



Geometry of Marine Invertebrates SA:V Questions

As you watch the videos, answer the questions below.

1. What is a ratio?

2. What happens to the SA:V (Surface Area to Volume Ratio) as you increase the size/volume of a shape?

3. Why might SA:V be an important ratio in cells?

4. Here are formulas for surface area and volume of a rectangular prism. Use these to fill out the chart below, then answer the next questions about that chart.

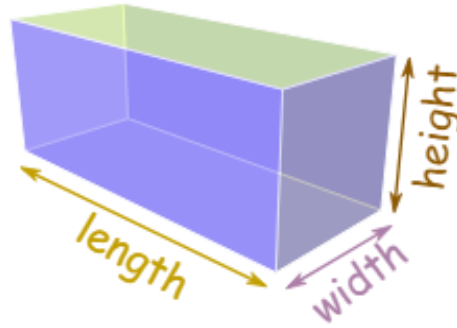
Surface Area of a rectangular prism:

$w = \text{width}, l = \text{length}, h = \text{height}$

$$SA = 2lw + 2wh + 2lh$$

OR

$$2(lw + wh + lh)$$



Volume of a rectangular prism:

$$V = lwh \text{ OR } l \times w \times h$$

Fill this out:

Shape	l	w	h	SA	V	SA:V
1	4	4	4			
2	8	2	4			
3	16	2	2			

5. What is the same about these prisms?

6. What is different about these prisms?

7. Explain *why* the one with the highest SA:V has the highest ratio.

8. From Ms. Almasi's video and the Khan video, what kinds of things need to cross the cell membrane?

9. Please explain why, in your words, the Surface Area to Volume ratio is important for cells.

10. What was the surface area of the cereal box in the Khan video?

11. What was the radius of the sphere in the Khan video?

12. What was the volume of that sphere?

13. Why is SA:V important for marine invertebrates (animals without backbones)?

OPTIONAL: If you did the practice problems in Khan Academy for the Cell SA:V, please insert or paste the screenshot when you finish the activity below.