

MIDDLE LEVEL ENDORSEMENT MATHEMATICS FORMULAS AND NOTATION

| Formula | Description |
|---|---|
| $V = \frac{1}{3}Bh$ | Volume of a right cone and a pyramid |
| $A = 4\pi r^2$ | Surface area of a sphere |
| $V = \frac{4}{3}\pi r^3$ | Volume of a sphere |
| $A = \pi r\sqrt{r^2 + h^2}$ | Lateral surface area of a right circular cone |
| $S_n = \frac{n}{2}[2a_1 + (n-1)d] = \frac{n(a_1 + a_n)}{2}$ | Sum of an arithmetic series |
| $S_n = \frac{a(1 - r^n)}{1 - r}$ | Sum of a geometric series |
| $\sum_{n=0}^{\infty} ar^n = \frac{a}{1-r}, r < 1$ | Sum of an infinite geometric series |
| $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$ | Distance formula |
| $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$ | Midpoint formula |
| $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$ | Law of sines |
| $c^2 = a^2 + b^2 - 2ab \cos C$ | Law of cosines |
| $s^2 = \frac{\sum_{i=1}^n (x_i - \bar{x})^2}{n-1}$ | Variance |
| $s = r\theta$ | Arc length |
| $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ | Quadratic formula |
| \bar{A} is the complement of set A | Set theory |
| ${}_n P_r = P(n, r) = \frac{n!}{(n-r)!}$ | Permutations |
| ${}_n C_r = C(n, r) = \frac{n!}{(n-r)!r!}$ | Combinations |