Physics Formula

Acceleration:

It is defined as the rate of change of velocity.

$$a = \frac{v}{t} = \left(\frac{LT^{-1}}{T}\right) = \left[LT^{-2}\right]$$

Acceleration due to gravity:

$$g = 4\pi^2\left(\frac{1}{T^2}\right) = \frac{L}{T^2} = \left[LT^{-2}\right]$$

Angular Displacement:

$$q = \frac{arc}{radius} = \frac{L}{L}$$

Angular momentum or moment of momentum L:

$$r \times mv =$$

$$LM\frac{L}{T} = \left[ML^2T^{-1}\right]$$

Angular velocity:

$$= \frac{\text{angular displacement}}{\text{time}} = \frac{1}{T} = \left[T^{-1}\right]$$

Coefficient of Friction:

$$\frac{\text{frictional force}}{\text{normal reaction}} = \frac{MLT^2}{MLT^{-2}} = M^0L^0T^0$$

Coefficient of friction has no dimension.

E-mail - dddrives@gmail.com
Tel - +91 022 2163 3694
Mob - 09322641435

Coefficient of Thermal conductivity k_0:

$$Q=\frac{K_0A(\theta_2-\theta_1)t}{d}$$

$$K_0=\frac{Qd}{A(\theta_2-\theta_1)t}$$

$$=\frac{ML^2T^{-2}L}{L^2KT}=\left[MLT^{-3}K^{-1}\right]$$

Coefficient of viscosity: (η)

$$\frac{F}{A\left(\frac{dv}{dx}\right)}=\frac{MLT^{-2}}{L^2\left(\frac{LT^{-1}}{L}\right)}=\frac{ML}{T^2}\cdot\frac{1}{L^2}\cdot\frac{LT}{L}$$

$$=\left[ML^{-1}T^{-1}\right]$$

Force:

Force =mass × acceleration = m × a

F = (M) ×(LT^{-2}) = (MLT^{-2})

So, dimension of mass is 1 and that of length is +1and that of time is –2 in force.

Gravitational constant:

According to Newton universal law of gravitation.

$$F=\frac{Gm_1Gm_2}{r^2}$$

Or

$$G=\frac{fr^2}{m_1m_2}$$

E-mail - dddrives@gmail.com
Tel - +91 022 2163 3694
Mob - 09322641435

Heat:

Heat is a form of energy.

$Q = [ML^2T^{-2}]$

Impulse:

= Force × Time = Mass × Acceleration × Time =

$$M \times \frac{L}{T^2} \times T = \left[ML\,T^{-1}\right]$$

Kinetic Energy (K.E.):

$$\frac{1}{2} \times \text{mass} \times \text{velocity}^2$$

$$E_k = \frac{1}{2} mv^2 = M\frac{L}{T} \times \frac{L}{T} = \left[ML^2T^2\right]$$

Latent Heat:

Heat absorbed per unit mass during changed of state.

$$L = \frac{Q}{m} = \frac{ML^2T^{-2}}{M} = \left[L^2T^{-2}\right]$$

Momentum:

= Force × Distance

$$\tau = \frac{ML}{T^2} \times L = \left[M^1L^2T^{-2}\right]$$

Moment of a force of torque of moment of a couple:

= Force × Distance

$$\tau = \frac{ML}{T^2} \times L = \left[M^1L^2T^{-2}\right]$$

E-mail - dddrives@gmail.com
Tel - +91 022 2163 3694
Mob - 09322641435

Planck's constant:

Radiation energy = Plank's constant × frequency

E = hv

$$h=\frac{E}{v}=\frac{ML^2T^{-2}}{T^{-1}}=ML^2T^{-1}$$

Power:

$$P=\frac{\text{Work}}{\text{Time}}=\frac{w}{t}$$

$$=\frac{F\times s}{t}=\frac{\text{mass}}{t}$$

$$P=\frac{ML}{T^2}\ \frac{L}{T}=(ML^2T^{-3})$$

Potential Energy (P.E.):

Mass × g × height = mgh

$$E_P=\frac{ML}{T^2}\times L=\left[ML^2T^{-2}\right]$$

Pressure:

$$=\frac{\text{force}}{\text{area}}=\frac{F}{A}$$

Specific Heat:

Thermal capacity for unit mass of the body.

Thermal capacity for unit mass of the body.

$$C=\frac{H}{m}=\frac{1}{m}\cdot\frac{dQ}{dT}=\frac{ML^2T^{-2}K^{-1}}{M}$$
$$=\left[M^0L^2T^{-2}K^{-1}\right]$$

E-mail - dddrives@gmail.com
Tel - +91 022 2163 3694
Mob - 09322641435

Speed

$$\text{speed} = \frac{\text{distance}}{\text{time}}$$

Velocity or speed =

$$v = \frac{L}{T} = \left[LT^{-1}\right]$$

So, dimension of length is +1 and of time is –1 in velocity and speed.

Stress : =

$$\frac{\text{force}}{\text{area}} = \frac{ML}{T^{-2}} \times \frac{1}{L^2}$$

Surface Tension:

$$\frac{\text{force}}{\text{length}} = \frac{ML}{T^2} \cdot \frac{1}{L} = \left[M^1L^0T^{-2}\right]$$

Thermal Capacity:

The amount of heat energy required by a body for unit rise of temperature.

$$H = \frac{dQ}{dT} = \frac{ML^2T^{-2}}{K} = \left[ML^2T^{-2}K^{-1}\right]$$

Velocity:

$$v = \frac{\text{displacement}}{\text{time}}$$

Work of energy:

Work = force × displacement = F × s

$W = (MLT^{-2}) \times (L) = (ML^2T^{-2})$

E-mail - dddrives@gmail.com
Tel - +91 022 2163 3694
Mob - 09322641435

Young modulus (Y):

$$\frac{Mgl}{\pi r^2 e}$$

$$Y = \frac{\text{Stress}}{\text{Strain}} = \frac{(F/A)}{\left(\frac{\Delta L}{L}\right)}$$

$$= \frac{(M\ L\,T^{-2}/L^2)}{(L/L)}$$

$$= \left[ML^{-1}T^{-2}\right]$$

E-mail - dddrives@gmail.com
Tel - +91 022 2163 3694
Mob - 09322641435