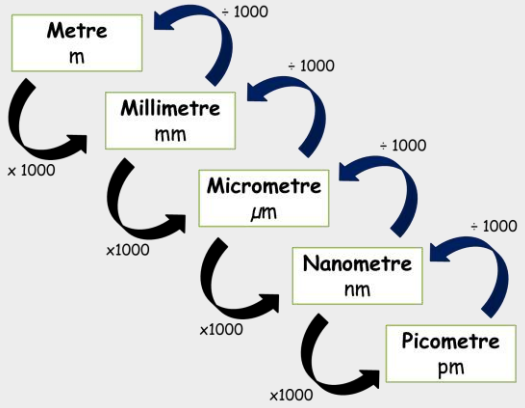
Converting Units



Percentage Change

$$\frac{\text{Final value} - \text{starting value}}{\text{starting value}} \times 100$$

Waist to Hip ratio

Waist:Hip or Waist/Hip

BMI:

$$BMI = \frac{\text{Mass (in Kilograms (Kg))}}{\text{Height}^2 \text{ (in Metres (m))}}$$

BMI	Considered
Below 18.5	Underweight
18.5 to 24.9	Healthy Weight
25.0 to 29.9	Overweight
30 or higher	Obese

e.g. a person with mass 78kg and height 1.80m has a BMI of
$78 \div 1.8^2$
$78 \div 3.24$
$= 24.07$
They are in a healthy range.

Estimating Population size

$$\text{Population size} = \text{Number of organisms in all quadrats} \times \frac{\text{Total size of area where organism lives}}{\text{Total area of quadrats}}$$

Standard form: Higher

For numbers greater than 0, count how many times you need to move the unit to the right until you form a number between 1 and 10.

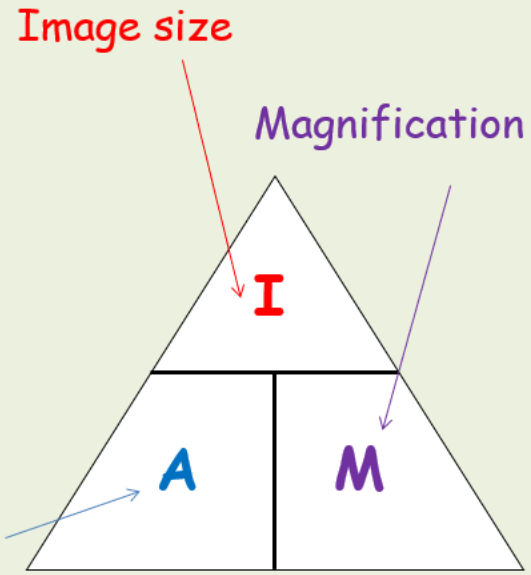
Write this number as the power of 10, insert the decimal point and remove the zeros.

1 2 3 4 5 6

$1150000 = 1.15 \times 10^6$

Using a microscope

	How to Calculate	Units
Magnification	Image size ÷ actual size	
Actual Size	Image size ÷ magnification	mm, etc.
Image Size	Actual size x magnification	mm, etc.



Surface area to Volume ratio

SA:V or Surface area/Volume

Cardiac Output

Cardiac output (litres/min) = stoke volume (litres/beat) x heart rate (beats/min)

SEPARATE ONLY:

Energy Transfer in Ecosystems

Concentration

Fick's Law

Inverse Square Law

Fick's Law

Rate of diffusion α $\frac{1}{\text{thickness of the membrane}}$

Rate of diffusion α $\frac{\text{surface area x concentration}}{\text{thickness of membrane}}$

Concentration = $\frac{\text{mass of solute (g)}}{\text{volume of solution in dm}^3}$

Energy transfers in ecosystems

$\frac{\text{Energy transferred to biomass}}{\text{Total energy supplied to organism}}$ x 100

Inverse square law

To calculate a new light intensity (I_{new}) when the distance of a light source changes (from d_{orig} to d_{new}), we use:

$$I_{new} = \frac{I_{orig} \times d^2_{orig}}{d^2_{new}}$$