

Physics Reference Sheet

Useful Equations

$$v_{av} = \frac{d}{t}$$

v_{av} = average velocity
 d = displacement
 t = time

$$a_{av} = \frac{v_f - v_i}{t}$$

a_{av} = average acceleration
 v_f = final velocity
 v_i = initial velocity
 t = time

$$F = ma$$

F = net force
 m = mass
 a = acceleration

$$W = mg$$

W = weight
 m = mass
 g = acceleration due to gravity

$$F = G \frac{m_1 m_2}{d^2}$$

F = force
 G = gravitational constant
 m_1 = mass of first object
 m_2 = mass of second object
 d = distance between the objects

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

F = force
 k = Coulomb's constant
 q_1 = charge on first object
 q_2 = charge on second object
 d = distance between the objects

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

KE = kinetic energy
 m = mass
 v = speed

$$PE = mgh$$

PE = potential energy
 m = mass
 g = acceleration due to gravity
 h = height

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

T = period
 f = frequency

Useful Equations (continued)

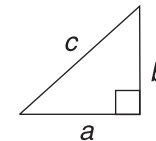
$$v = \lambda f$$

v = speed
 λ = wavelength
 f = frequency

$$E = hf = h \left(\frac{c}{\lambda} \right)$$

E = energy
 h = Planck's constant
 f = frequency
 c = speed of light
 λ = wavelength

$$a^2 + b^2 = c^2$$



Values of Physical Constants

g = 9.8 m/s²
 G = 6.67 × 10⁻¹¹ Nm²/kg²
 k = 9.0 × 10⁹ Nm²/C²
 h = 6.63 × 10⁻³⁴ Js
 c = 3.00 × 10⁸ m/s

Physical Quantities and Units

Quantity	Unit (abbreviation)
electric charge	coulomb (C)
energy	joule (J)
force	newton (N)
frequency	hertz (Hz)
length	meter (m)
mass	kilogram (kg)
temperature	degrees Celsius (°C)
time	second (s)