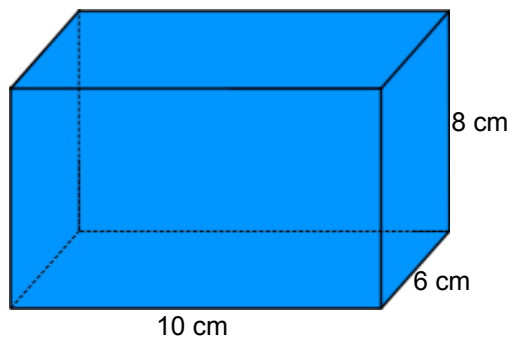


14.5 Volume/Temperature

How do we find the volume of a solid figure?

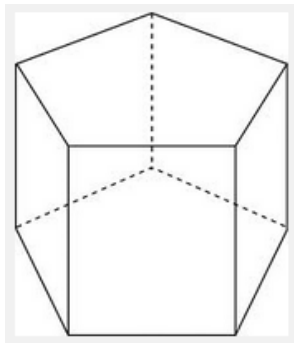
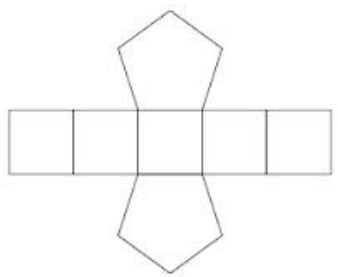


Let A = area of base

P = perimeter of base

h = height of solid

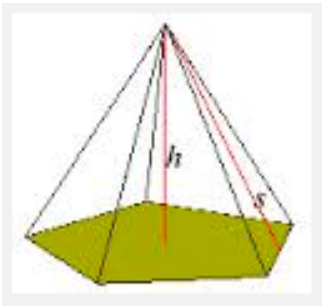
Right Prism



$$V = Ah$$

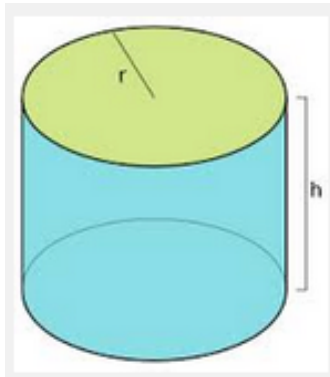
Let s = slant height

Right Pyramid

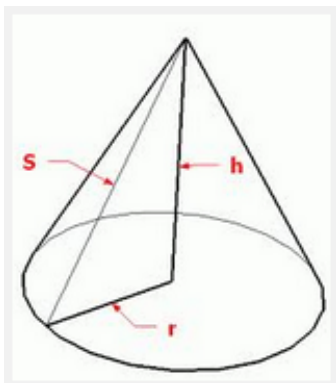


$$V = (Ah)/3$$

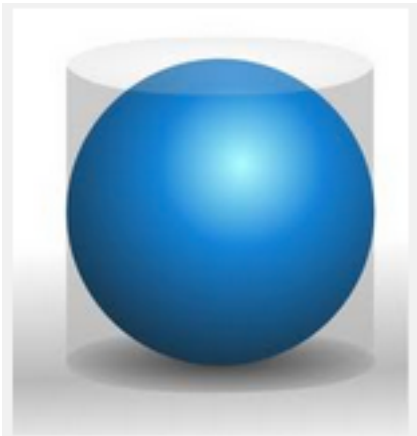
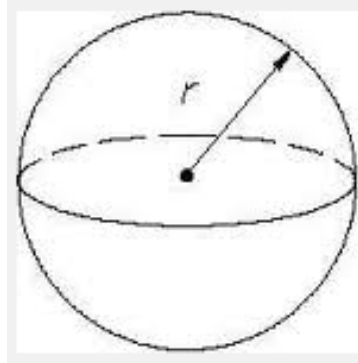
Right Circular Cylinder



Right Circular Cone



Sphere



The ratio of volume of the sphere to the volume of the smallest cylinder containing the sphere is still $2/3$!!!

Math4020

Scaling Worksheet

Cube

Side Length	Surface Area	Volume
1 m		
2 m		
3 m		
5 m		
7 m		
10 m		

Sphere

Radius	Surface Area	Volume
1 ft		
2 ft		
3 ft		
5 ft		
6 ft		
10 ft		

Rt. Circular Cylinder

Radius	Height	Surface Area	Volume
1 in	3 in		
2 in	6 in		
3 in			
5 in			
8 in			
10 in			

Scaling Relationship:

If we double the lengths in a solid,
 We multiply the surface area by _____
 We multiply the volume by _____

If we triple the lengths in a solid,
 We multiply the surface area by _____
 We multiply the volume by _____

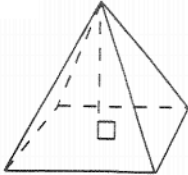
Rt. Circular Cone

Radius	Height	Surface Area	Volume
1 unit	2 units		
2 units	4 units		
3 units			
5 units			
9 units			
10 units			

If we multiply the lengths in a solid by 5,
 We multiply the surface area by _____
 We multiply the volume by _____

If we multiply the lengths in a solid by n,
 We multiply the surface area by _____
 We multiply the volume by _____

The square pyramid drawn below is a scale model of the package for a new



scale model:
 height = 8 in
 apex located over center of square base
 side of square base = 5 in

a) What is the volume of the scale model?

Volume: _____

b) What is the surface area of the scale model?

Surface Area: _____

c) Suppose the actual package will have a height 32 inches. What will the surface area and volume be for the actual package?

Surface Area: _____

Volume: _____

The two commonly used systems of temperature, Celcius and Fahrenheit, are not as simply related.

The problem is this: A basic principle of Celcius is that the freezing point of water is zero. In Fahrenheit, that freezing point is 32°. To make things even harder, the Fahrenheit and Celcius degrees are not the same size -- they represent a different amount of temperature change.

The boiling point of water is set at 100° C. In Fahrenheit, the boiling point of water is 212° F. Then a Celcius degree is defined as 1/100 of the change from freezing to boiling, and Fahrenheit degrees are defined similarly.

1. Which degree represents a larger change in temperature, a Celcius degree or a Fahrenheit degree?
2. How would you convert from "Celcius degrees above freezing" to "Fahrenheit degrees above freezing".
3. Turn your answer to #2 into a formula that takes the temperature C in Celcius, and returns the temperature F in Fahrenheit.
4. Using any reasoning you like, produce a formula that takes the temperature F in Fahrenheit and returns the temperature C in Celcius.
5. There is one temperature that is the same in both systems. Use one of your formulas to find it.