

Newtons and Dynes

definition of a newton (MKS system): $1 \text{ newton} = \frac{1 \text{ kg } m}{s^2}$

definition of a dyne (CGS system): $1 \text{ dyne} = \frac{1 \text{ gm } cm}{s^2}$

converting newtons to dynes:

$$1 \text{ newton} = 1 \text{ kg} \times \frac{1,000 \text{ gm}}{\text{kg}} \times 1 \text{ m} \times \frac{100 \text{ cm}}{1 \text{ m}} \times \frac{1}{s^2} = \frac{100,000 \text{ gm } cm}{s^2} = 100,000 \text{ dynes} = 10^5 \text{ dynes}$$

converting dynes to newtons:

$$1 \text{ dyne} = 1 \text{ gm} \times \frac{1 \text{ kg}}{1,000 \text{ gm}} \times 1 \text{ cm} \times \frac{1 \text{ m}}{100 \text{ cm}} \times \frac{1}{s^2} = \frac{1 \text{ kg } m}{100,000 s^2} = \frac{1 \text{ newton}}{100,000} = 10^{-5} \text{ newtons}$$

acceleration of gravity:

$$g = \frac{9.81 \text{ m}}{s^2} \text{ in the MKS system}$$

$$g = \frac{981 \text{ cm}}{s^2} \text{ in the CGS system}$$