

# How Much Do You Weigh?

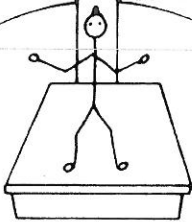
Weight is a measure of the force of gravity on an object. The force of gravity is not a constant value in the universe. The force of gravity on the surface of the planet Jupiter is more than  $2\frac{1}{2}$  times the force of gravity on the surface of Earth. The moon's gravitational force is only about  $\frac{1}{6}$  of Earth's.

The unit of weight is the newton, N. Weight in newtons is calculated by multiplying the mass of an object in kilograms by the number of newtons per kilogram. On Earth there are 9.8 newtons per kilogram. A mass of 100 kg would weigh  $100 \text{ kg} \times 9.8 \text{ N/kg} = 980 \text{ N}$ .

Calculate your weight in newtons on Earth, the moon, Mars, and Jupiter. Place your answers in the blank space on the appropriate scales. The newtons per kilogram on each planet are listed. If you do not know your mass in kilograms, divide your mass in pounds by 2.2. For example, if your mass is 110 pounds, your mass is  $110 \div 2.2 = 50 \text{ kg}$ .

Weight

\_\_\_\_\_

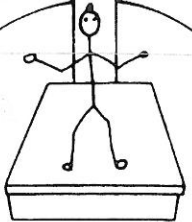


Earth  
 $F = 9.8 \frac{\text{N}}{\text{kg}}$

Your mass \_\_\_\_\_ kg

Weight

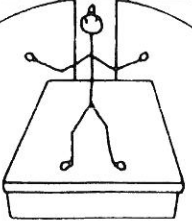
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Moon  
 $F = 1.6 \frac{\text{N}}{\text{kg}}$

Weight

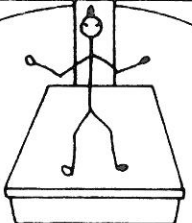
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Mars  
 $F = 3.7 \frac{\text{N}}{\text{kg}}$

Weight

\_\_\_\_\_



Jupiter  
 $F = 26 \frac{\text{N}}{\text{kg}}$