

## Mass/Weight examples:

1. The average mass of a person is 60.0 kg. What is this in weight?

$$F_g = mg \\ = (60.0 \text{ kg})(9.81 \text{ m/s}^2) \\ = 588.6 \text{ N}$$

2. If the weight of a car is 7000 N on Earth, what is its mass?

$$F_g = mg \quad m = \frac{F_g}{g} = \frac{7000 \text{ N}}{9.81 \text{ m/s}^2} \\ = 713.6 \text{ kg}$$

3. What is the acceleration due to gravity on a planet where a 25.0 kg object weighs 500.0 N?

$$F_g = mg \quad g = \frac{F_g}{m} = \frac{500.0 \text{ N}}{25.0 \text{ kg}} \\ = 20.0 \frac{\text{N}}{\text{kg}} \\ = 20.0 \frac{\text{m}}{\text{s}^2}$$

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$$\frac{\text{N}}{\text{kg}} = \text{m/s}^2$$

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