

Volume

How many ft^3 would you need to fill the Classroom (which is $25\text{ft} \times 40\text{ft}$)

-- We already determined that the area would be 1000ft^2 tiles

The height of the room is 9ft

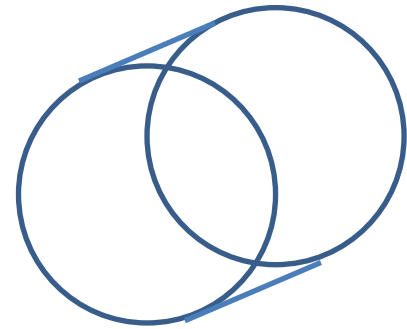
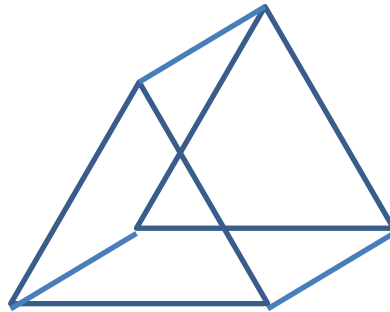
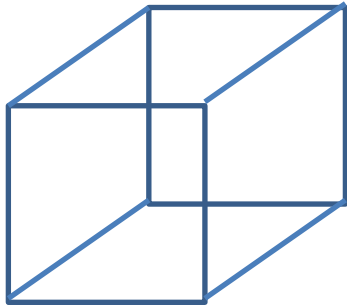
This helps us think about how many stacks of ft^3 we would need:

$$1000 \times 9\text{ft} = 9000 \text{ft}^3$$

There are mainly two (three) families of 3D shapes that we work with

PRISM

A face that is extended through a depth



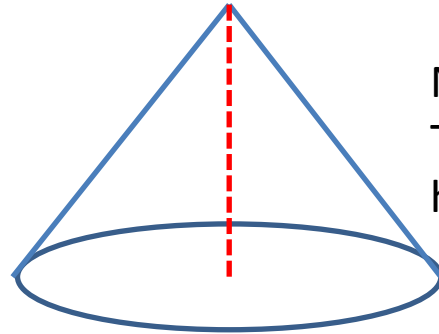
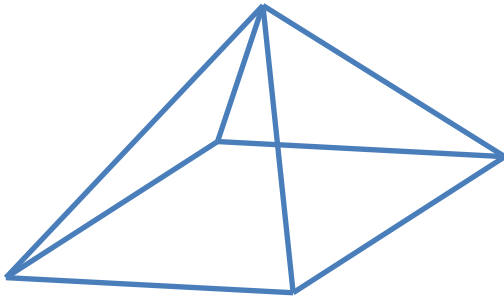
To find the volume of a PRISM

Area of the face x depth



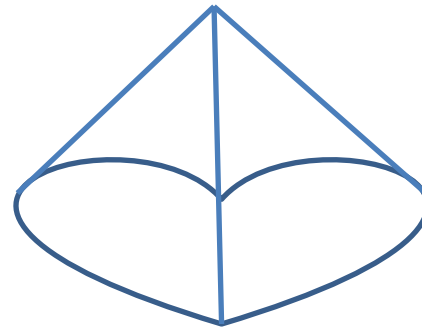
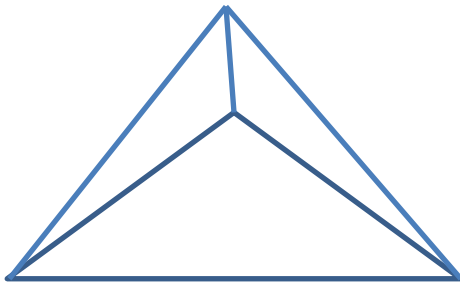
PYRAMIDS

A base that is extended through a height into a single vanishing point



NOTE: You need to multiply
The base area by this red
height (not the slanted one)

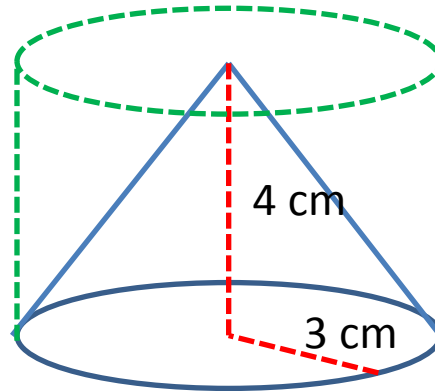
And then divide by 3



Volume of these pyramids are less than their prism counterparts.

How much less? $\frac{1}{3}$

Example: Find the volume of the following pyramid



Area of the base: $3 \times 3 = 9 \text{ cm}^2$ times PI

$$28.26 \text{ cm}^2$$

Base times the depth would give us the volume if it was a

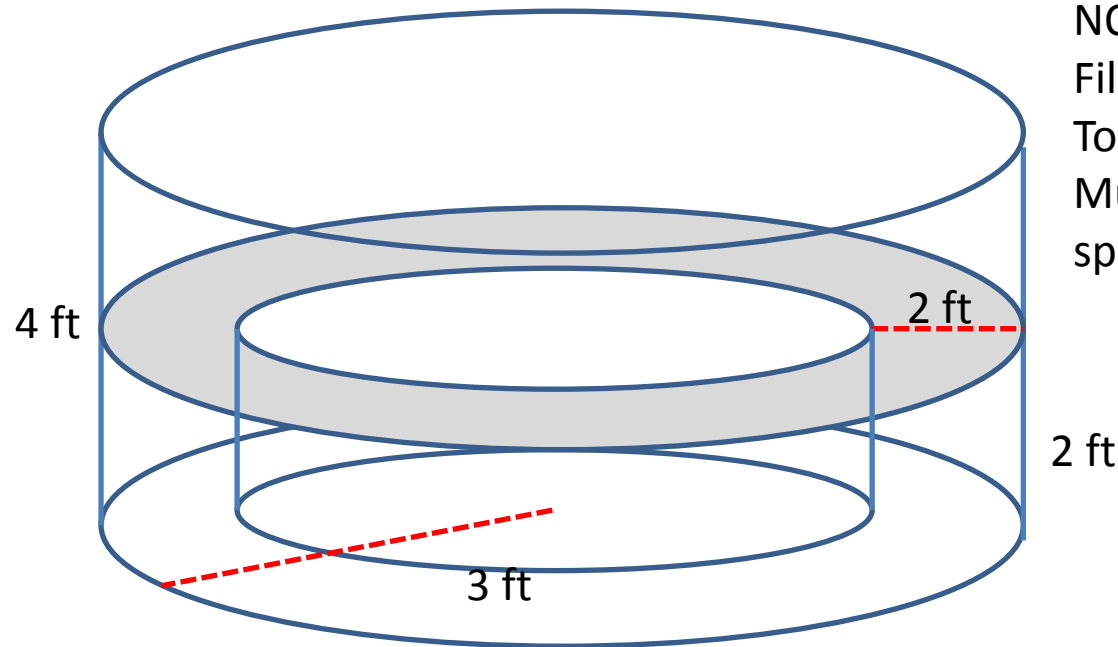
Prism:

$$28.26 \times 4 = 113 \text{ cm}^3$$

But we have a pyramid, so it is $\frac{1}{3}$ of that:

$$113/3 = 36.67 \text{ cm}^3$$

Example: You want to fill a hot tub with water. How much water do you need?



NOTE: You cannot Fill the hot tub to the Top with water. You Must leave $\frac{1}{2}$ a foot of space