

# Physical Science Reference Sheet

## Formulas

### Force, Mass and Motion

$$\text{Velocity} = \frac{\text{displacement}}{\text{time}} \quad (v = \frac{d}{t})$$

$$\text{Acceleration} = \frac{\text{final velocity} - \text{initial velocity}}{\text{time}} \quad (a = \frac{v_f - v_i}{t})$$

$$\text{Weight} = \text{mass} \times \text{acceleration of gravity} \quad (w = mg)$$

$$\text{Force} = \text{mass} \times \text{acceleration} \quad (F = ma)$$

$$\text{Work} = \text{force} \times \text{distance} \quad (W = Fd)$$

$$\text{Mechanical advantage} = \frac{\text{effort distance}}{\text{resistance distance}} = \frac{\text{resistance force}}{\text{effort force}} \quad (\text{MA} = \frac{d_e}{d_r} = \frac{f_r}{f_e})$$

### Chemical Reactions and Properties of Matter

$$\text{Density} = \frac{\text{mass}}{\text{volume}} \quad (D = \frac{m}{V})$$

$$\text{Volume of a rectangular solid} = \text{length} \times \text{width} \times \text{height} \quad (V = lwh)$$

$$\text{Heat lost or gained} = \text{mass} \times \text{specific heat capacity} \times \text{change in temperature} \quad (Q = mc\Delta T)$$

### Waves, Electricity and Magnetism

$$\text{Voltage} = \text{current} \times \text{resistance} \quad (V = IR)$$

## Constants and Relationships

$$\text{Kelvin} = \text{°Celsius} + 273 \quad (\text{K} = \text{°C} + 273)$$

$$\text{Acceleration due to gravity: } g \approx 10 \frac{m}{\text{sec}^2}$$

$$\text{newton: } 1 \text{ N} = 1 \text{ kg} \cdot \frac{m}{s^2}$$

$$\text{joule: } 1 \text{ J} = 1 \text{ N} \cdot \text{m}$$