

Hillgrove Physics Equation Sheet

Basic Facts:

g = acceleration due to gravity

$$g = 10 \text{ m/s}^2$$

$$k = 9.0 \times 10^9 \text{ N} \cdot \text{m}^2 / \text{C}^2$$

speed = distance/time

$$v = \frac{d}{t}$$

Acceleration = change in Velocity/
Time elapsed

$$\vec{a} = \frac{\Delta \vec{v}}{t}$$

Distance = $\frac{1}{2}$ x g x time squared

$$d = \frac{1}{2} g t^2$$

Time = square root of (2 x distance)/ g

$$t = \sqrt{\frac{2d}{g}}$$

Electricity

Voltage = Current x Resistance

$$V = IR$$

Electric Power = Voltage x Current

$$P = VI$$

Wave Motion

Period = 1 / frequency

$$T = \frac{1}{f}$$

Frequency = 1 / Period

$$f = \frac{1}{T}$$

Velocity = wavelength x frequency

$$v = \lambda f$$

Velocity = wavelength / Period

$$v = \frac{\lambda}{T}$$

Net Force = mass x acceleration

$$\vec{F}_{net} = m \cdot \vec{a}$$

Weight = mass x g

$$\vec{W} = m \cdot g$$

Pressure = Force / Area

$$P = \frac{\vec{F}}{A}$$

Momentum = mass x velocity

$$\vec{p} = m\vec{v}$$

Change in Momentum = Force x Change in time

$$\Delta m\vec{v} = \vec{F}\Delta t$$

Work = Force x distance

$$Work = \vec{F}d$$

Power = Work / time

$$Power = \frac{Work}{t}$$

Change in Energy = Work

$$\Delta E = Work$$

Potential = mass x g x height
Energy

$$E_{PE} = m \cdot g \cdot h$$

Kinetic = $\frac{1}{2}$ x mass x velocity squared
Energy

$$E_{KE} = \frac{1}{2} m \cdot v^2$$

Torque = Force x distance

$$T = \vec{F}d$$

Potential difference = Electric
potential energy / charge

$$V = \frac{E_{PE}}{q}$$

Electric Force = k x (charge 1 x charge 2)/
distance squared

$$\vec{F} = k \frac{q_1 q_2}{d^2}$$