

Mass vs. Weight

Mass – amount of a substance

- scalar quantity
- measure in kg or pounds (lbs)
- stays constant at all locations

Weight – the force of gravity on an object

- a vector (direction is towards the center of the planet)
- measured in Newtons
- can vary as location changes

Weight is the product of mass and the acceleration of gravity (g) at a given location:

$$F = ma$$

$$F_g = mg$$

where: F_g = weight (N)

m = mass (kg)

g = acceleration of gravity (m/s^2)

ex.

What is the weight of a 25 kg object (a.) on Earth and (b.) on the moon?