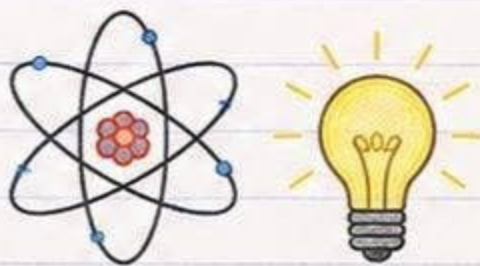


Physics Terms

1. PHYSICS:

Physics is the branch of science that deals with matter, energy, space, time and the laws that govern them.



2. MATTER:

Anything that has mass and occupies space is called matter.



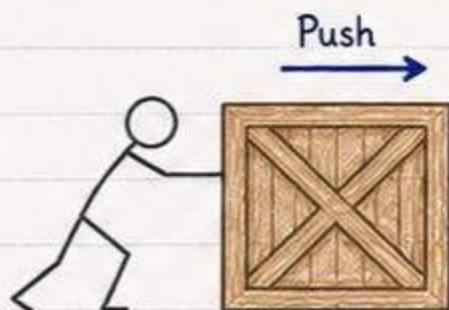
3. ENERGY:

Energy is the capacity to do work.



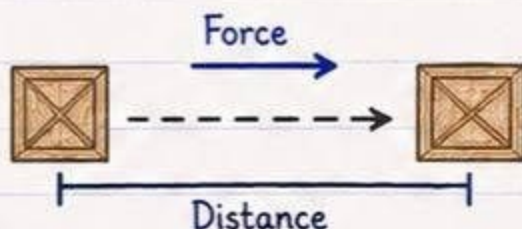
4. FORCE:

A force is a push or pull that can change the state of rest or motion of an object.



5. WORK:

Work is done when a force causes an object to move through a distance.



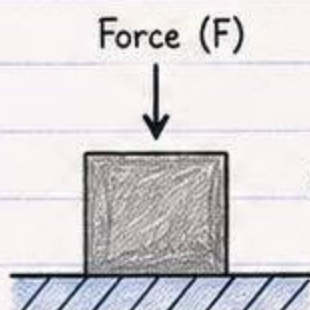
6. POWER:

Power is the rate at which work is done or energy is transferred.



7. PRESSURE:

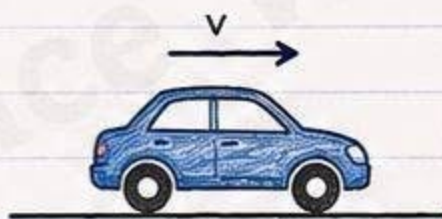
Pressure is the force applied per unit area.



$$\text{Pressure (P)} = \frac{\text{Force (F)}}{\text{Area (A)}}$$

8. VELOCITY:

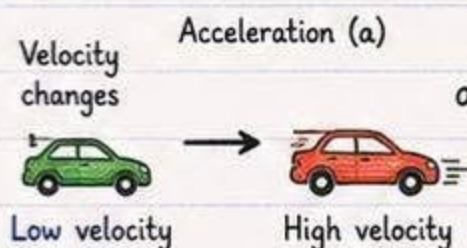
Velocity is the rate of change of displacement.



$$v = \frac{\text{Displacement}}{\text{Time}}$$

9. ACCELERATION:

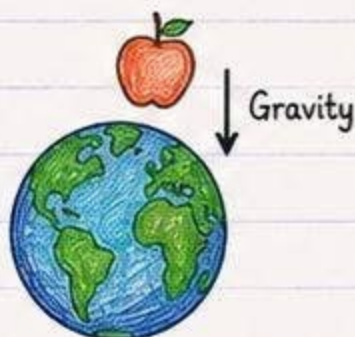
Acceleration is the rate of change of velocity.



$$a = \frac{\text{Change in velocity}}{\text{Time}}$$

10. GRAVITY:

Gravity is the force by which the Earth (or any other body) attracts objects towards its center.



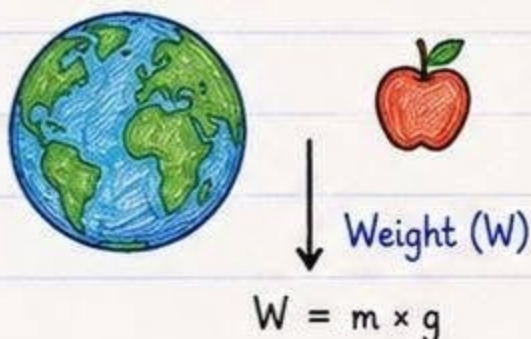
11. MASS:

Mass is the amount of matter in an object. It does not change from place to place.



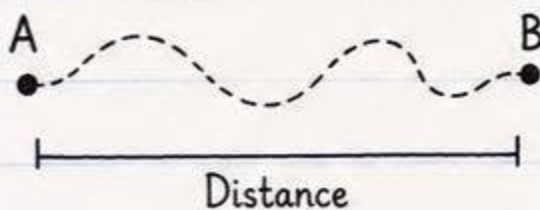
12. WEIGHT:

Weight is the force with which the Earth (gravity) pulls an object.



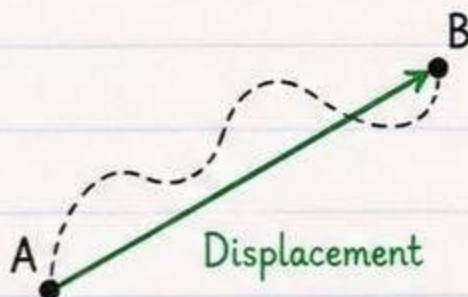
13. DISTANCE:

Distance is the total length of the path traveled by an object.



14. DISPLACEMENT:

Displacement is the shortest distance from the initial position to the final position in a given direction.



15. SPEED:

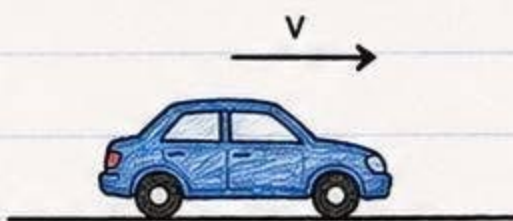
Speed is the distance covered per unit time.



$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

16. VELOCITY:

Velocity is the displacement of an object per unit time in a given direction.

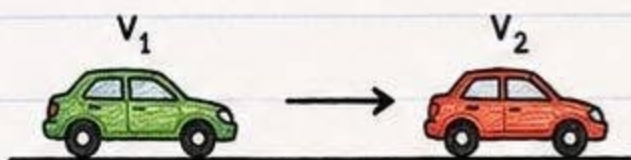


$$\text{Velocity} = \frac{\text{Displacement}}{\text{Time}}$$

17. ACCELERATION:

Acceleration is the rate of change of velocity with time.

$$a = \frac{\text{Change in velocity}}{\text{Time}}$$



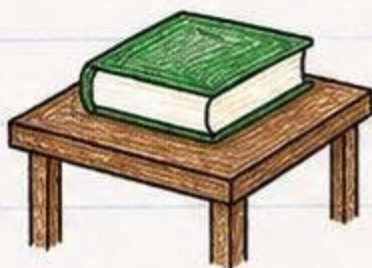
18. TIME:

Time is the measure of duration between two events.



19. INERTIA:

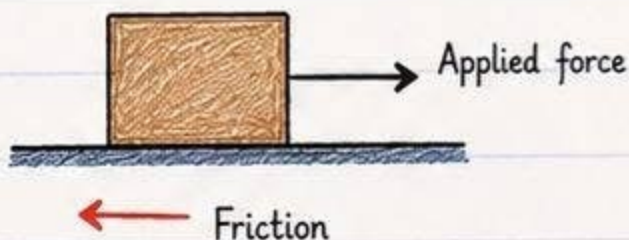
Inertia is the property of an object to resist any change in its state of rest or uniform motion.



A book at rest will stay at rest unless an external force acts on it.

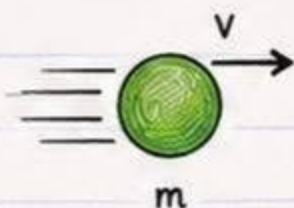
20. FRICTION:

Friction is a force that opposes the motion of one surface over another surface.



21. MOMENTUM:

Momentum is the product of mass and velocity of a moving object.

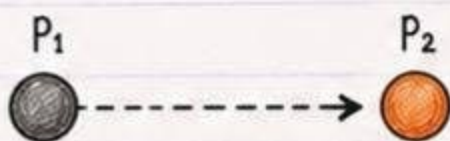


$$p = m v$$

p = Momentum
 m = Mass
 v = Velocity

22. IMPULSE:

Impulse is the change in momentum of an object.



$$\text{Impulse} = \Delta p = p_2 - p_1$$

23. NEWTON'S FIRST LAW OF MOTION:

An object will remain at rest or in uniform motion in a straight line unless acted upon by an external unbalanced force.



Book at rest will remain at rest unless a force acts on it.

24. NEWTON'S SECOND LAW OF MOTION:

The rate of change of momentum of an object is directly proportional to the net external force acting on it and takes place in the direction of the force.

$$F = \frac{\Delta p}{\Delta t}$$

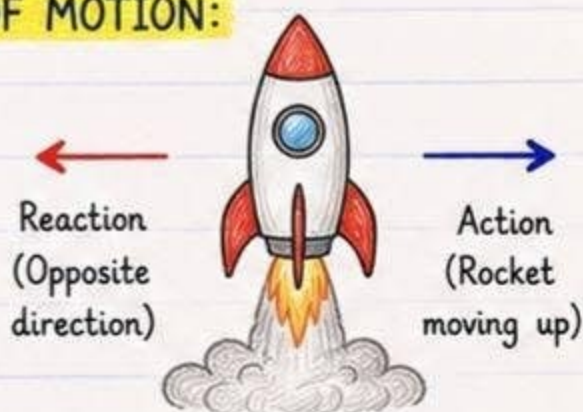
F = Net force

Δp = Change in momentum

Δt = Time

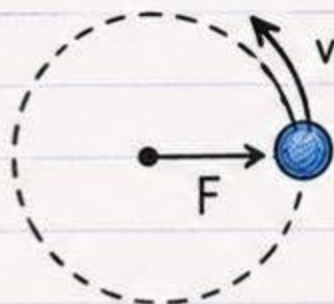
25. NEWTON'S THIRD LAW OF MOTION:

For every action, there is an equal and opposite reaction.



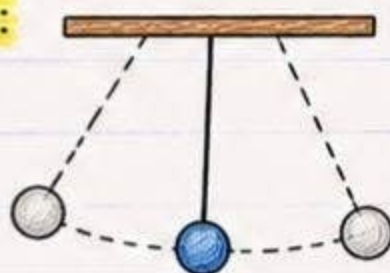
26. CENTRIPETAL FORCE:

Centripetal force is the force that keeps an object moving in a circular path.



27. PERIODIC TIME (TIME PERIOD):

The time taken to complete one full cycle of a periodic motion is called time period.



T = Time taken for one complete swing

28. FREQUENCY:

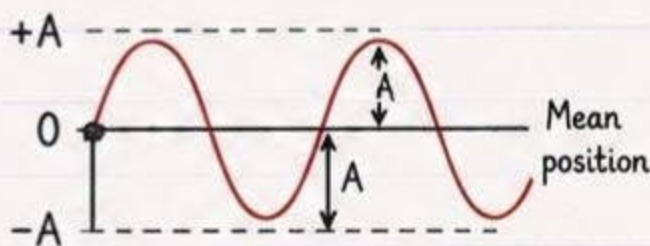
The number of oscillations (cycles) completed per second is called frequency.

$$f = \frac{1}{T}$$

f = Frequency (Hz)
 T = Time period (s)

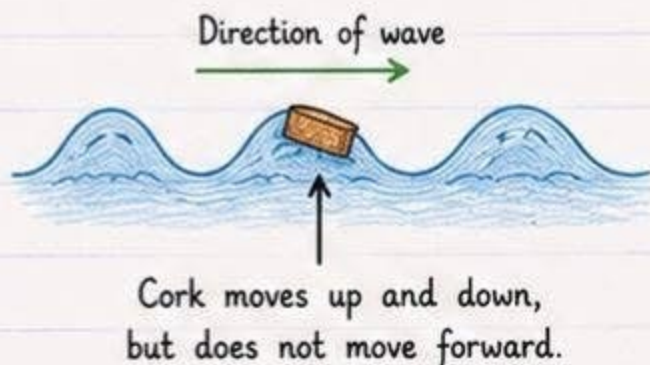
29. AMPLITUDE:

Amplitude is the maximum displacement of a vibrating particle from its mean (rest) position.



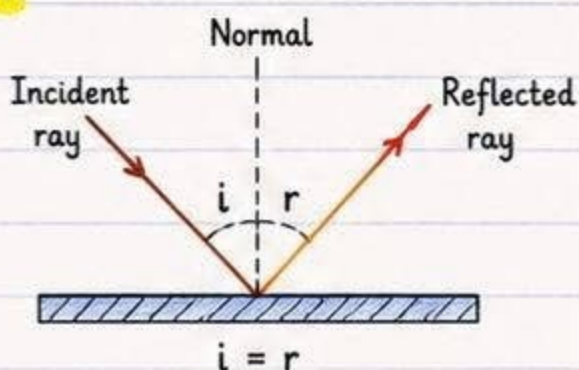
30. WAVE:

A wave is a disturbance that transfers energy from one place to another without transferring matter.



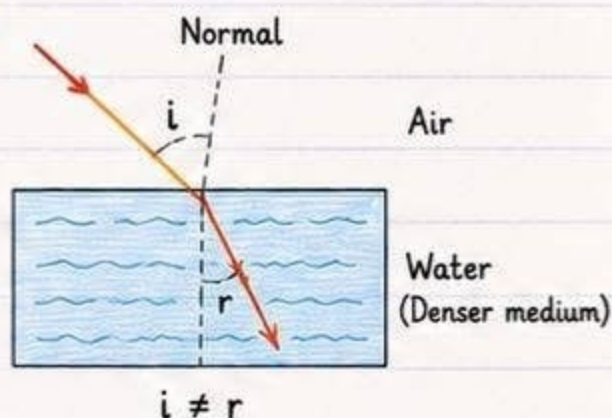
31. REFLECTION OF LIGHT:

The bouncing back of light into the same medium after striking a surface is called reflection.



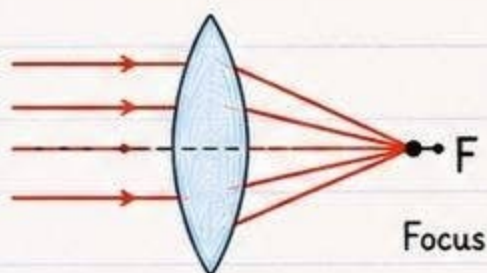
32. REFRACTION OF LIGHT:

The bending of light when it passes from one medium to another is called refraction.



33. FOCUS:

Focus is the point where parallel rays of light converge after reflection or refraction.



34. DENSITY:

Density is the mass per unit volume of a substance.

$$\rho = \frac{m}{V}$$

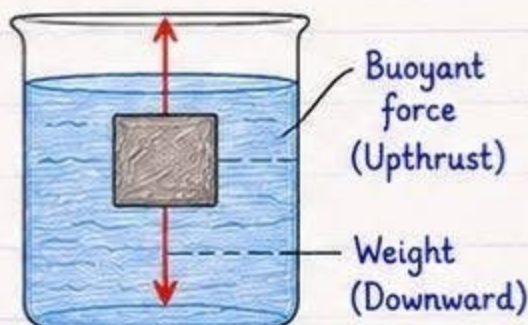
ρ = Density (kg/m^3)

m = Mass (kg)

V = Volume (m^3)

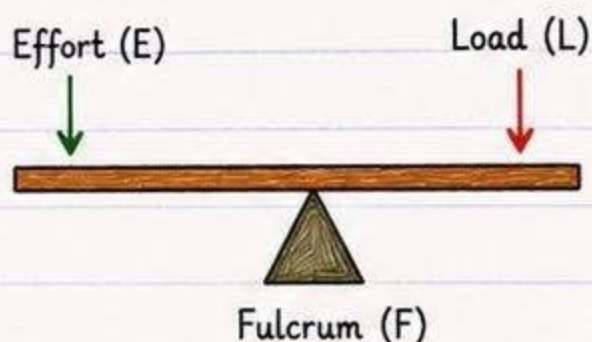
35. BUOYANCY:

Buoyancy is the upward force exerted by a fluid on an object immersed in it.



36. LEVER:

A lever is a rigid bar that turns about a fixed point called the fulcrum.



37. MECHANICAL ADVANTAGE (MA):

Mechanical advantage is the ratio of load to effort.

$$MA = \frac{\text{Load (L)}}{\text{Effort (E)}}$$

38. EFFICIENCY:

Efficiency is the ratio of useful output to input, usually expressed in percentage.

$$\text{Efficiency } (\eta) = \frac{\text{Useful Output}}{\text{Input}} \times 100\%$$

η = Efficiency

39. ELECTRIC CURRENT:

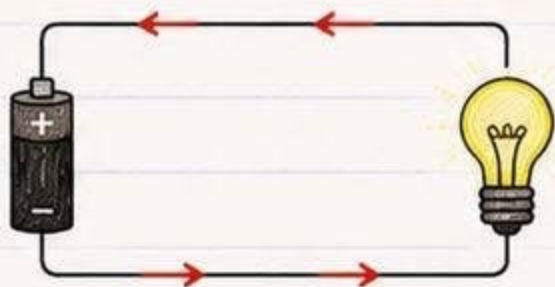
Electric current is the rate of flow of electric charge through a conductor.

$$I = \frac{Q}{t}$$

I = Current (A)

Q = Charge (C)

t = Time (s)



40. RESISTANCE:

Resistance is the opposition offered by a conductor to the flow of electric current.

$$R = \frac{V}{I}$$

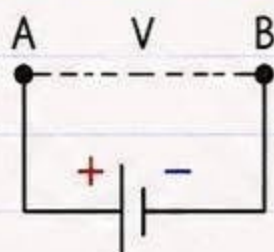
R = Resistance (Ω)

V = Potential difference (V)

I = Current (A)

41. VOLTAGE (POTENTIAL DIFFERENCE):

Voltage is the work done per unit charge to move a charge between two points.



$$V = \frac{W}{Q}$$

V = Voltage (V)

W = Work (J)

Q = Charge (C)

42. OHM'S LAW:

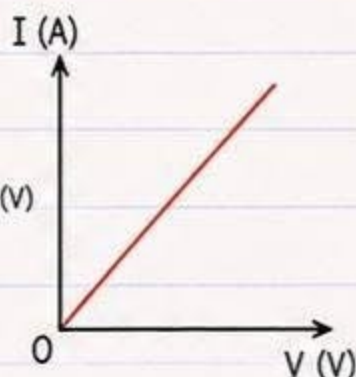
At constant temperature, the current through a conductor is directly proportional to the potential difference across it.

$$V = IR$$

V = Potential difference (V)

I = Current (A)

R = Resistance (Ω)



43. ELECTRICAL ENERGY:

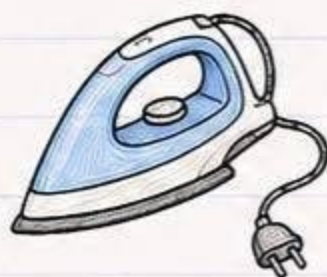
Electrical energy is the energy consumed by an electrical appliance when electric current flows through it.

$$E = Pt$$

E = Energy (J)

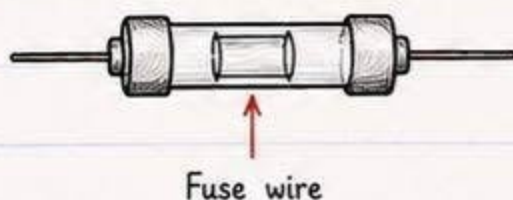
P = Power (W)

t = Time (s)



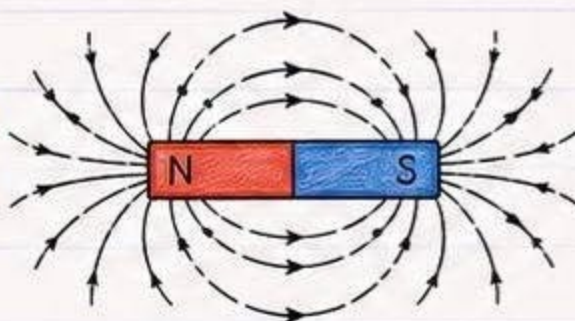
44. FUSE:

A fuse is a safety device that melts and breaks the circuit when excess current flows through it.



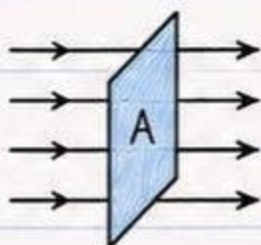
45. MAGNETIC FIELD:

The region around a magnet in which magnetic force can be experienced is called magnetic field.



46. MAGNETIC FLUX:

Magnetic flux is the total number of magnetic field lines passing through a given area.



$$\Phi = B A \cos \theta$$

Φ = Magnetic flux (Wb)

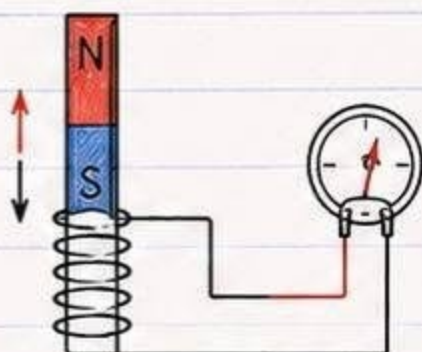
B = Magnetic field (T)

A = Area (m^2)

θ = Angle between B and area normal

47. INDUCTION:

Electromagnetic induction is the production of an induced e.m.f. in a conductor when the magnetic flux linked with it changes.



48. INDUCED E.M.F.:

The e.m.f. produced in a conductor due to change in magnetic flux is called induced e.m.f.

$$\mathcal{E} = -N \frac{d\Phi}{dt}$$

$\mathcal{E}$ = Induced e.m.f. (V)

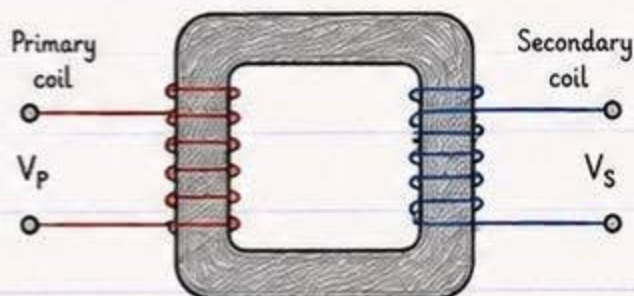
N = Number of turns

Φ = Magnetic flux (Wb)

t = Time (s)

49. TRANSFORMER:

A transformer is a device that changes high alternating voltage into low voltage or vice versa.



50. REFRACTIVE INDEX:

Refractive index is the ratio of the speed of light in vacuum to the speed of light in a medium.

$$n = \frac{c}{v}$$

n = Refractive index

c = Speed of light in vacuum

v = Speed of light in medium

51. SPECIFIC HEAT CAPACITY:

Specific heat capacity is the amount of heat required to raise the temperature of 1 kg of a substance by 1°C .

$$c = \frac{Q}{m \Delta T}$$

c = Specific heat capacity ($\text{J/kg}^{\circ}\text{C}$)

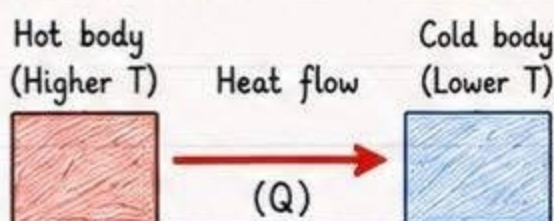
Q = Heat energy (J)

m = Mass (kg)

ΔT = Change in temperature ($^{\circ}\text{C}$)

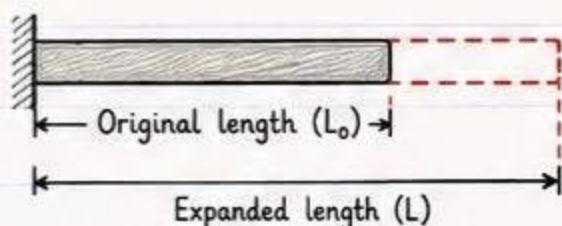
52. HEAT:

Heat is a form of energy that flows from a body at higher temperature to a body at lower temperature.



53. THERMAL EXPANSION:

The increase in size, length, area or volume of a body when its temperature increases is called thermal expansion.



$$\Delta L = \alpha L_0 \Delta T$$

ΔL = Change in length

α = Coefficient of linear expansion ($^{\circ}\text{C}^{-1}$)

L_0 = Original length

ΔT = Change in temperature ($^{\circ}\text{C}$)

54. DENSITY (ρ):

Density is the mass per unit volume of a substance.

$$\rho = \frac{m}{V}$$

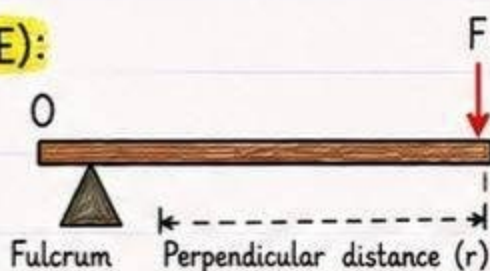
ρ = Density (kg/m^3)

m = Mass (kg)

V = Volume (m^3)

55. MOMENT OF FORCE (TORQUE):

The turning effect of a force about a fixed point or axis is called moment of force or torque.



$$\tau = F \times r$$

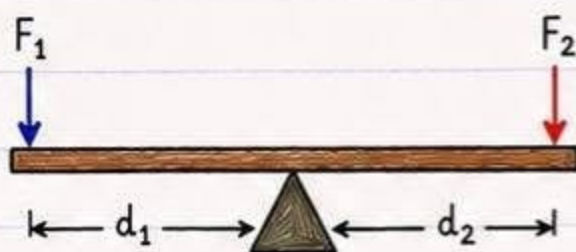
τ = Torque ($\text{N}\cdot\text{m}$)

F = Force (N)

r = Perpendicular distance (m)

56. EQUILIBRIUM:

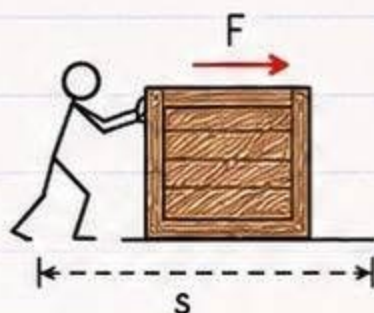
A body is said to be in equilibrium when the net force and net torque acting on it are zero.



For equilibrium:
 $\Sigma F = 0$ and $\Sigma \tau = 0$

57. WORK:

Work is said to be done when a force causes a body to move through a distance in the direction of the force.



$$W = F \times s \cos \theta$$

W = Work (J)
 F = Force (N)
 s = Displacement (m)
 θ = Angle between F and displacement

58. KINETIC ENERGY (KE):

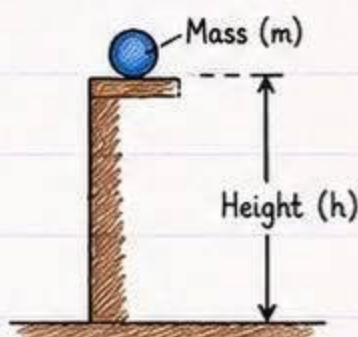
Kinetic energy is the energy possessed by a body due to its motion.

$$KE = \frac{1}{2} m v^2$$

m = Mass (kg)
 v = Velocity (m/s)
 KE = Kinetic energy (J)

59. POTENTIAL ENERGY (PE):

Potential energy is the energy possessed by a body due to its position or configuration.



$$PE = m g h$$

m = Mass (kg)
 g = Acceleration due to gravity (9.8 m/s^2)
 h = Height (m)
 PE = Potential energy (J)

60. LAW OF CONSERVATION OF ENERGY:

Energy can neither be created nor be destroyed. It can only be transformed from one form to another.



Kinetic Energy



Electrical Energy

$$\text{Total energy before} = \text{Total energy after}$$