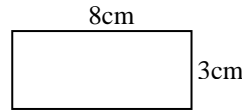


# Perimeter / Area / Volume

**PERIMETER UNITS** mm, cm, m or km

The distance around the outside of a shape is the **perimeter**,

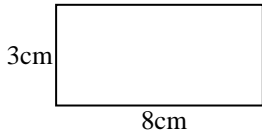


Perimeter  $(3 + 8) \times 2 = 22\text{cm}$

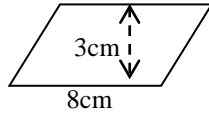
**AREA UNITS** =  $\text{cm}^2$

- Area can be calculated by using a formula

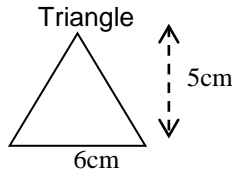
Rectangles and Parallelograms



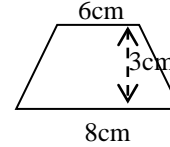
Area = Length x Width  
 $8 \times 3 = 24\text{cm}^2$



Area = (base x height) x  $\frac{1}{2}$   
 $6 \times 5 \times \frac{1}{2} = 15\text{cm}^2$



Trapezium



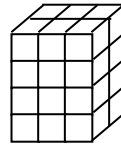
Area =  $\frac{1}{2} (a + b) \times \text{height}$   
 $\frac{1}{2} \times (8 + 6) \times 3 = 21\text{cm}^2$

Top + Bottom  $\div 2 \times \text{height}$

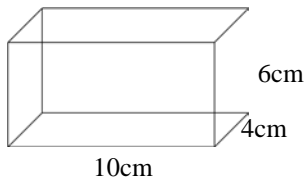
**VOLUME Units** =  $\text{cm}^3$

Volume of a shape is the amount of space inside a 3-D shape. Units =  $\text{mm}^3$ ,  $\text{cm}^3$  or  $\text{m}^3$

- Volume can be calculated by counting cubes  
Volume =  $24\text{cm}^3$   
( $3 \times 4 \times 2$ )

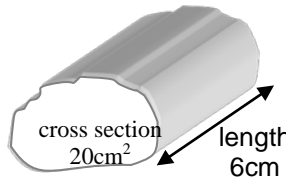


- Cube / Cuboid = Length x width x height



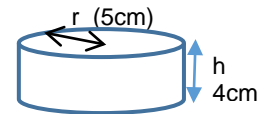
length x width x height  
 $= 10 \times 4 \times 6$   
 $= 240\text{cm}^3$

Prism  
Cross sectional area x length



area x length  
 $= 20 \times 6$   
 $= 120\text{cm}^3$

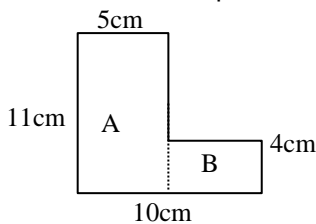
Cylinder  
Area x height



Volume =  $\pi r^2 h$   
 $\pi \times 5^2 \times 4$   
 $= 314\text{cm}^3$

## COMPOSITE SHAPES AREA & PERIMETER

Calculate the area and perimeter of this shape



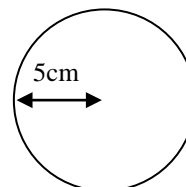
Perimeter =  $10 + 11 + 5 + 7 + 5 + 4$   
 $= 42\text{cm}$

Area  
Area A =  $11 \times 5 = 55\text{cm}^2$   
Area B =  $5 \times 4 = 20\text{cm}^2$   
Total Area =  $75\text{cm}^2$

## CIRCLES

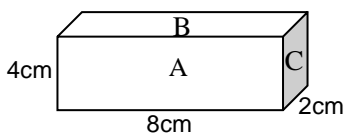
- Perimeter of a circle is called Circumference  $2\pi r$
- Area of a circle =  $\pi r^2$
- ( $\pi = 3.14$  or use your calculator)

Circumference =  $2 \times \pi \times 5 = 31.4\text{cm}$   
Area =  $\pi \times 5^2 = 78.5\text{cm}^2$



## SURFACE AREA

e.g. find the area of the 6 faces of a cube



Area face A =  $8 \times 4 = 32\text{cm}^2$  There are two A faces  $2 \times 32 = 64\text{cm}^2$   
Area face B =  $2 \times 8 = 16\text{cm}^2$  There are two B faces  $2 \times 16 = 32\text{cm}^2$   
Area face C =  $2 \times 4 = 8\text{cm}^2$  There are two C faces  $2 \times 8 = 16\text{cm}^2$   
**Total Surface area of all 6 faces =  $112\text{cm}^2$**