Standard form:

$$a \times 10^n$$

⌡ Where a one digit.

⌡ And n +ve ⟵

         -ve ⟶

Simple Interest:

$$I = \frac{R}{1}$$

Where   I : Interest.

            P: Amount of Money.

            T: Time Yearly.

            R: Rate.

Compound Interest:

$$T = P(1+R/100)^n$$
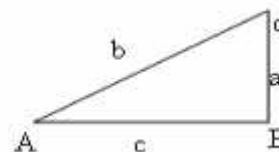
T: Total Amount of Money.

P: Amount of Money.

R: Rate.

n: Time Yearly.

Shape	Area	Perimeter
Rec	L x W	2(L + W)
Square	L x W	4 L
Parallel	B x h	Sum of side
Trap	1/2 (a + b)h	Sum of side
Kite	1/2 D_1 x D_2	Sum of side
Triangle	1/2 B x h	Sum of side
	1/2 a x b x sin t	
Circle	r^2	2 r

In a right angle triangle

⌡ SOH/ CAH/ TOA

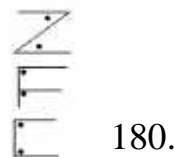⌡ $b^2 = a^2 + c^2$ (Pythagoras Therom)

Parallel lines

⌡ Two alternate equal angles.

⌡ Two corresponding equal angles.

⌡ Two interior angles are equal to   180.

In Circle

⌡ radius tangent

⌡ 2 circular angle equal

⌡ Central angle = 2 circles

⌡ 2 tangent are equal

⌡ Angle opposite Diameter = 90º

- In cyclic opposite angle = 180º
- Arc length = $\frac{G}{3} \times 2\pi r$
- Sector area = $\frac{G}{3} \times \pi r^2$

Volume = A x h
A = Base area.

Sum of interior = (n-2)180
Each angle in regular = $\frac{(n-2)1}{n}$
Sum of exterior = 360º

In similarity
- Angles equal
- Sides proportional (equal ratio)
- $\frac{A_1}{A_2} = (\frac{S_1}{S_2})^2$
- $\frac{V_1}{V_2} = (\frac{S_1}{S_2})^3$

Direct Variation
$$x \propto y \longrightarrow x = k\,y$$

Inversely Variation
$$x \propto \frac{1}{y} \longrightarrow x = \frac{k}{y}$$

Indices
$$a^n \times a^m = a^{n+m}$$
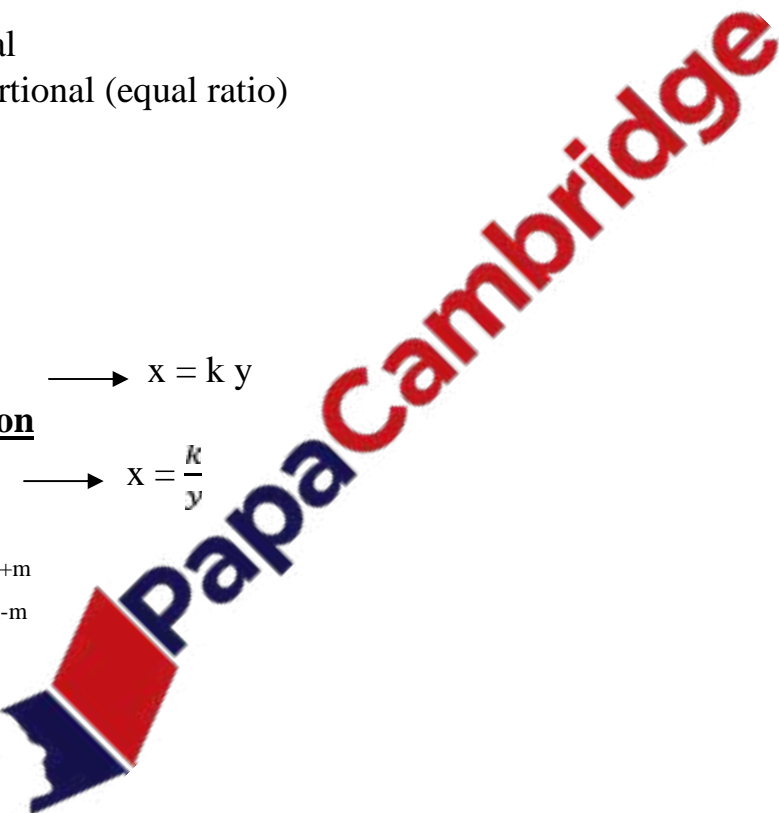$$a^n \div a^m = a^{n-m}$$
$$(a^n)^m = a^{nm}$$
$$\sqrt[n]{a^m} = a^{\frac{m}{n}}$$
$$a^z = 1$$
$$a^{-1} = \frac{1}{a}$$

Inequality
$$-x < y \longrightarrow x > -y$$

Linear programming
- Shade unrequired region after:-
- Turn inequality $\longrightarrow$ equation. (make y subject)
- Draw equation of (straight line).
- Shade over or under the line.

Bearing:

Angle measured
) From   North   Clock Wise

Sine rule:

Given angle & opposite side

$$\frac{a}{s\ A} = \frac{b}{s\ B} = \frac{c}{s\ C}$$

Cosine rule:

Given 3 sides or 2 sides and angle in bet.

$a^2 = b^2 + c^2 - 2bc \cos A$

$\cos A = \frac{b^2 + c^2 - a^2}{2b}$

Limits of Accuracy:

nearest $\longrightarrow$ $\boxed{}$ $\div 2$ $\longrightarrow$ result $\pm$

Quadratic Equation:

Correct to 2 decimal place use

$X = \frac{-b \pm \sqrt{b^2 - 4a}}{2a}$ where $ax^2 + bx + c = 0$

Gradient:

) Line touches the curve at point
) Tan angle.
) Diff of y / diff of x

Equation of straight line $\longrightarrow y = mx + c$

Where m = gradient , c = intercept

Graphical soln:

) Point of intersection of curve with x axis or line
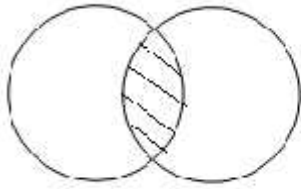) Line cut x axis $\longrightarrow$ y = 0
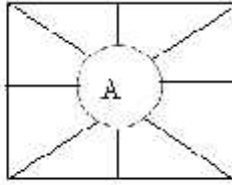) Line cut y axis $\longrightarrow$ x = 0

In a speed time graph:

Distance = Area under graph.

Acceleration $= \frac{cha\quad o\ s}{cha\quad o\ ti}$

Sets:

A ∩ B	complement	A ∪ B
1 ∈ A	not A	all element
1 ∉ B	A ⊂ δ	
	B ⊄ ε	
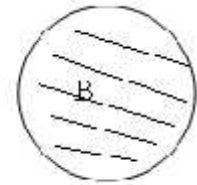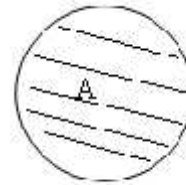
In Vector:

) If you want resultant you must start with point and end by the other.

For example: $\overrightarrow{A} = \overrightarrow{A} + \overrightarrow{C} + \overrightarrow{D}$

Column Vector:

$\binom{3}{2} = \overrightarrow{A}$

Start with A 3 unit in +ve x

Then 2 unit in +ve y

Parallel Vector:

$k\binom{a}{b} // \binom{a}{b}$

Modulus Vector:

• Length • magnitude

If $\vec{a} = \binom{x}{y}$ ⟶ $|\vec{a}| = \sqrt{x^2 + y^2}$

Function:

) To get the inverse make x subject.

) Composed function substitute x by function.

Matrix:

Order R x C

M_1 x M_2

For multiply R_1 x C_1 R_2 x C_2

Condition $C_1 = R_2$

Inverse of matrix:

$$A = \begin{pmatrix} a & b \\ c & d \end{pmatrix}$$

$$A^{-1} = \frac{1}{a-b} \begin{pmatrix} d & -b \\ -c & a \end{pmatrix}$$

$$AA^{-1} = I \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$$

I $\longrightarrow$ Identity

Transformation:

G1 the size not change

⟩ Reflection $\longrightarrow$ Distance from O to Mir = Distance from I to Mir
$\longrightarrow$ OI Mir

⟩ Rotation $\longrightarrow$ center (Bisector of O & I)
$\longrightarrow$ Angle of rotation
$\longrightarrow$ Direction

⟩ Translation $\longrightarrow$ $\begin{pmatrix} x \\ y \end{pmatrix}$ column vector

G2 the size changed (scale factor)

Enlargement

⟩ Scale factor
⟩ Center fenelayment

Scale Factor = $\frac{l_i \quad hto \quad I}{l_i \quad ho \quad 0}$

Shear

⟩ Scale factor
⟩ Invariant line

Scale Factor = $\frac{D \quad o \quad I m}{\perp d \quad o \quad 0 f \quad l_i}$

Stretch

⟩ Scale factor
⟩ Invariant line

Scale Factor = $\frac{\perp d \quad o \quad If \quad l_i}{\perp d \quad o \quad 0 f \quad l_i}$

Statistics

⌡ If histogram f.d $= \dfrac{f}{c \quad w \quad h}$

⌡ If pie chart total frequency $\equiv 360°$

Data

Ungrouped

Mean $\equiv \dfrac{si \quad o \quad a}{the \quad n}$

Median   Middle after arrange

Mode   Most repeated

grouped

$\dfrac{\Sigma f}{\Sigma f}$ Middle class

$f/_2$ and add till you get

highest frequency class
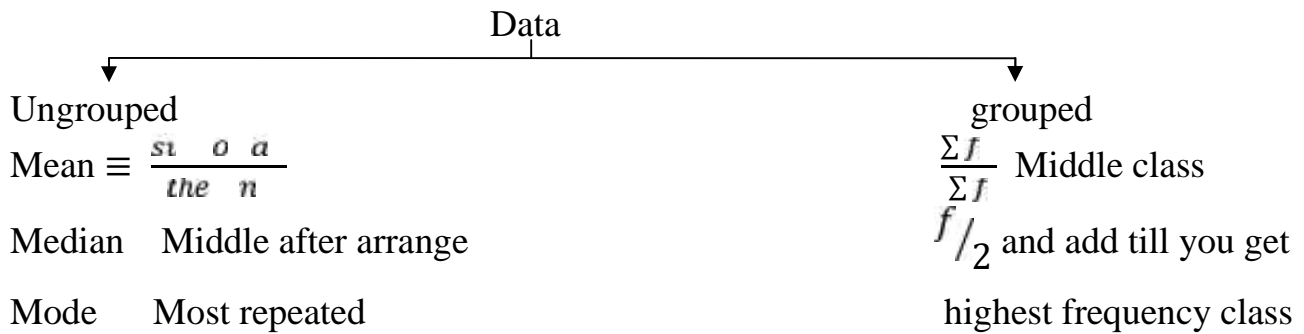
In cumulative frequency curve:

Median = 50% of frequency
Upper quartile = 75% of frequency
Lower quartile = 25% of frequency
Inter quartile = upper – lower

Probability

$$0 \le P \le 1$$

$P = \dfrac{n \quad o \quad e}{a \quad e}$

Sum of all probability = 1
For 2 events A & B
P (A and B) = P (A) x P (B)
P (A or B) = P (A) + P (B)

If we have 2 points   A (x_1, y_1) B(x_2, y_2)

A   B

Length of $\overline{A}$ $= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

Mid-point $= (\dfrac{x_1+x_2}{2}, \dfrac{y_1+y_2}{2})$

Grad $= \dfrac{y_2-y_1}{x_2-x_1}$