

MOTION

CHAPTER NO.2

SUB: PHYSICS

MOTION

CLASS-1

CHANGING YOUR TOMORROW

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LEARNING OBJECTIVE

Students will be able to

- Define weight
- Relate weight of an object with its mass



Mass & Weight

Mass

It defined mass as the measure of the amount of matter in a body.

It is represented by the symbol m .

The SI unit of mass is Kilogram (kg).

Weight

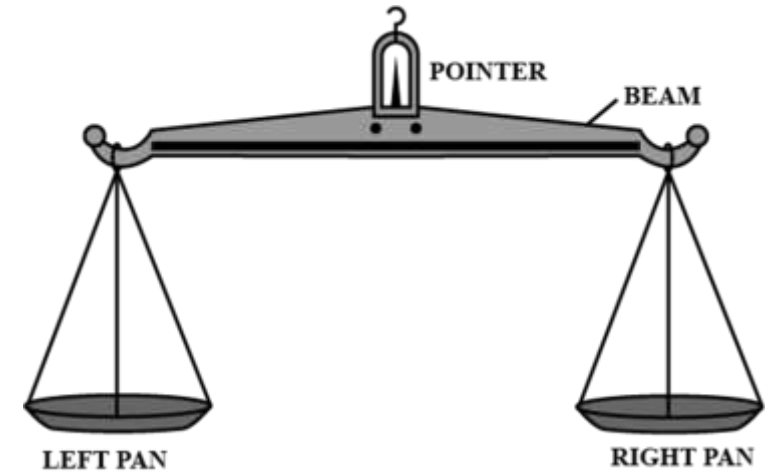
It is the measure of the force of gravity acting on a body.

It is represented by the symbol W .

The formula for weight is given by:

$$w = mg$$

As weight is a force its SI unit is also the same as that of force, [SI unit of weight](#) is Newton (N).



What is the difference between mass and weight?

Mass	Weight
Mass can never be zero.	Weight can be zero. As in space if no gravity acts upon an object, its weight becomes zero.
Mass is a scalar quantity. It has magnitude.	Weight is a vector quantity. It has magnitude and is directed toward the center of the Earth or other gravity well.
Mass is commonly measured in kilograms and grams.	Weight is commonly measured in Newtons.
Mass doesn't change according to location.	Weight varies according to location.
The mass may be measured using an ordinary balance.	Weight is measured using a spring balance.

EFFECT OF CHANGE IN PLACE ON MASS AND WEIGHT

The mass of a body remains constant everywhere on the surface of earth or on any other heavenly body. But the weight of the body changes from place to place because it depends on the force of attraction of earth on the body which differs from place to place.

Mass vs Weight

Mass is a how much matter an object contains. Weight is the force exerted on a mass by gravity.

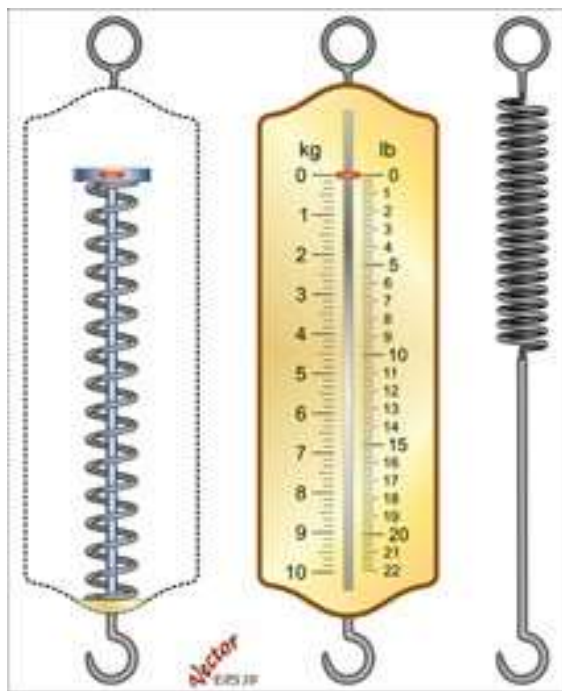
Mass is a constant for a body and does not change with location. Weight is not a constant. It changes from place to place.

The kilogram is a unit of mass. The Newton is a unit of weight.

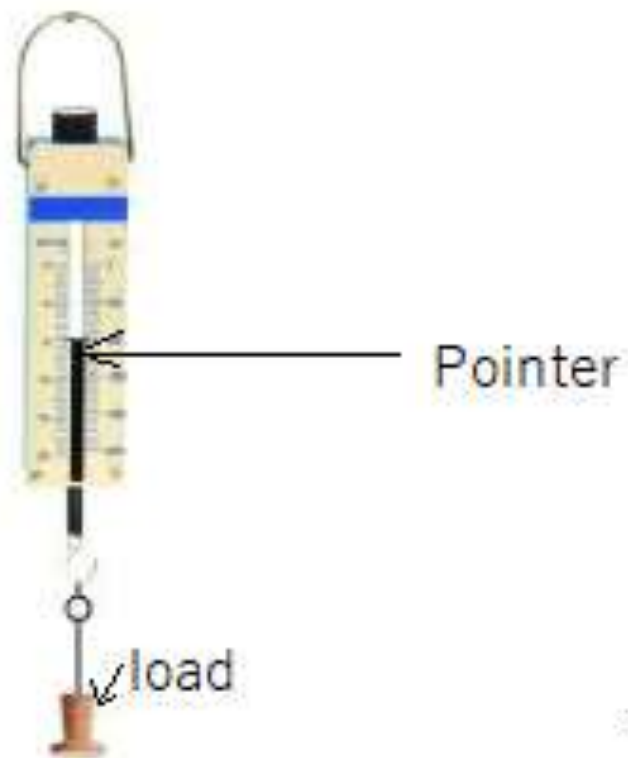
Location	Mass	Weight
Earth	50 kg 110 lb	50 kg 110 lb 490 N
Moon	50 kg 110 lb	8 kg 18 lb 82 N

Technically, the pound is a unit of weight but not mass!

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HOME ASSESSMENT

Define the term weight and state its S.I. unit ?

What is the Difference between Mass and Weight?

THANKING YOU
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