



TurtleMaths.com
Geometry & Algebra

MYP Extended Mathematics

One-Page Formula Summary

AREA

Parallelogram: $A = bh$ Triangle: $A = \frac{1}{2}bh$
Trapezium: $A = \frac{1}{2}(a + b)h$
Circle: $A = \pi r^2$ Circumference: $C = 2\pi r$

LINEAR FUNCTIONS

Midpoint: $\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$
Distance: $d = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$
Straight line: $y = mx + c$; $ax + by + d = 0$
Gradient: $m = \frac{y_2 - y_1}{x_2 - x_1}$

QUADRATIC FUNCTIONS

For $f(x) = ax^2 + bx + c$
Axis of symmetry: $x = -\frac{b}{2a}$
Solutions: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
Discriminant: $\Delta = b^2 - 4ac$

PYTHAGORAS & RATIOS

Pythagoras' Theorem: $c^2 = a^2 + b^2$
Trigonometric identity: $\tan \theta = \frac{\sin \theta}{\cos \theta}$
 $\sin B = \frac{\text{opp}}{\text{hyp}}$ $\cos B = \frac{\text{adj}}{\text{hyp}}$ $\tan B = \frac{\text{opp}}{\text{adj}}$

TRIGONOMETRY

Cosine rule: $c^2 = a^2 + b^2 - 2ab \cos C$
 $\cos C = \frac{a^2 + b^2 - c^2}{2ab}$
Sine rule: $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

SURFACE AREA & VOLUME

Cylinder curved surface area: $A = 2\pi rh$
Volume of cylinder: $V = \pi r^2 h$
Surface area of sphere: $A = 4\pi r^2$
Volume of sphere: $V = \frac{4}{3}\pi r^3$
Cone curved surface area: $A = \pi rl$
Volume of cone: $V = \frac{1}{3}\pi r^2 h$
Pyramid: $V = \frac{1}{3}Ah$ Cuboid: $V = lwh$
Prism: $V = Ah$

SEQUENCES

Arithmetic: $U_n = U_1 + (n - 1)d$
Geometric: $U_n = U_1 r^{n-1}$

EXPONENTS & LOGARITHMS

$a^x = b \iff x = \log_a b$ $a^x = e^{x \ln a}$
 $\log_a(a^x) = x$ $a^{\log_a x} = x$
 $\log_c a + \log_c b = \log_c(ab)$
 $\log_c a - \log_c b = \log_c(a/b)$ $\log_c(a^r) = r \log_c a$

STATISTICS

Arithmetic mean: $\frac{\text{sum of values}}{\text{number of values}}$
Interquartile range: $\text{IQR} = Q_3 - Q_1$

PROBABILITY

$P(A) = \frac{\text{outcomes in } A}{\text{total outcomes}}$ $P(A') = 1 - P(A)$
Mutually exclusive: $P(A \cap B) = 0$
Independent: $P(A \cap B) = P(A) \times P(B)$
Combined: $P(A \cup B) = P(A) + P(B) - P(A \cap B)$
Conditional: $P(A | B) = \frac{P(A \cap B)}{P(B)}$

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