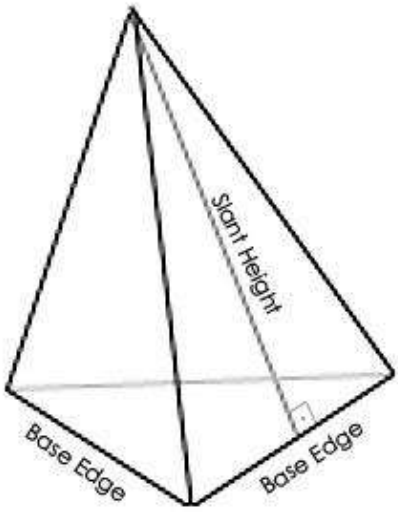


_____ _____ _____

How many faces?_____ How many faces?_____ How many faces? ____

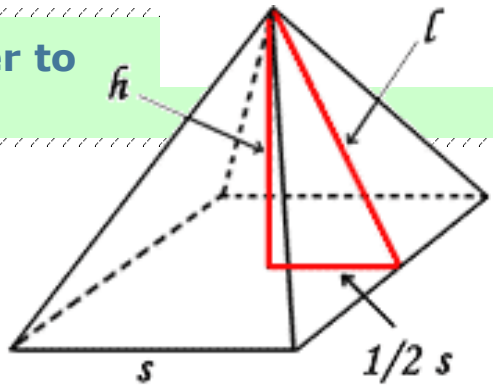
Parts of a pyramid



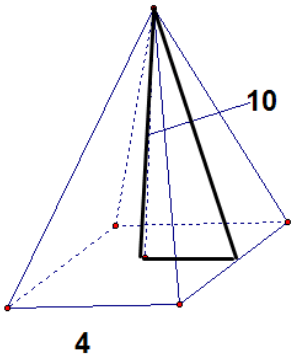


To find slant height (ℓ) remember to use Pythagorean Theorem

$$(\frac{1}{2}s)^2 + h^2 = l^2$$



Let's Work Together:



1) Find the slant height

2) Find the area of the base.

3) Find the area of a face.

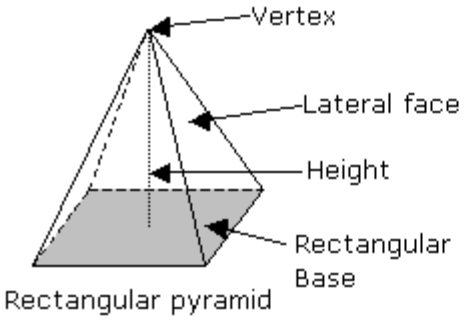
Name: _____ Date: _____

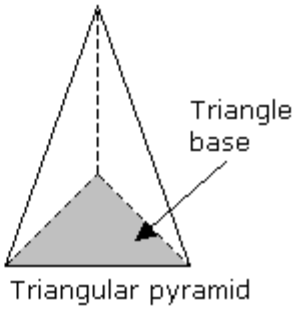
Geometry A U1D4 Pyramids Volume Notes

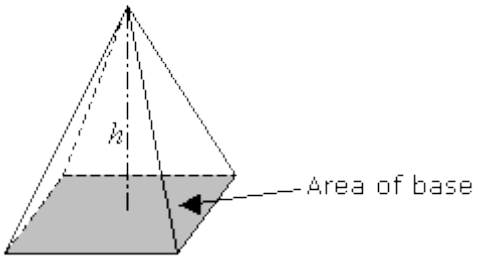
A pyramid is a solid with a **polygonal base** and several triangular **lateral faces**. The pyramid is named after the shape of its base. For example, rectangular pyramid, triangular pyramid.

The lateral faces meet at a common **vertex**. The **height** of the pyramid is the perpendicular distance from the base to the vertex.

***Examples*:**

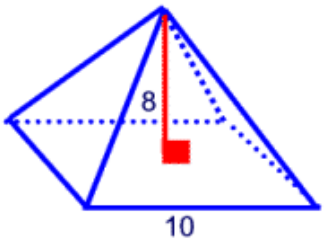




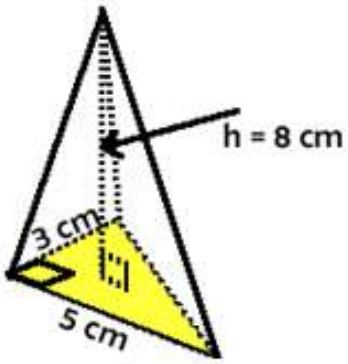


Formula for volume of a square pyramid: _____

Example 1: A regular pyramid is shown below. Find the volume of the pyramid to the *nearest cubic unit.*



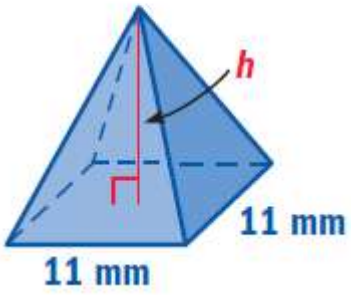
Example 2: **The volume of a triangular pyramid is the same as a square based pyramid, but B is calculated differently:**



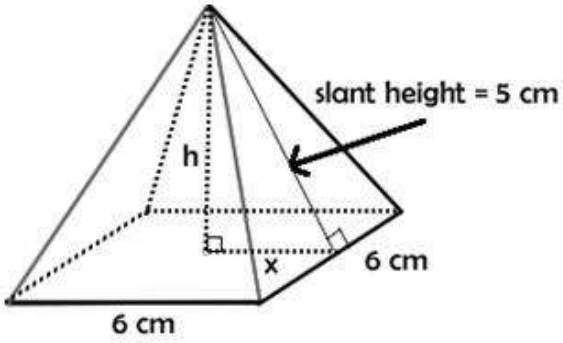
Working backwards……

Example 3: **Find the height of the pyramid below.**

$V = 1452 \text{ mm}^3$



Example 4: Apply the concept of slant height to help find the volume of the pyramid



Name: _____ Date: _____

Geometry A U1D4 Pyramids Work Together

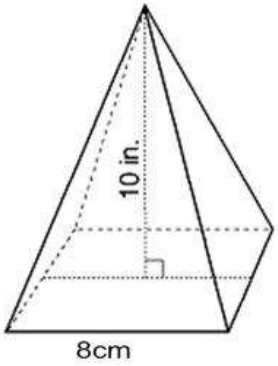
1) Janelle goes to CVS to get some sunscreen for her day at the beach. She narrows it down to Bottle A and Bottle B. She thinks Bottle B is the better buy. Maya doesn't agree. Which is the better buy?

A) Find the volume of both bottles.

B) Find the unit cost for each bottle.

C) Which bottle is the better buy?

2) a) Find the volume of the given pyramid. **Note: the different units!**
Round to nearest cubic cm.



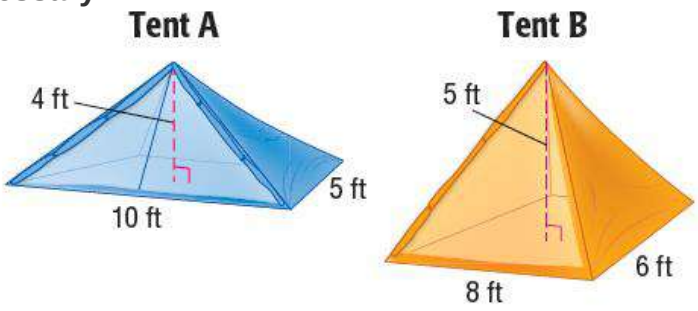
b) Skyler wants to make a sand art project with this pyramid, find out how much of each sand color he will need based upon each percent.

Sand color Percent of total volume	Volume rounded to the nearest cubic cm.
Blue 30%	
Red 10%	
Orange 18%	
Black 15%	
White 5%	
Sky blue 22%	

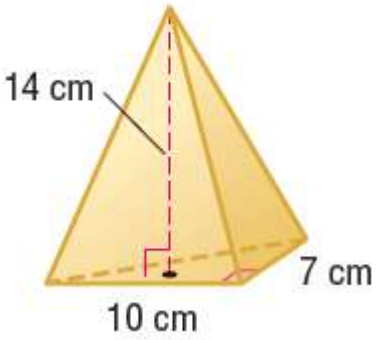
Name: _____ Date: _____

Geometry A U1D4 Pyramids HOMEWORK

1) **How much larger is the volume of Tent B than the volume of Tent A? Round to the nearest tenth if necessary.**



2) **Find the volume of the pyramid. Round to the nearest tenth if necessary.**



3) **Juan is making 3 square based pyramids for an Egyptian social studies project out of clay. The length of the base of the pyramids needs to be 4 inches and the height needs to be 7 inches. How much will he need to spend on clay?**

A) How many cubic inches of clay will he need?

B) How many grams of clay will he need to buy? (1 gram of fire clay = .047 cubic inches)

C) He finds the clay he wants in Walmart for $3.32 for 500 grams. How many packages does he need to buy?

D) How much will he spend on the clay for the project?

Name _____ Date _____

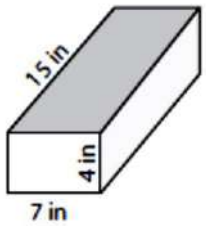
Geometry A QUIZ VOLUME PRISMS

Geometry: Volume of Prisms, Cylinders, Cone & Spheres

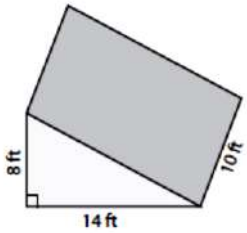
Directions - For each of the following *calculators* and *reference sheets* are allowed.

- **State the formula**
- **Show the substitution**
- **Solve**
- **Write a statement (Round to the nearest tenth when necessary)**

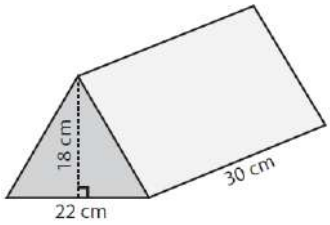
1) Find the volume.



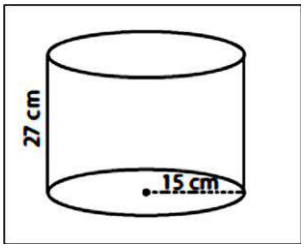
2) Find the volume.



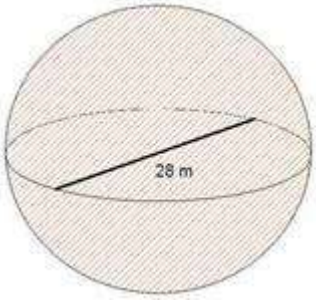
3) Find the volume.



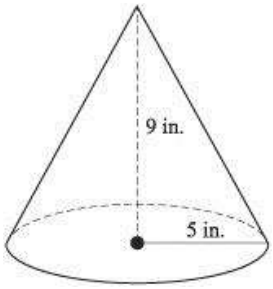
4) Find the volume.

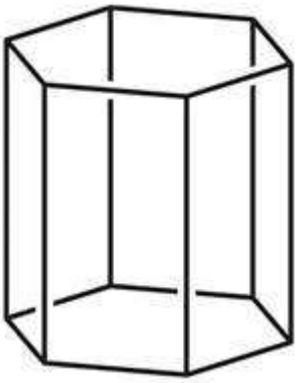


5) Find the volume.



6) Find the volume.





3D Solid Name: _____

Shape of the base: _____

Number of Faces: _____ **Number of Edges: _____**

Number of Corners: _____

Highlight 2 edges that are skew in the diagram.

3D Solid Name: _____

Shape of the base: _____

Number of Faces: _____ **Number of Edges: _____**

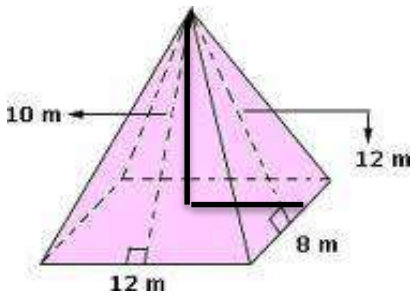
Number of Corners: _____

Highlight two edges that are non-coplanar.

1) A contractor needs to purchase 500 bricks. The dimensions of each brick are 5.1 cm by 10.2 cm by 20.3 cm, and the density of each brick is 1920 kg/m. The maximum capacity of the contractor's trailer is 900 kg. Can the trailer hold the weight of 500 bricks?
Justify your answer.

2) A rectangular-based pyramid and a triangular prism are shown by diagrams below.
Show which has the greater capacity?

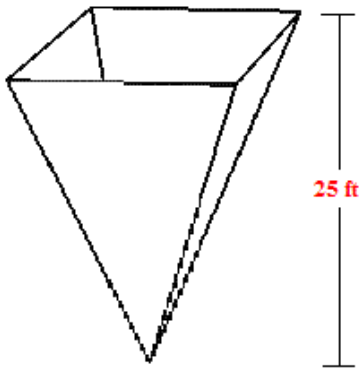
Use 10m as the vertical height!



3) If the volume of this regular pyramid is 300 ft^3, what is the length of one of the sides of its square base?

Circle one:

1. 36 ft
2. 18 ft
3. 6 ft
4. 12 ft



Ans Key

(a) How many times more sunscreen is in Bottle B than in Bottle A?

(b) Which is the better buy?

a. Use the formula for the volume of a pyramid to estimate the amount of sunscreen in each bottle.

***Bottle* A**

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

$$= \frac{1}{3}(2)(1)(6)$$

$$= 4 \text{ in.}^3$$

***Bottle* B**

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

$$= \frac{1}{3}(3)(1.5)(4)$$

$$= 6 \text{ in.}^3$$

∴ So, Bottle B has $\frac{6}{4}$, or 1.5 times more sunscreen than Bottle A.

b. Find the unit cost for each bottle.

***Bottle* A**

$$\frac{\text{cost}}{\text{volume}} = \frac{\$9.96}{4 \text{ in.}^3}$$

$$= \frac{\$2.49}{1 \text{ in.}^3}$$

***Bottle* B**

$$\frac{\text{cost}}{\text{volume}} = \frac{\$14.40}{6 \text{ in.}^3}$$

$$= \frac{\$2.40}{1 \text{ in.}^3}$$

∴ The unit cost of Bottle B is less than the unit cost of Bottle A. So, Bottle B is the better buy.