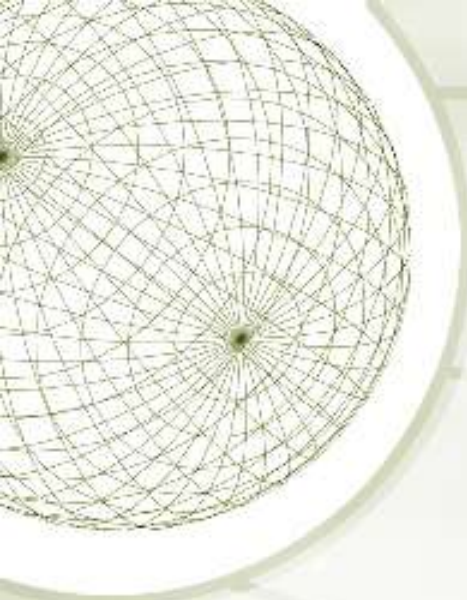
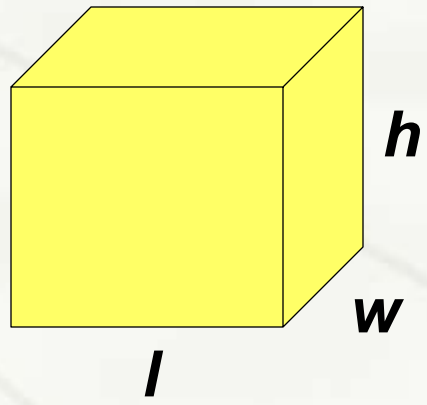


Geometry

Volume of Rectangular and Triangular Prisms

Volume

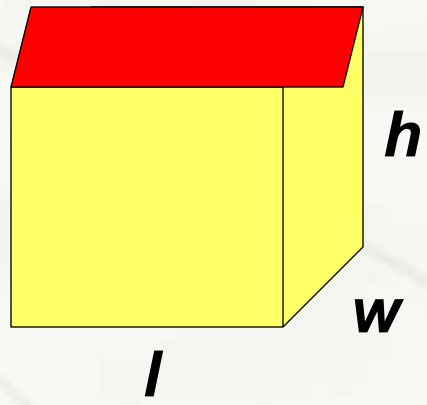
- **Volume – the amount of space occupied by an object.**



Example:
The VOLUME of this cube is all the space contained by the sides of the cube, measured in cube units (units^3).

Volume

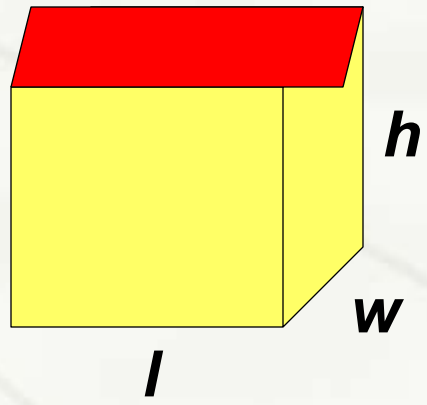
- **Volume** - To calculate the volume of a prism, we first need to calculate the area of the BASE of the prism.



Example: The AREA of the base of this rectangular prism is l x w.

Volume

- **Volume** - Once we know the area of the base, this is then multiplied by the height to determine the VOLUME of the prism.

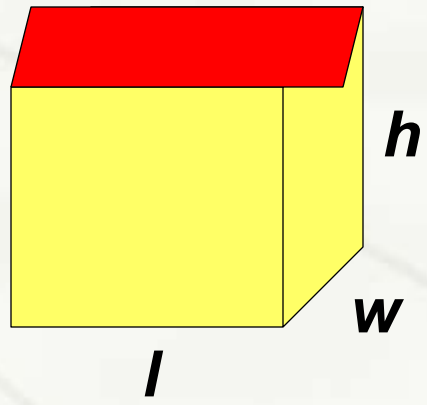


We find that:

Volume = Area of Base x Height

Volume = (l x w) x h

Volume (rectangular prism)



Formula:

$V = B \times h$

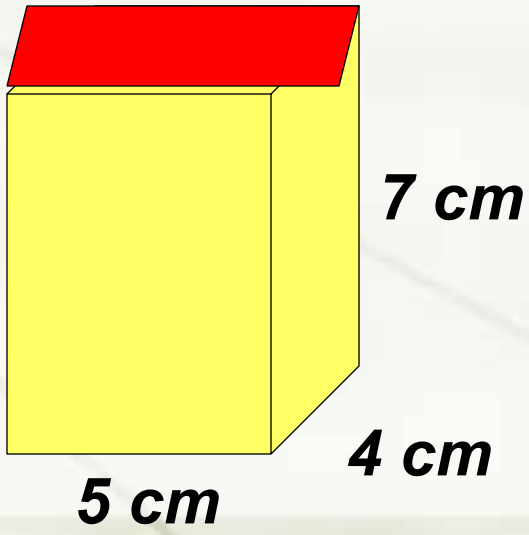
$V = l \times w \times h$

Volume

- Find the volume of this prism…

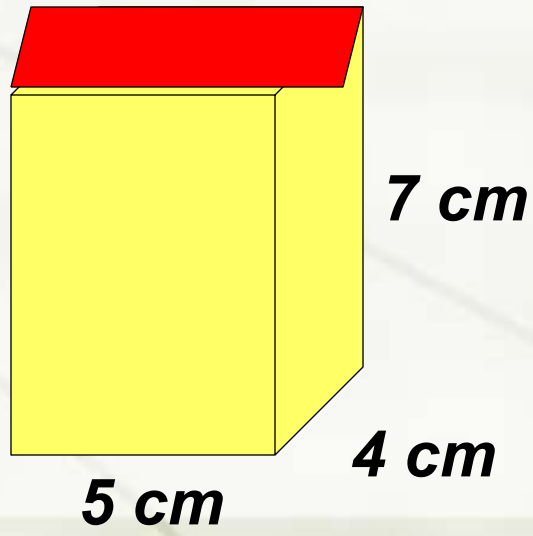
Formula:

$$V = B \times h$$
$$V = l \times w \times h$$



Volume

- Find the volume of this prism…



Formula:

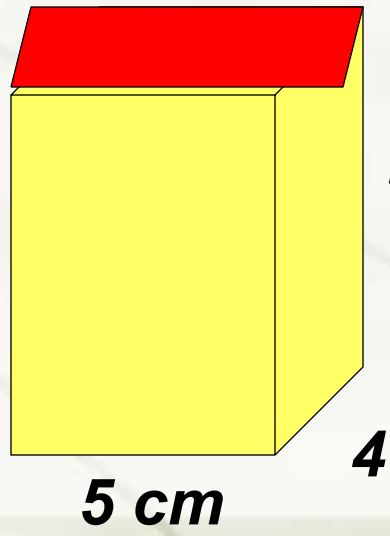
$$V = B \times h$$

$$V = l \times w \times h$$

$$V = 5cm \times 4cm \times 7cm$$

Volume

- Find the volume of this prism…



Formula:

$$V = B \times h$$

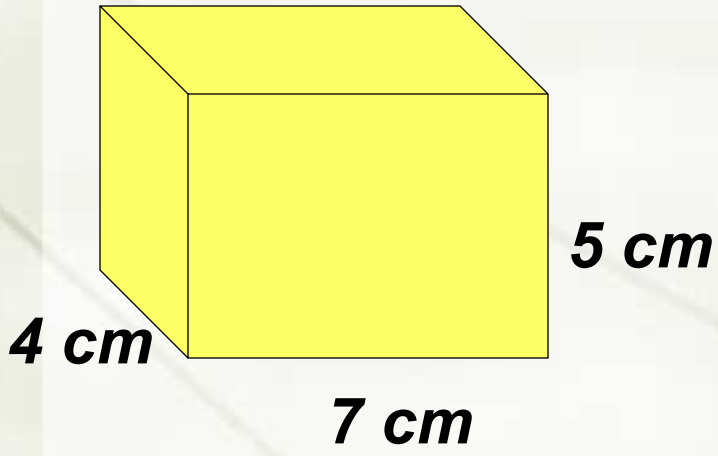
$$V = l \times w \times h$$

$$V = 5cm \times 4cm \times 7cm$$

$$V = 140cm^3$$

Volume

- Does it matter which side is the base?



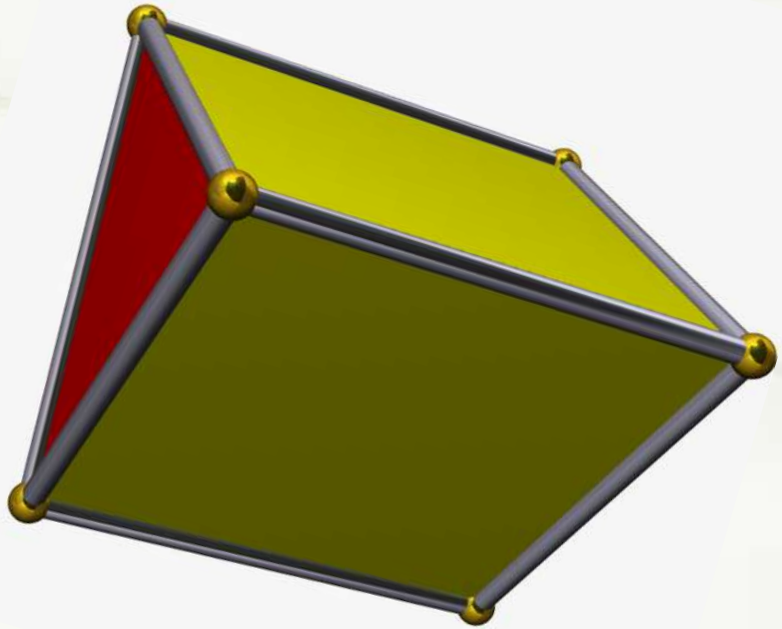
Formula:

$$V = B \times h$$

$$V = l \times w \times h$$

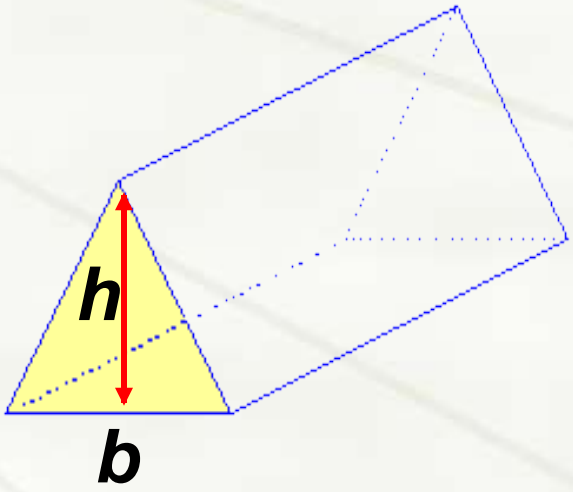
$$V = 7cm \times 4cm \times 5cm$$

- Volume of a Triangular Prism



Volume

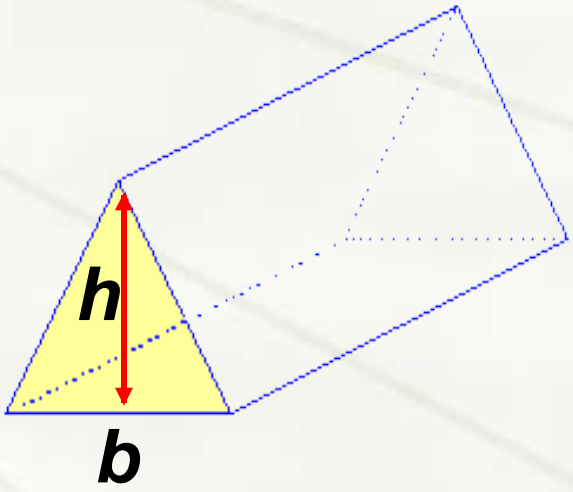
- The same principles apply to the triangular prism.



To find the volume of the triangular prism, we must first find the area of the triangular base (shaded in yellow).

Volume

- To find the area of the Base…

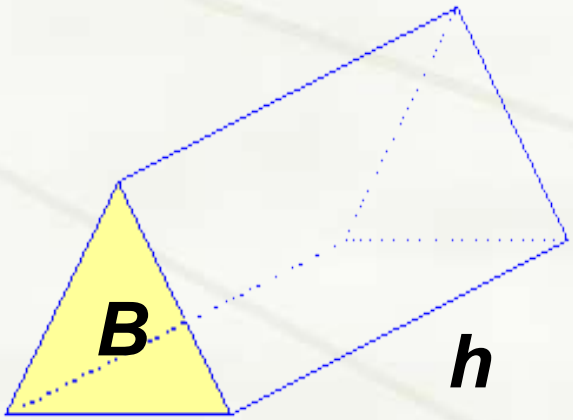


$$\text{Area (triangle)} = \frac{b \times h}{2}$$

This gives us the Area of the Base (B).

Volume

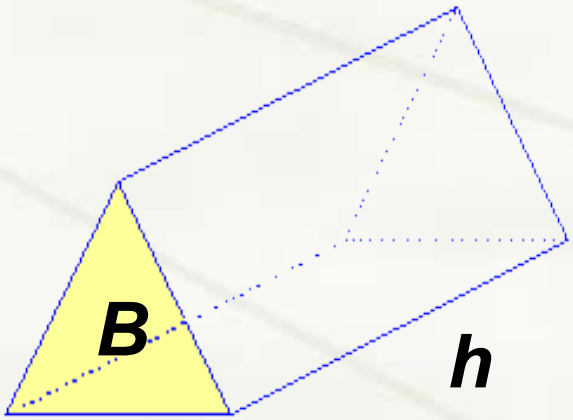
- Now to find the volume…



We must then multiply the area of the base (B) by the height (h) of the prism.

This will give us the Volume of the Prism.

- Volume of a Triangular Prism



Volume (triangular prism)

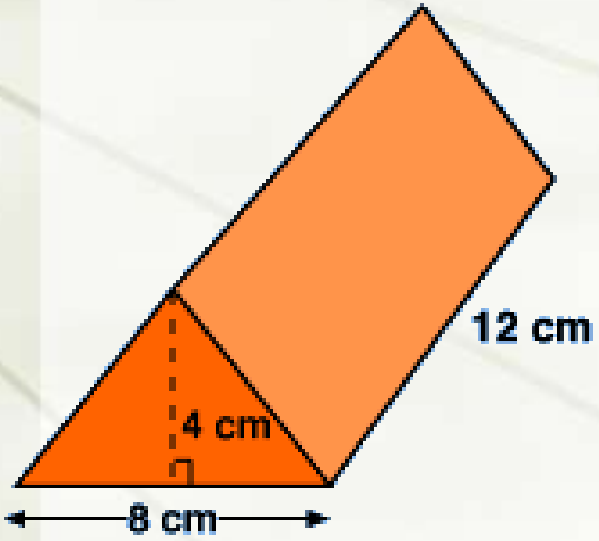
$$V = B \times h$$

Volume

- Together…

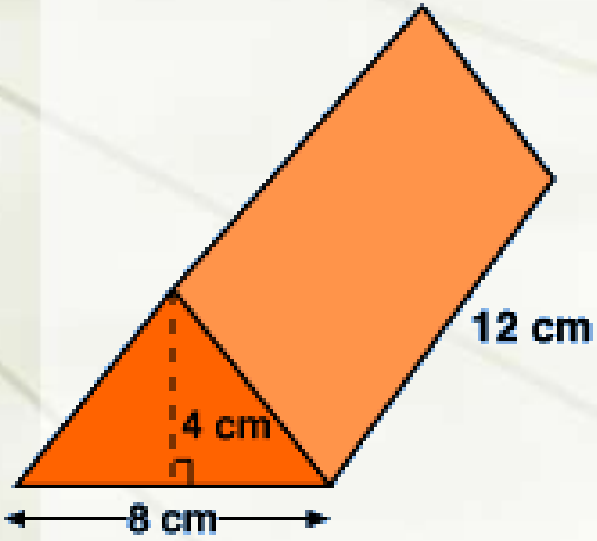
Volume

$V = B \times h$



Volume

- Together…



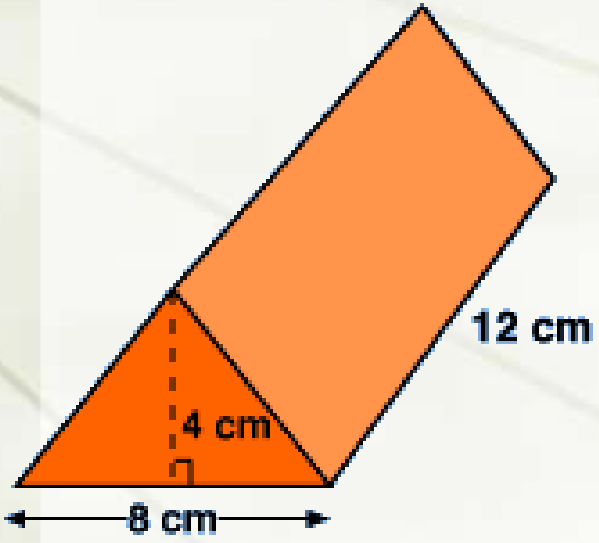
Volume

$$V = B \times h$$

$$V = \frac{(8 \times 4)}{2} \times 12$$

Volume

- Together…



Volume

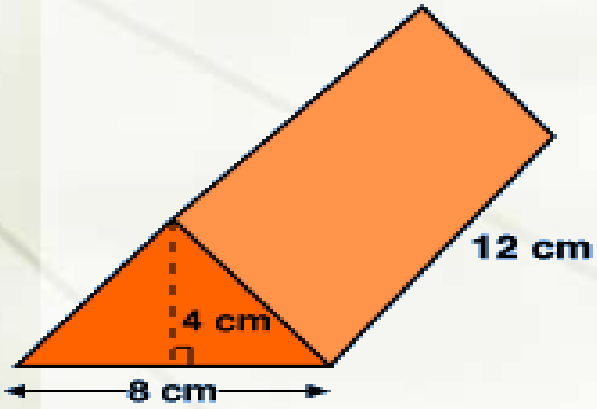
$V = B \times h$

$V = \frac{(8 \times 4)}{2} \times 12$

$V = 16 \times 12$

Volume

- Together…



$$Volume$$

$$V = B \times h$$

$$V = \frac{(8 \times 4)}{2} \times 12$$

$$V = 16 \times 12$$

$$V = 192\ cm^3$$

Volume

- Your turn...

Find the Volume