

Answer on Question#64166 – Physics – Mechanics – Relativity

Definition of Terms

- a) Friction
- b) Gravitation
- c) Coefficient of friction
- d) Static force of friction
- e) Angle of repose

Solution.

a) Friction is a resistance encountered when one body moves relative to another body with which it is in contact.

Friction is the force resisting the relative motion of solid surfaces, fluid layers, and material elements sliding against each other.

b) Gravity, also called gravitation, in mechanics, the universal force of attraction acting between all matter.

Newton hypothesized that any two objects with mass will attract each other. The force of attraction is gravity, the same force that holds us on the ground and makes things falls. Newton supposed that gravity acts everywhere and can be described by the following equation:

$$F = G \frac{M_1 M_2}{r^2}$$

Where M_1 and M_2 are the masses of the two objects, r is the distance between the masses (masses must be point masses) and G is the universal gravitational constant.

$$G = 6.67 \cdot 10^{-11} \frac{Nm^2}{kg^2}$$

c) The coefficient of friction, often symbolized by the Greek letter μ , is a dimensionless scalar value which describes the ratio of the force of friction between two bodies and the force pressing them together. The coefficient of friction depends on the materials used; for example, ice on steel has a low coefficient of friction, while rubber on pavement has a high coefficient of friction. A measure of the amount of resistance that a surface exerts on or substances moving over it, equal to the ratio between the maximal frictional force that the surface exerts and the force pushing the object toward the surface.

d) Static friction is friction between two or more solid objects that are not moving relative to each other.

The opposing force which comes into play when an object does not move over another object, even when the force is applied to make it move is called Static Friction

e) Angle of repose is defined as the minimum angle made by an inclined plane with the horizontal such that an object placed on the inclined surface just begins to slide.