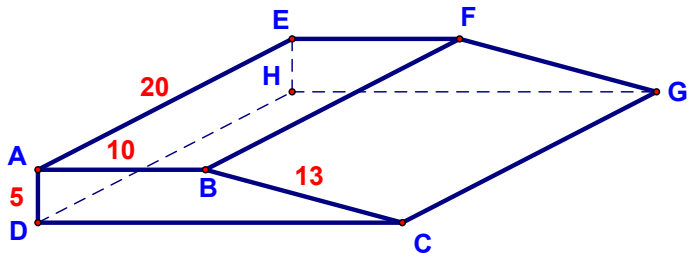
## Volumes of Pyramids & Cones - Lesson 12-5

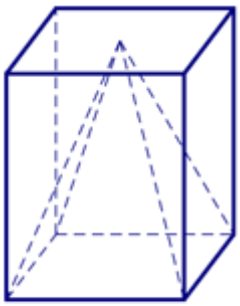
Here's the warmup!

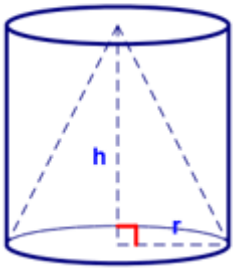



**Find the volume of the solid.**

---

Today we're looking at the volume of pyramids and cones, which is based on the volume of prisms and cylinders:






**The volume of a pyramid (cone) is related to the volume of a prism (cylinder) having the same base and height.**

***Theorems 114 and 115:***

**The volume of a pyramid (cone) is equal to one-third of the product of the area of the base and the height**

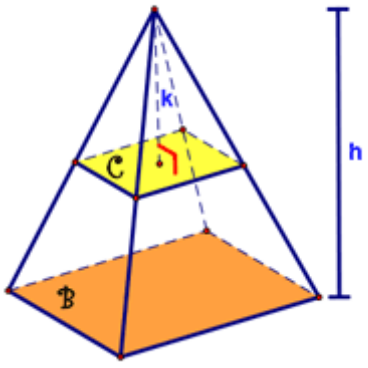
$$V = \frac{1}{3}BH$$

**where B is the area of the base and H is the height of the pyramid (cone).**

See if you can do this example problem!

**If the height of a right pyramid is 21 and the pyramid's base is an equilateral triangle with sides measuring 8, what is the pyramid's volume?**

We should also look at an interesting ratio:




***Theorem 116***

**In a pyramid or a cone, the ratio of the area of a cross section to the area of the base equals the square of the ratio of the figures' respective distances from the vertex.**

$$\frac{C}{B} = \left(\frac{k}{h}\right)^2$$

**where C is the area of the cross section, B is the area of the base, k is the distance from the vertex to the cross section, and h is the height of the pyramid or cone.**

This theorem isn't really that complicated...to find the ratio of the cross sections, just find the ratio of the heights.