

WNCP Grade 11 Foundations and Pre-Calculus Math: Formula Sheet

Pythagorean Theorem

$a^2 + b^2 = c^2$, where c is the length of the hypotenuse

Linear Relations

Slope: $m = \frac{y_2 - y_1}{x_2 - x_1}$ The equation $y = mx + b$ is one form of a linear relation.

Quadratic Formula

Given the quadratic equation $ax^2 + bx + c = 0$, the quadratic formula is:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Trigonometry

$$\sin \theta = \frac{\text{opposite}}{\text{hypotenuse}}$$

$$\cos \theta = \frac{\text{adjacent}}{\text{hypotenuse}}$$

$$\tan \theta = \frac{\text{opposite}}{\text{adjacent}}$$

Sine Law

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

Cosine Law

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

Area and Volume: for ALL calculations using π , always use $\pi = 3.14$

Area of a **circle** with radius r :

$$A = \pi r^2$$

Circumference of a **circle** with radius r

$$C = 2\pi r$$

Area of a **triangle** with base b and height h :

$$A = \frac{1}{2}bh$$

Volume of **Prism**:

Volume = area of base \times height of the prism

Volume of **Pyramid**:

Volume = $\frac{1}{3} \times$ (the volume of the enclosing prism)

Volume of **Cylinder** with height h and radius r :

$$V = \pi r^2 h$$

Volume of **Sphere** with radius r :

$$SA = \frac{4}{3}\pi r^3$$

Sequences and Series (for Pre-Calculus course only)

General term of an arithmetic sequence: $t_n = a + (n - 1)d$

General term of a geometric sequence: $t_n = ar^{n-1}$

Sum of an arithmetic series: $S_n = \frac{n}{2}(2a + (n - 1)d)$

Sum of geometric series: $S_n = \frac{a(r^n - 1)}{r - 1}$