

## SURFACE AREA TO VOLUME RATIO

- All organisms must exchange materials with their \_\_\_\_\_ through membranes. Because their requirements are greater, large organisms must exchange \_\_\_\_\_ material than small organisms.
- As any object gets larger, its volume increases more rapidly than its surface area.

<b>Side Length</b>	<b>Surface Area</b>	<b>Volume</b>	<b>S.A. to Volume Ratio</b>
1 cm	6 cm <sup>2</sup>	1cm <sup>3</sup>	6
10 cm	600 cm <sup>2</sup>	1000cm <sup>3</sup>	0.6

- In the table, while the volume increases 1000 times, the surface area only increases \_\_\_\_\_ times.
- Very small organisms have the most effective materials exchange through membranes by having a \_\_\_\_\_ shape.
- One way that larger organisms overcome the problem is to change \_\_\_\_\_. For example, flatworms and algae are flattened in shape for greater surface area.