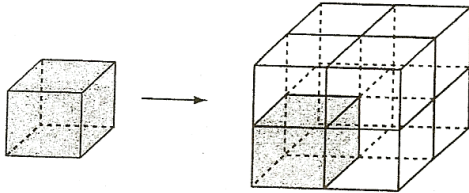


Names: \_\_\_\_\_ Period: \_\_\_\_\_ Date: \_\_\_\_\_  
Biology ~ Mr. Croft

## Cell Size & Surface Area to Volume Ratio

**30 Points**

Study the picture and answer the questions that follow.



Each side of the cube on the left measures 1 cm.

### **Useful Equations:**

Surface area:  $6 \times L \times W$       Units:  $\text{cm}^2$

Volume:  $L \times W \times H$       Units:  $\text{cm}^3$

Surface Area to Volume Ratio = surface area/volume

1. Calculate the surface area, volume, and surface area to volume ratio of the cube on the left.  
Surface Area = \_\_\_\_\_  $\text{cm}^2$     Volume = \_\_\_\_\_  $\text{cm}^3$     Ratio = \_\_\_\_:\_\_\_\_
2. Suppose you double the length, height, and width of a cube as shown in the picture on the right. Calculate the surface area and volume of the new cube. Then find the lowest ratio of surface area to volume.  
Surface Area = \_\_\_\_\_  $\text{cm}^2$     Volume = \_\_\_\_\_  $\text{cm}^3$     Ratio = \_\_\_\_:\_\_\_\_
3. Explain what the surface area to volume ratio means. Which cube has a larger surface area to volume ratio?
4. Calculate the surface area, volume, and ratio of a cube that is half as big as the first cube.  
Surface Area = \_\_\_\_\_  $\text{cm}^2$     Volume = \_\_\_\_\_  $\text{cm}^3$     Ratio = \_\_\_\_:\_\_\_\_
5. Conclusion: as the size of a cube increases, what happens to the surface area to volume ratio?
6. If you were a cell, would you rather be small, medium, or large in size? Explain!