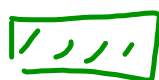


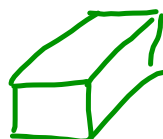
Math 10  
Areas, volumes, Surface  
Area  
Economy Rate.

Area  $\rightarrow$  2-D



$\text{cm}^2$     $\text{mm}^2$   
 $\text{m}^2$

Volume  $\rightarrow$  3-D



$\text{cm}^3$   
 $\text{m}^3$

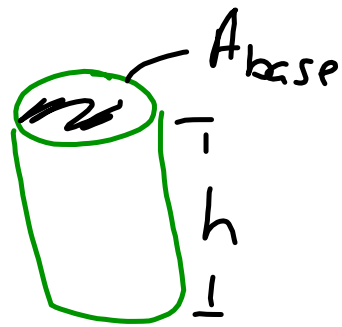
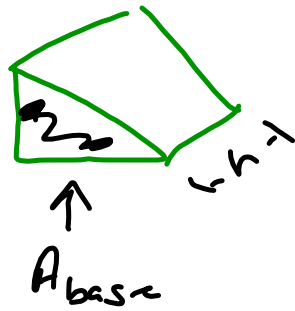
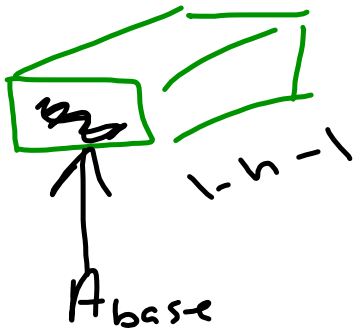
$\text{mm}^3$

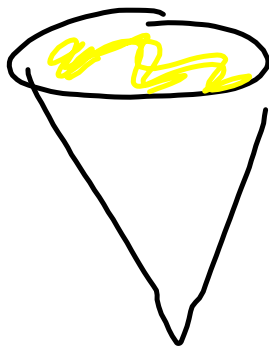
## Volume Calculation

$$V = A_{\text{base}} \times h$$

How far you  
slide  $A_{\text{base}}$ .

Any face on a  
3-D shape that  
can slide through  
the rest of the  
shape without changing  
its shape.





Can't use

$$V = A_b \times h$$

as the circle  
will not maintain  
its shape throughout

If you can't use  $V = A_{\text{base}} \times h$   
go to your formula sheet and  
get the formula from there.

Surface Area  $\rightarrow$  The sum of all the areas of the faces of a 3-D shape.



$$SA = 6 + 6 + 15 + 15 + 10 + 10 = 62 \text{ m}^2$$

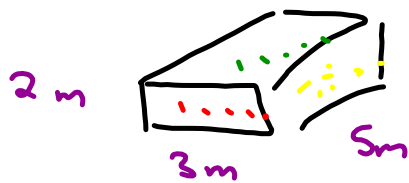
Economy Rate:

$$ER = \frac{\text{volume}}{\text{Surface Area}}$$

← No units.



Example:



$$SA = 62 \text{ cm}^2$$

$$6 + 6 + 15 + 15 + 10 + 10$$

$$V = A_{\text{base}} \times h$$

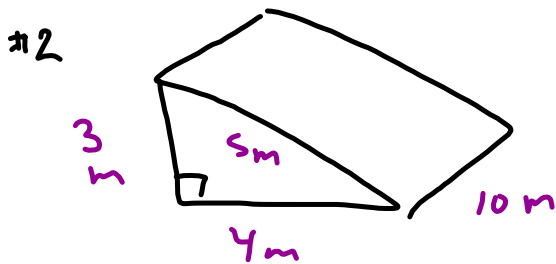
$$= (2 \times 3) \times 5$$

$$= 6 \times 5$$

$$= 30 \text{ m}^3$$

$$ER = \frac{V}{SA}$$

$$= \frac{30}{62} = 0.48$$



$$SA = \frac{3(4)}{2} + \frac{3(4)}{2} + 10(5) + 10(4) + 10(?) = 132 \text{ m}^2$$

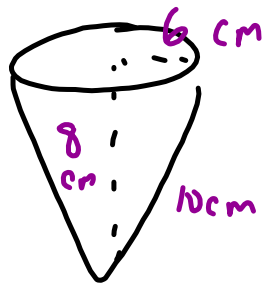
$$V = A_b \times h$$

$$= \frac{3(4)}{2} \times 10 = 60 \text{ m}^3$$

$$ER = \frac{V}{SA} = \frac{60}{132}$$

$$= 0.45$$

#3



$$ER = \frac{Vol}{SA}$$

$$= \frac{301.44}{301.44}$$

$$= 1$$

Cone

$$V = \frac{A_{base} \times h}{3} = \frac{\pi r^2 h}{3}$$

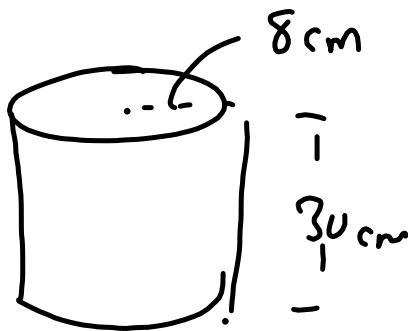
$$= \frac{301.44 \text{ cm}^3}{3}$$

$$SA = \pi r^2 + \pi r s$$

$$= 113.04 + 188.4$$

$$= 301.44$$

#4.



$$ER = \frac{V}{SA}$$

$$= \frac{6028.8}{1909.12} = 3.16$$

$$V = A_b \times h$$

$$= \pi r^2 \times 30$$

$$= \pi 8^2 \times 30$$

$$= 6028.8 \text{ cm}^3$$

$$SA = 2\pi r^2 + 2\pi r h$$

$$= 401.92 + 1507.2$$

$$= 1909.12 \text{ cm}^2$$