List of base units

① Base units of velocity ⟶ m/s

② Base units of acceleration → m/s^2

③ Force

$F = ma$

$F = Kg\ m\bar{s}^2$

④ Pressure

$P = F/A = \frac{ma}{A}$

$P = \frac{Kg\ m\bar{s}^2}{m^2} = Kg\bar{m}^1\bar{s}^2$

⑤ Momentum = [mass][velocity]

$Kg\ m\bar{s}^1$

⑥ Impulse = change of momentum

$= Kg\ m\bar{s}^1$

⑦ WORK = Fd

$= mad$

$= Kgm\bar{s}^2 m = Kgm^2\bar{s}^2$

⑧ P.E = mgh

$= Kgm\bar{s}^2 m = Kgm^2\bar{s}^2$

⑨ $K.E = \frac{1}{2} m V^2$

$= Kg[m\bar{s}^1]^2$

$= Kgm^2\bar{s}^2$

⑩ Power = $\frac{work}{time} = \frac{Fd}{t} = \frac{mad}{t}$

$= \frac{Kgm\bar{s}^2 m}{s} = Kgm^2\bar{s}^3$

⑪ Moment or Torque = Fd

$= mad$

$= Kgm\bar{s}^2 m$

$= Kgm^2\bar{s}^2$

⑫ Stress = $\frac{Force}{Area} = \frac{ma}{A} = \frac{Kgm\bar{s}^2}{m^2}$

Stress = $Kgm^{-1}\bar{s}^2$

⑬ Strain = $\frac{extension}{original\ length} = \frac{m}{m}$

= no unit [dimensionless]

⑭ Hooke's constant or Spring constant

$K = \frac{Force}{extension} = \frac{ma}{x} = \frac{Kgm\bar{s}^2}{m}$

$K = Kg\bar{s}^2$

⑮ Young Modulus = $\frac{stress}{strain}$

Young Modulus = $\frac{F/A}{extension/L}$

$= F/A \times \frac{L}{x}$

$= \frac{ma}{A} \times \frac{L}{x}$

$= \frac{Kgm\bar{s}^2}{m^2} \times \frac{m}{m}$

$= Kgm^{-1}\bar{s}^2$ [same as Stress or pressure]

⑯ charge = [current][time]

$Q = A\ sec$

⑰ Voltage = $\frac{Work}{charge}$

$= \frac{Fd}{It} = \frac{mad}{It}$

$= \frac{Kgm\bar{s}^2 m}{As}$

$= \frac{Kgm^2\bar{s}^2}{As} = Kgm^2\bar{s}^3A^{-1}$

⑱ Electric field Strength

$E = \frac{Force}{charge} = \frac{ma}{It} = \frac{Kgm\bar{s}^2}{A\,sec}$

$E = \frac{Kgm\bar{s}^2}{As} = Kgm\bar{s}^3A^{-1}$

⑲ Resistance = $\frac{Voltage}{current}$

$= \frac{work}{charge} \div I$

$= \frac{Fd}{It \times I} = \frac{mad}{I^2t}$

$R = \frac{Kgm\bar{s}^2 m}{A^2 s}$

$= Kgm^2\bar{s}^3A^{-2}$

⑳ Resistivity ⟶ $R = \frac{\rho L}{A}$

$\rho = \frac{RA}{L} = \frac{Kgm^2\bar{s}^3A^{-2}m^2}{m}$

$\boxed{\rho = Kgm^3\bar{s}^3A^{-2}}$

㉑ density = Kg/m^3

㉒ frequency ⟶ Hz

$f = \frac{1}{T} = sec^{-1}$

㉓ Angle $l = r\theta$

$\theta = l/r = \frac{m}{m}$

θ has no base unit.

(24) Specific heat capacity ⇒

$$H = mc\Delta T$$

$$C = \frac{H}{m\Delta T} = \frac{mad}{m\Delta T}$$

$$C = m^2 s^{-2} K^{-1}$$