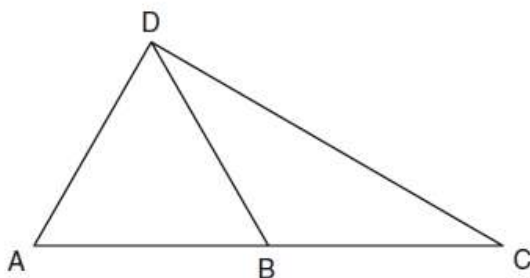


Name: _____

Date: _____

Geometry A U8D3 Pyramids WARM UP

- 1) In the diagram below of $\triangle ACD$, B is a point on \overline{AC} such that $\triangle ADB$ is an equilateral triangle, and $\triangle DBC$ is an isosceles triangle with $\overline{DB} \cong \overline{BC}$. Find $m\angle C$.



- 2) If a regular pentagon is rotated clockwise around its center, the minimum number of degrees it must be rotated to carry the pentagon onto itself is

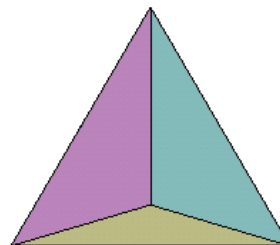
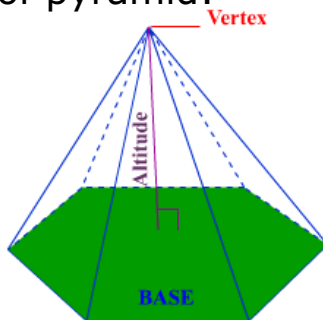
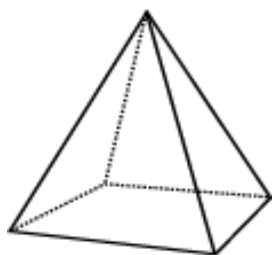
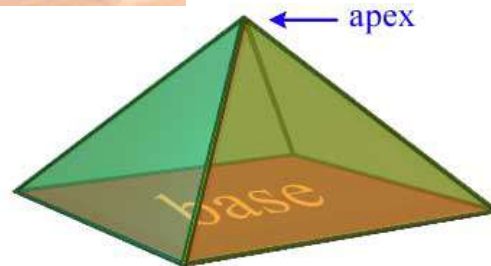
- (1) 54°
- (2) 72°
- (3) 108°
- (4) 360°

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

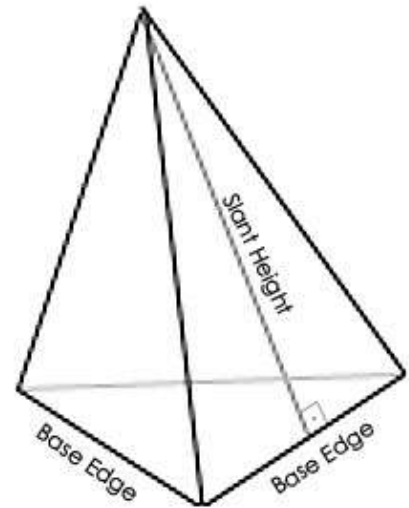
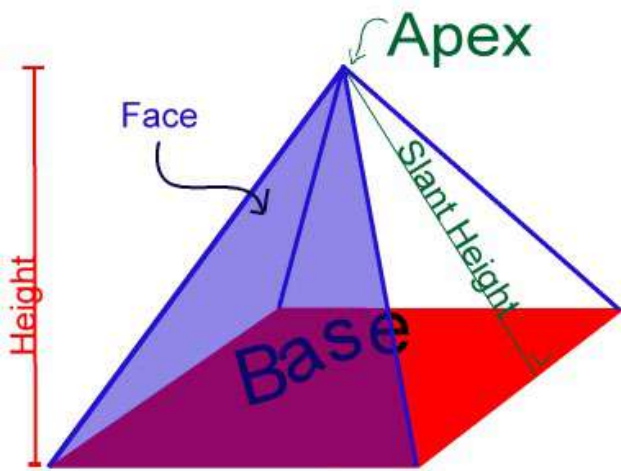


- 3) A pyramid is typically described by the shape of its base. A pyramid is made by connecting a base to an apex

YOU: Name each type of pyramid:



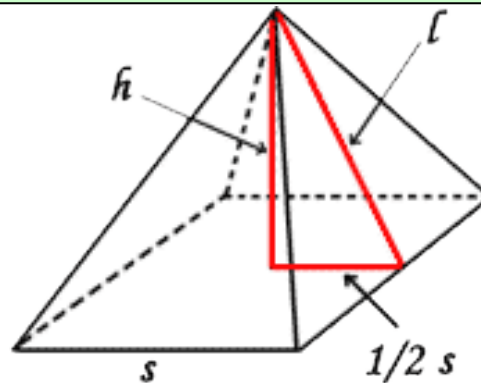
How many faces? _____ How many faces? _____ How many faces? _____



Parts of a pyramid

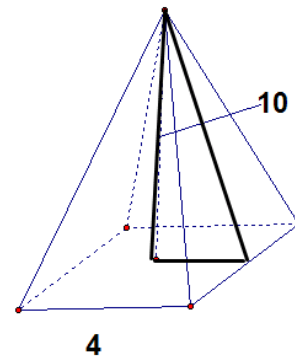
To find slant height (l) remember to use Pythagorean Theorem

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



Example:

Calculating Slant height:



Name: _____

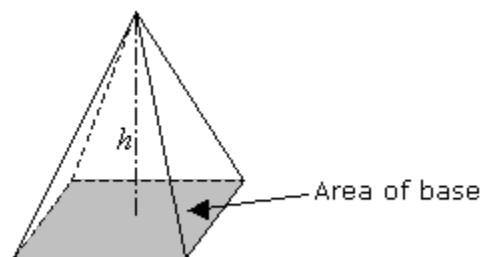
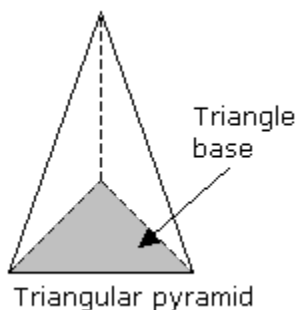
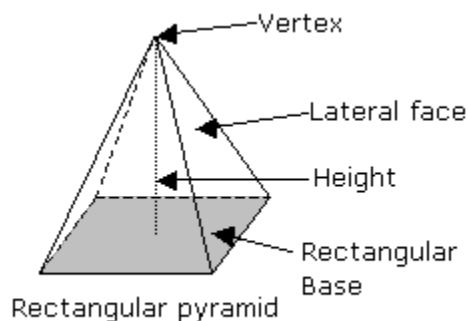
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Geometry A U8D3 Pyramids Volume Notes

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.

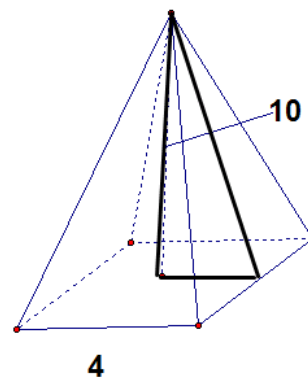
Examples:



The volume of a square pyramid is given by the formula:

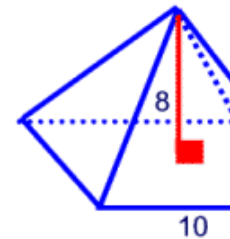
$$\text{Volume of pyramid} = \frac{1}{3} (\text{Area of base} \times \text{height})$$

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



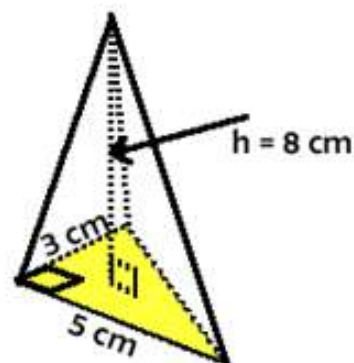
You Try!

A regular pyramid is shown at the left. Find the volume of the pyramid to the nearest cubic unit.

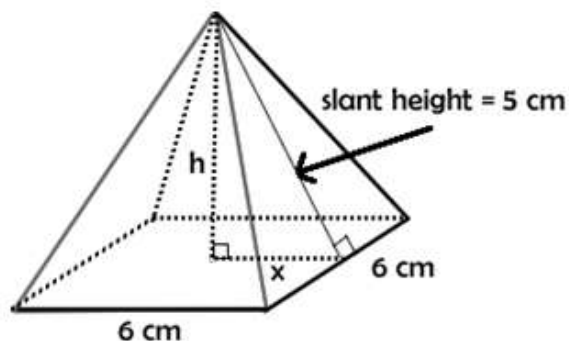


The volume of a **triangular pyramid** is given by the same formula:

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

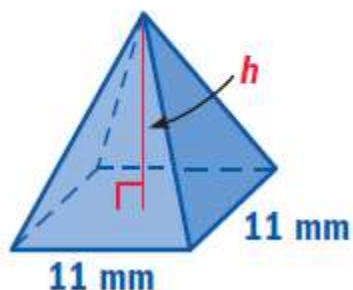


Apply the concept of slant height to help find the volume of the pyramid



Find the height of the pyramid below.

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



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.

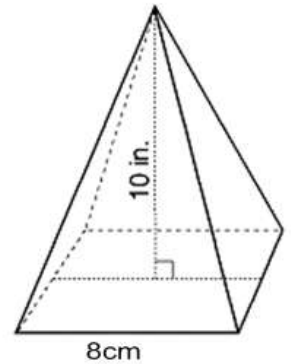


C) Which bottle is the better buy?

D) As Janelle is about to make her purchase, Evan finds that Bottle C is on sale for \$13.20. Evan thinks Bottle C is the best buy. Is he right?



4) a) Draw and label a net of this square pyramid in cm. (hint: you will need to find the slant height!) **Note: the different units!**



b) Find the area of each lateral face and the base.

c) Calculate the total surface area of this pyramid.
pyramid.

Round to nearest square cm.

d) Calculate the volume that the

Round to nearest cubic cm.

e) 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 U8D3 Pyramids HOMEWORK

- 1) **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?**

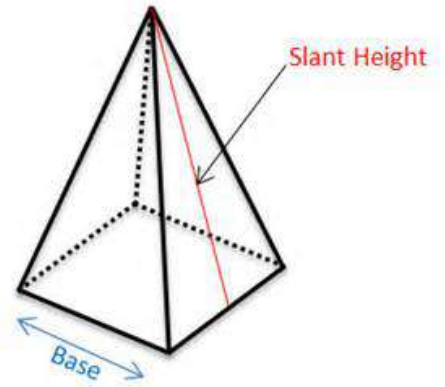
A) How many cubic inches of clay will he need?

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?

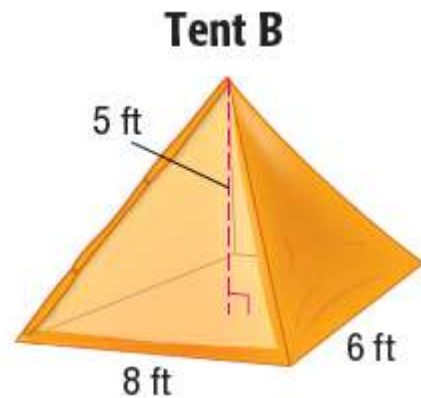
D) How much will he spend on the clay for the project?

- 2) A marble monument is in the shape of a square pyramid. The side length of the base is 5 feet. The slant height of the pyramid is 5 feet.
- a) Find the volume of the pyramid.

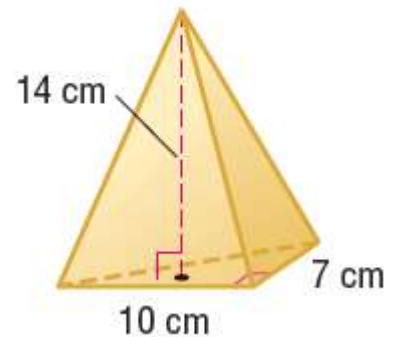


- b) Use the fact that 1 cubic foot of marble weighs about 170 pounds. To the nearest pound, how much does the monument weigh? Explain your reasoning.

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



- 4) Find the volume of the pyramid. Round to the nearest tenth if necessary.



Name _____

Date _____

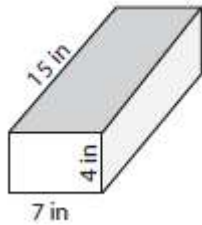
Geometry A QUIZ VOLUME PRISMS

Geometry: Volume of Prisms, Cylinders, Cone & Spheres

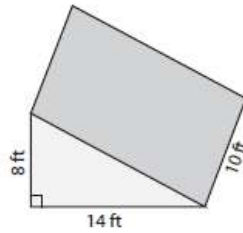
Directions - For each of the following calculators and reference sheets are allowed.

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

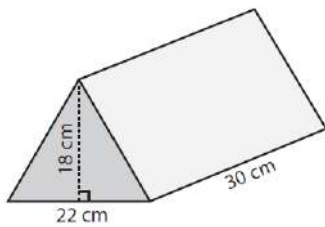
1) Find the volume.



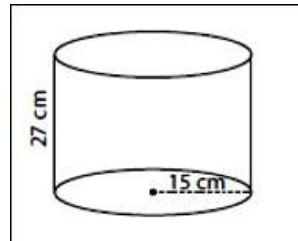
2) Find the volume.



3) Find the volume.



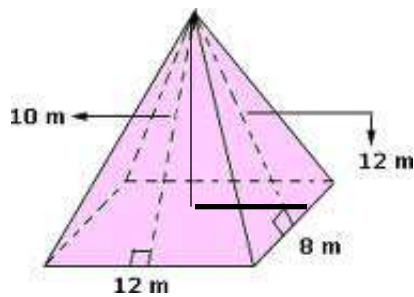
BONUS: Find the volume.



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?

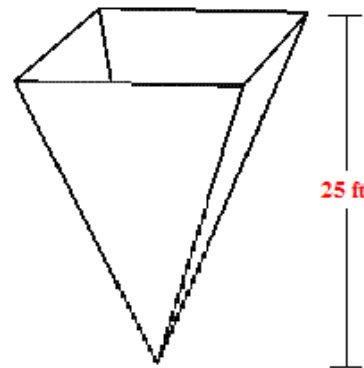
Use 10m as the vertical height!



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

$$\begin{aligned} V &= \frac{1}{3}Bh \\ &= \frac{1}{3}(2)(1)(6) \\ &= 4 \text{ in.}^3 \end{aligned}$$

Bottle B

$$\begin{aligned} V &= \frac{1}{3}Bh \\ &= \frac{1}{3}(3)(1.5)(4) \\ &= 6 \text{ in.}^3 \end{aligned}$$

❖ 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

$$\begin{aligned} \frac{\text{cost}}{\text{volume}} &= \frac{\$9.96}{4 \text{ in.}^3} \\ &= \frac{\$2.49}{1 \text{ in.}^3} \end{aligned}$$

Bottle B

$$\begin{aligned} \frac{\text{cost}}{\text{volume}} &= \frac{\$14.40}{6 \text{ in.}^3} \\ &= \frac{\$2.40}{1 \text{ in.}^3} \end{aligned}$$

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