

## Physical Science B Equations

SI units

$$\text{Velocity} = \frac{\text{distance}}{\text{time}} \quad v = \frac{d}{t} \quad \left[ \frac{\text{m}}{\text{s}} \right]$$

$$\text{Acceleration} = \frac{\text{velocity}}{\text{time}} \quad a = \frac{v}{t} \quad \left[ \frac{\text{m}}{\text{s}^2} \right]$$

Earth's "g" or acceleration due to gravity is  $9.8 \frac{\text{m}}{\text{s}^2}$

Force = mass  $\times$  acceleration

$$F = ma$$

$$\left[ \frac{\text{kgm}}{\text{s}^2} \right] = [\text{N}]$$

Weight = mass  $\times$  gravitational acceleration  
(Force)

$$W = mg$$

$$[\text{N}]$$

Law of Universal Gravitation

$$F_g = \frac{Gm_1m_2}{r^2} = \frac{Gm_1m_2}{d^2} \quad [\text{N}]$$

Momentum = mass  $\times$  velocity

$$p = mv$$

$$\left[ \frac{\text{kgm}}{\text{s}} \right]$$

$$\text{(initial)} \quad m_1v_{1i} + m_2v_{2i} = m_1v_{1f} + m_2v_{2f} \quad \text{(final)}$$

Work = Force  $\times$  displacement

Work is a type of energy!

$$W = Fd$$
$$W = mad$$

Units

$$[J]$$
$$= N \cdot m$$
$$= \frac{kg \cdot m^2}{s^2}$$

Kinetic Energy

$$KE = \frac{1}{2}mv^2$$

[J]

Gravitational Potential Energy

$$GPE = mgh$$

[J]

Wave Speed = wavelength  $\times$  frequency

$$v = \lambda f \quad \left( m \cdot \frac{1}{s} \right) = \left[ \frac{m}{s} \right]$$

↑  
(Hz)

Ohm's Law

current =  $\frac{\text{voltage}}{\text{resistance}}$

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

$$\left[ A = \frac{V}{\Omega} \right]$$