

YAKEEN NEET 2.0

2026

Laws of Motion

Physics

Lecture – 01

By– Manish Raj (MR Sir)





Topics to be covered

1 #

Inertia.

2

1st, 2nd, 3rd Law of Motion

3

4

only clay → 30 to 35 question
(NEET + JEE Main + JEE Adv)
(MR. PHYSICS) ✓

→ DPP Practice Karo

→ Maha-manthan → Theory (NCERT + HCV)
100% covered

→ Sangharsh arjyam (42+44 question)

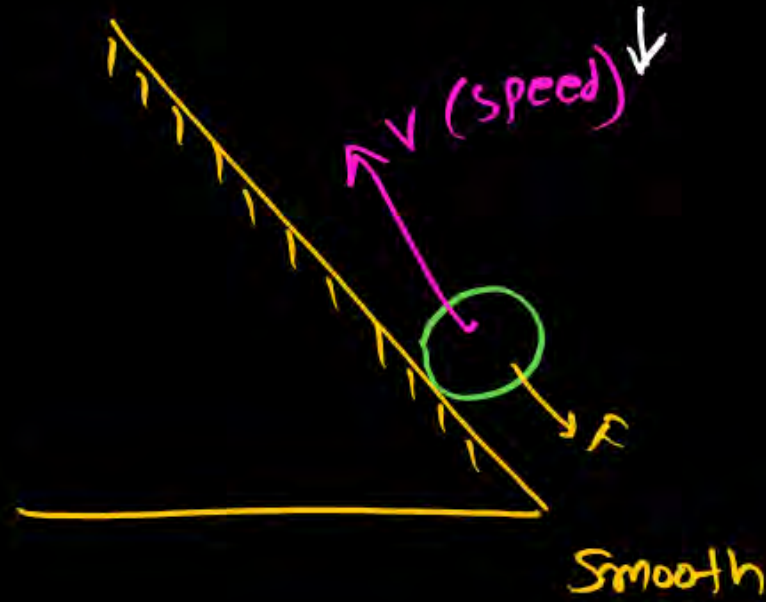
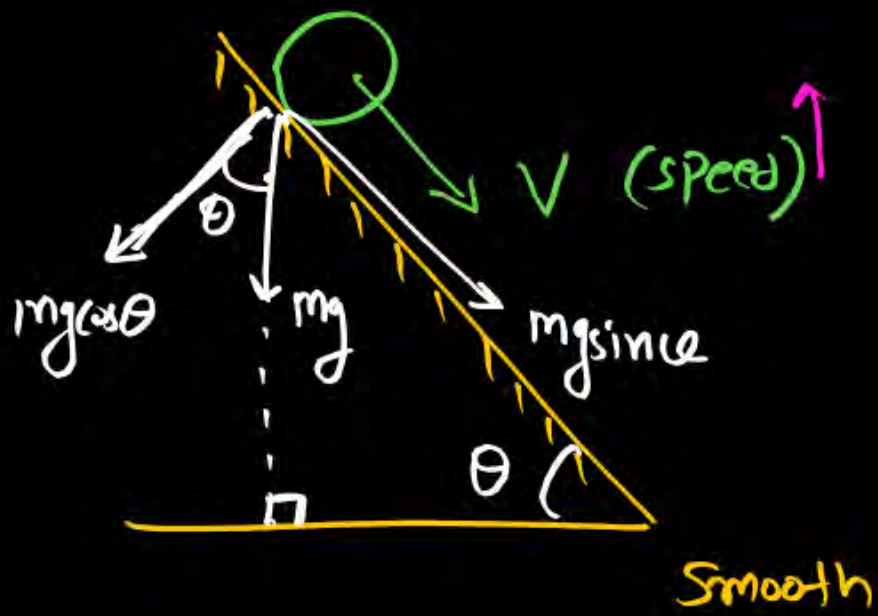
Sanghar assignment - 4
(motion in plane)

→ H/w solution
same hai

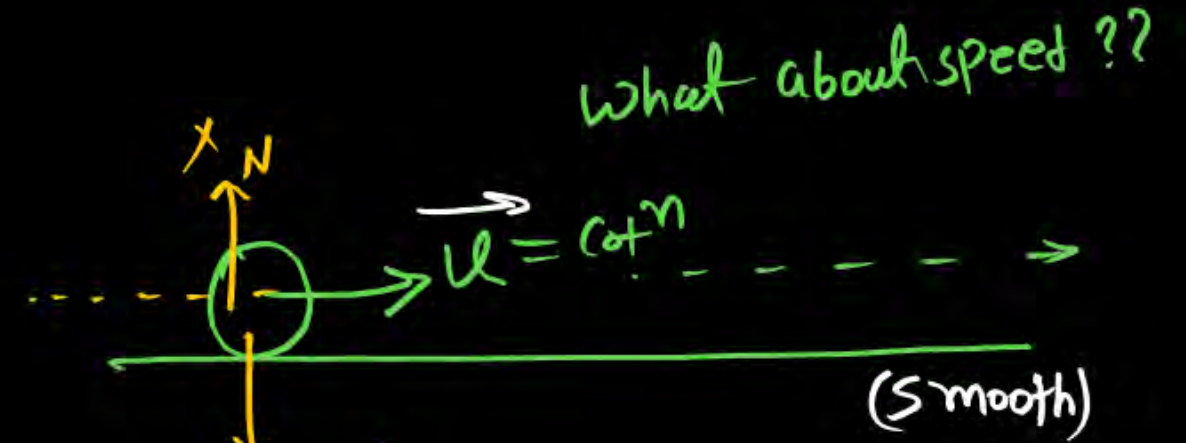
→ Based on circular
motion.

Must hai karna

→ Kuch concept
discuss kiya hai
usko note ⁱⁿ it
add karna hai



Rest &
Motion is inherent property of
body.



\vec{u} (velocity) = cot^n

$\vec{a} = 0$

$F_{\text{net}} = 0$ ✓

(Q) Who is responsible to keep the
object in Motion ??

Ans \rightarrow { No external
force } $F_{\text{net}} = 0$ ✓

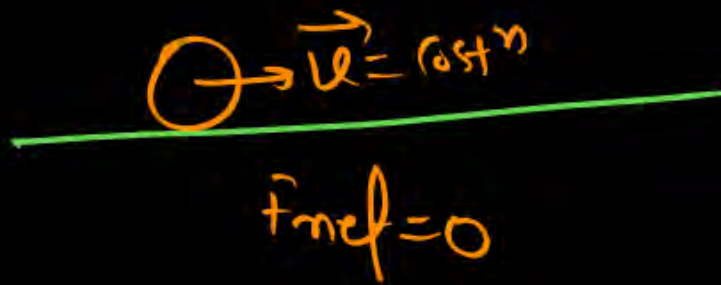
Physical state of a body for rest^n mass: — \rightarrow Inherent property of body.

(1) state of rest ($\vec{v}=0$)

(2) state of uniform motion ($\vec{v} = \text{const}^n$)

No net external force required to keep the object in same physical state.

Condition of equilibrium: — Same physical state me rahna.



Change in state.

(i) change in state of rest to motion.

(ii) change in state of uniform motion to

speed \uparrow

speed \downarrow

dirⁿ change

Force \rightarrow Cause of change in state.

Pull, Push.

vector
unit (Newton)

✓
MR* Box:- for force

- ① Force ke liye ye
dekho koin-kis pe ^{force}
apply kar raha hai force.
- ② Kitna force, Kis direction
me hai, or kis point par
apply ho raha hai

✓ Kitna, Kidher, Kis Point Par

MR* Box for
Translational
equilibrium.

$\vec{F}_{net} = 0$

$\vec{v} = 0$
(rest)

$\vec{v} = \text{const}^n$
(uniform Motⁿ)

Inertia → Property of object due to which it oppose the change in state (physical state)

→ This is Not a physical quantity.

→ It can't measure or calculate, can compare only.

- ① Inertia of rest :-
- ② Inertia of uniform motion : $\left. \begin{array}{l} \text{Inertia of speed} \\ \text{Inertia of dir}^n \end{array} \right\}$

Inertia of Pinky > Inertia of Rambo

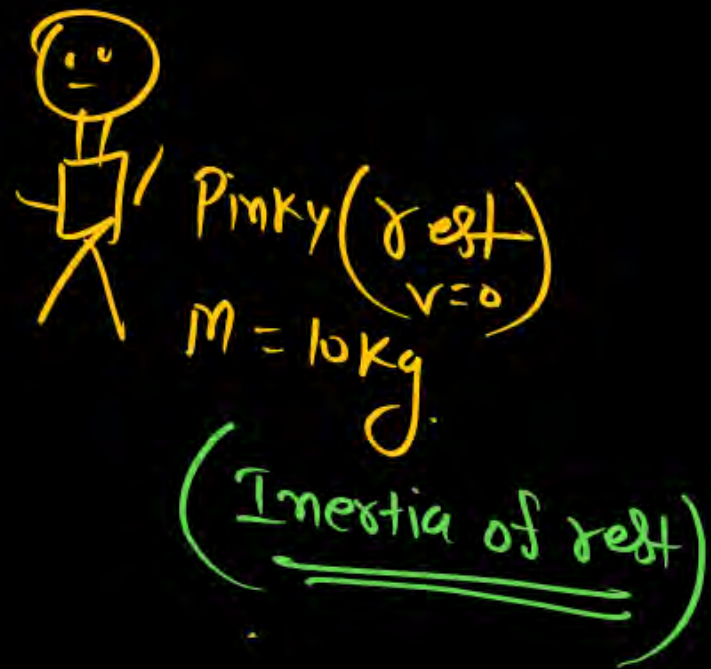
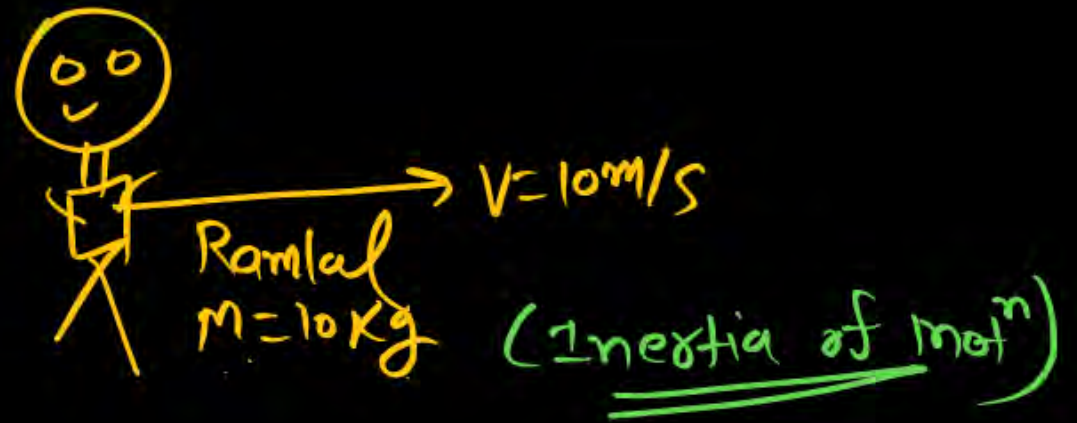
Inertia \propto mass

→ unit → ~~(a) Kg~~
✓✓ (b) unit less



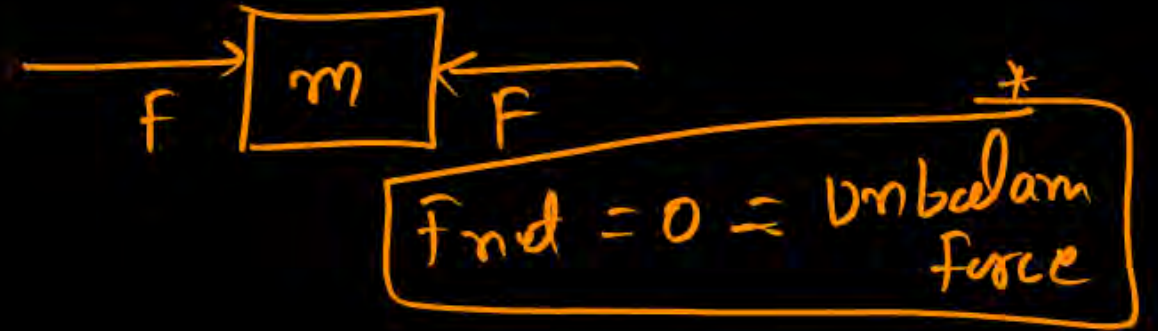
Which have more Inertia ??

↳ equal Inertia.



Newton's 1st Law

→ Law of Inertia.
→ Qualitative definition of motion.



- ① If Net external force Acting on object is zero, then it will continue its physical state of rest or state of uniform motion.
- ② Object will continue its state unless & until net external force will act on it.

$$\left[\begin{array}{l} \textcircled{\#} \sum_{\text{net}} F_x = 0 \quad ; \quad \vec{a}_x = 0 \Rightarrow \vec{v}_x = \text{const.} \\ \textcircled{\#} \sum_{\text{net}} F_y = 0 \quad ; \quad \vec{a}_y = 0 \Rightarrow \vec{v}_y = \text{const.} \end{array} \right]$$

NEWTON'S FIRST LAW OF MOTION

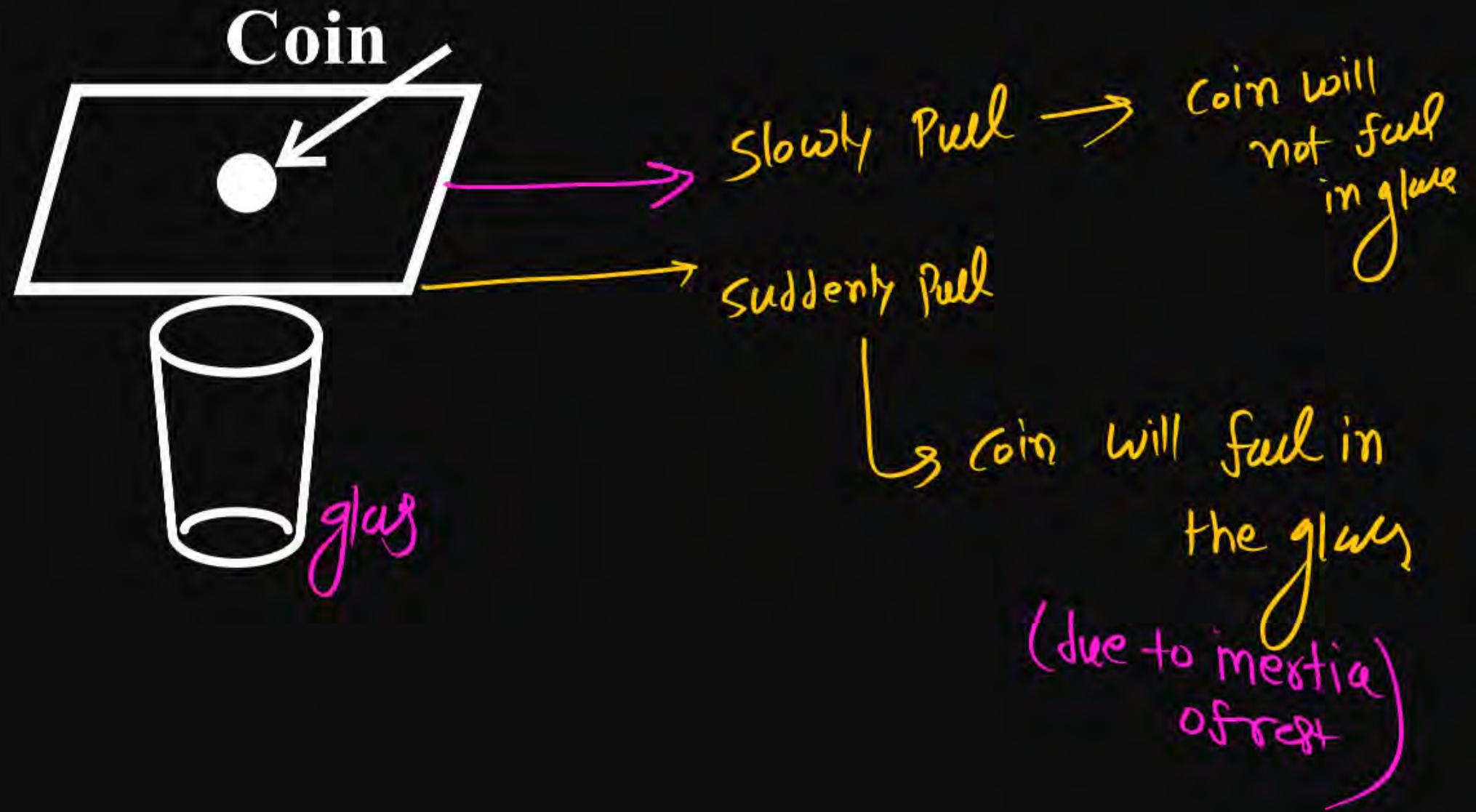


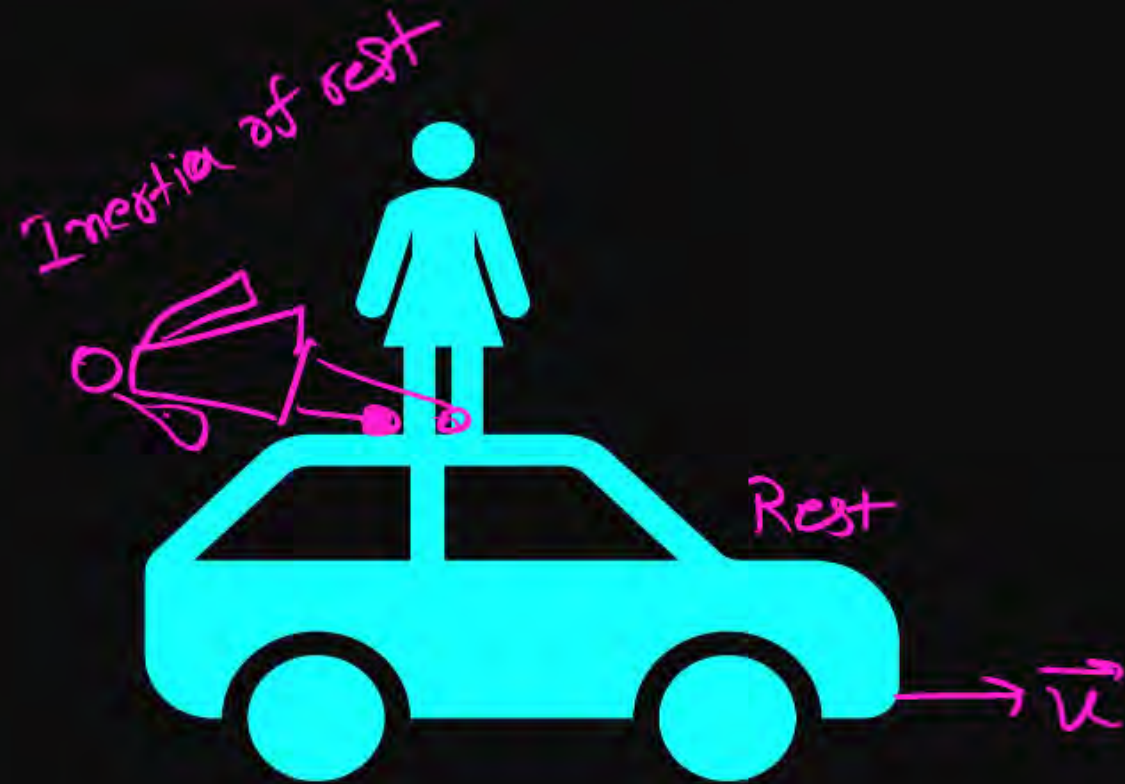
An object that is at rest will stay at rest



Unless an external force acts upon it.

An object that is at rest;
will stay at rest unless
an external force
acts upon it.





Suddenly car starts to move then Pinky will fall

- (a) Forward ~~X~~
- (b) Backward
- (c) Remains same

Kids in the school bus when
the driver randomly hits break



due to Inertia of motⁿ,

Notes of Physics
Practicals



Question

Likho
Pae



When an object is at rest

- 1 Force is required to keep it in rest state ~~X~~
- 2 No force is acting on it ~~X~~ but $F_{net} = 0$
- 3 ✓ A large number of forces may be acting on it which (balance each other)
 $F_{net} = 0$
- 4 ~~X~~ It is in vacuum

Question

nahi likhna.



When an object is in equilibrium state, then

- 1 It must be at rest ~~X~~
- 2 No force is acting on it ~~X~~
- 3 Its net acceleration must be zero ✓
- 4 ~~X~~ All of these

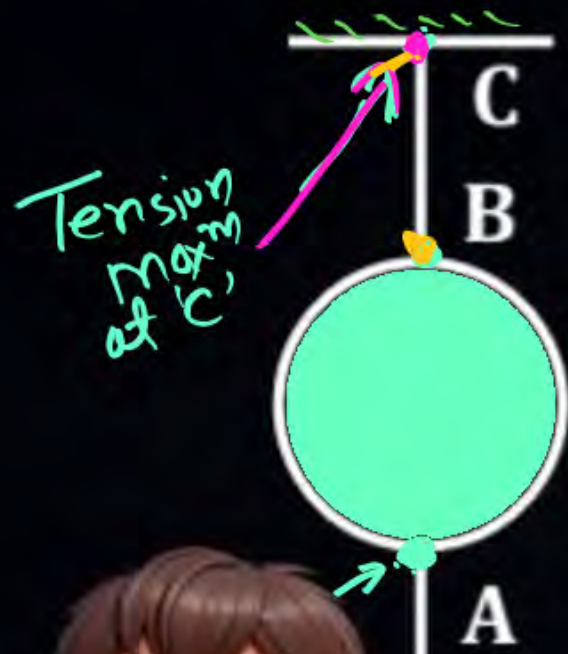
Question

જાણી લેવા



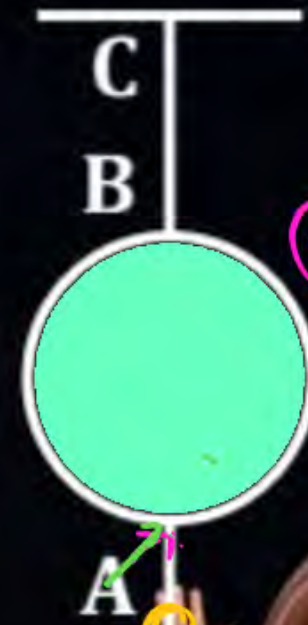
An athlete does not come to rest immediately after crossing the winning line due to the ✓

- 1 Inertia of rest
- 2 ✓ Inertia of motion
- 3 Inertia of direction
- 4 None of these



Pulling Slowly

String will break from 'C'
max^m tension at 'C'



Pulling Suddenly

String will break from 'A'
due to Inertia

धर पर मिला

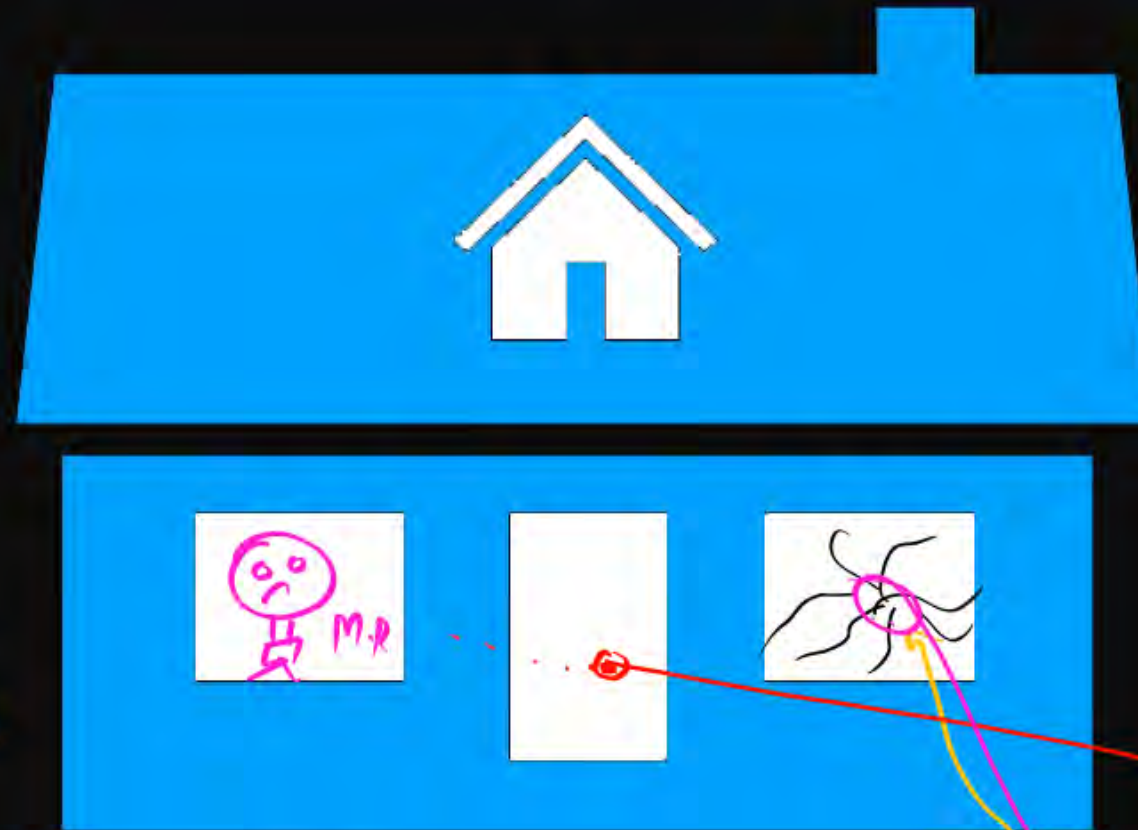
Time of contact
Ball ke case me
Jyada hoga.

Ball se glass Break huaa

Ans

due to Inertia of
rest glass

but bullet se Kyu Nahi huaa ??
bullet se Just hole huaa.



Babu

Kallu



Question



A boy sitting on the topmost berth in the compartment of a train which is just point to stop on a railway station, drops an apple aiming at the open hand of his brother sitting vertically below his hands at a distance of about 2 meter. The apple will fall:

- ☒ 1 Precisely on the hand of his brother.
- ☒ 2 Slightly away from the hand of his brother in the direction of motion of the train.
- ☒ 3 Slightly away from the hand of his brother in the direction opposite to the direction of motion of the train.
- ☐ 4 None of the above

hint → apple will
copy velocity (Inertia)
but not retarded
 $a_{apple} = g (\downarrow)$





Force



• Fundamental Force

- ✓ (1) Gravitational force
- ✓ (2) Electromagnetic force
- ✓ (3) Strong nuclear force
- ✓ (4) Weak nuclear force

nuclear physics

Derived force

Weight force

mg (due to gravity)

Normal Reaction

Tension

Friction

Buyant force

Viscus force

Spring force

all force are
derived from
electromagnetic
force

→ likho AIPMT →
origin of friction
force is
→ Electromagnetic
force

Newton 3rd Law: — → Action & reaction are not a Cause effect.

Every Action have equal and opposite reaction.

Ⓢ Ⓢ correct statement ??

MR Scam

~~X~~ (a) Action is a cause of reaction

~~X~~ (b) Reaction is a cause of Action

~~X~~ (c) Both.

✓✓ (d) None of them

(only 5%)
Correct

Newton's 3rd Law :-

You can't touch without being touched \rightarrow Newton's 3rd Law

Pinky Kallua

Ram Lal



definition of force

force always exist in Pair.

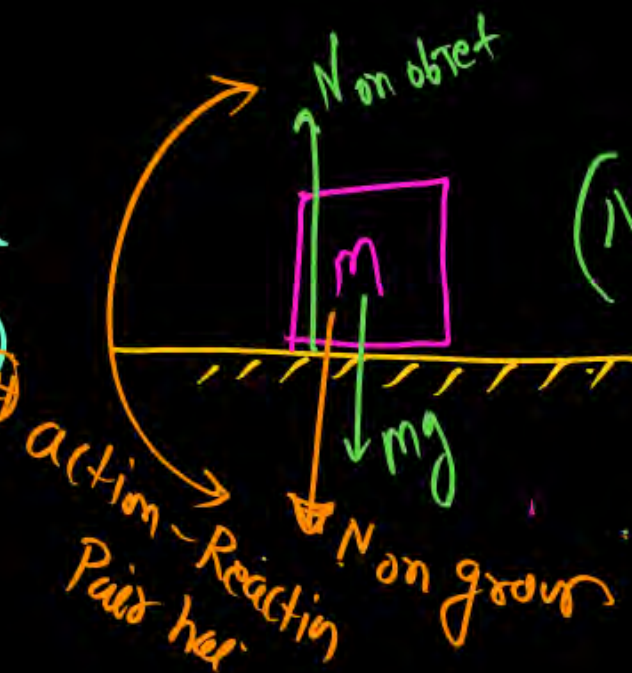
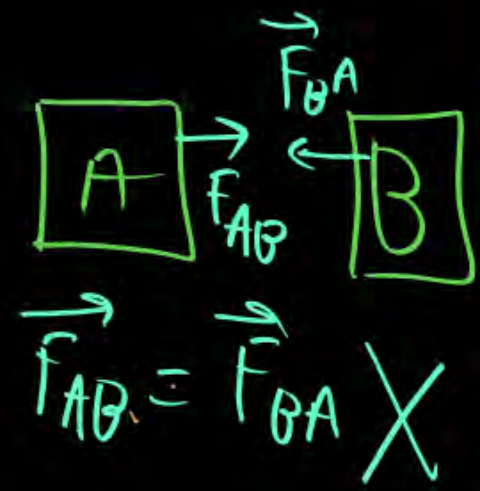
Two object will apply equal & opposite force on each other

That force acts at same time*

Nature of force of action & reaction must be same nature*

act on diffⁿ body

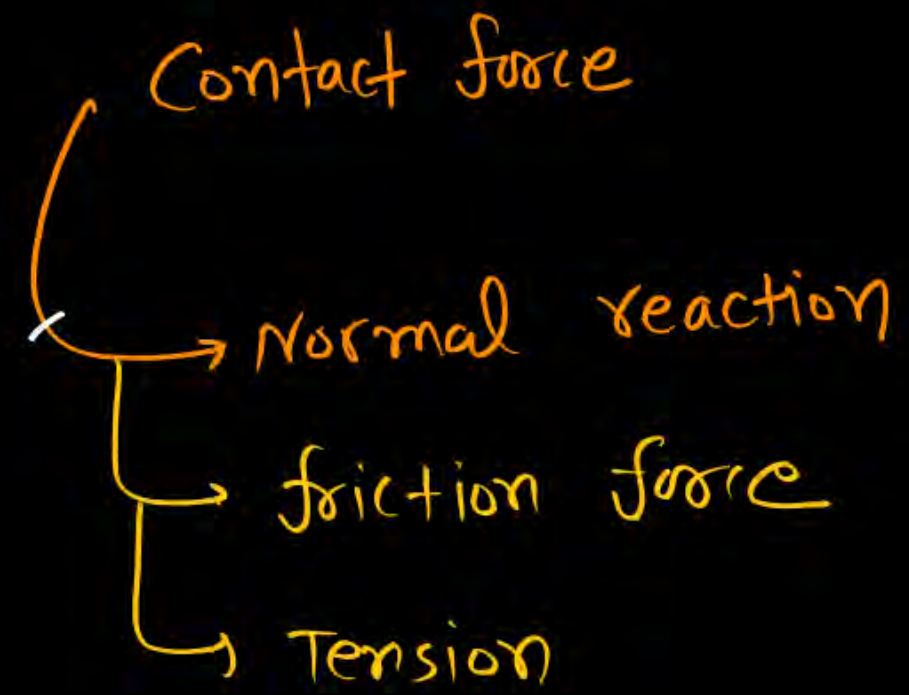
$$\vec{F}_{AB} = -\vec{F}_{BA} \checkmark$$



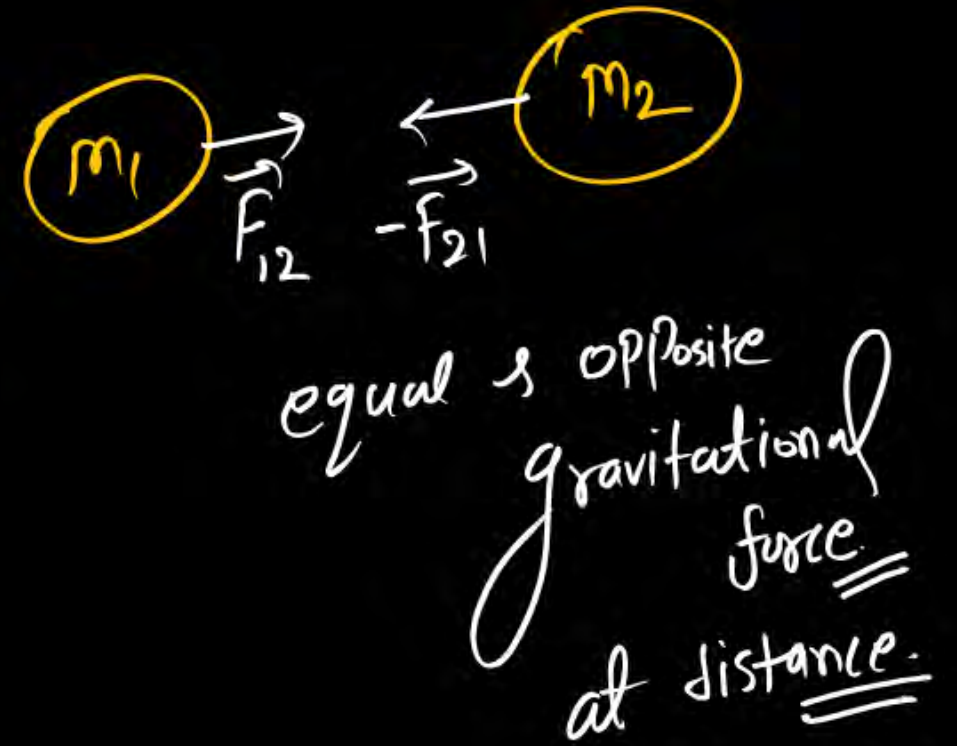
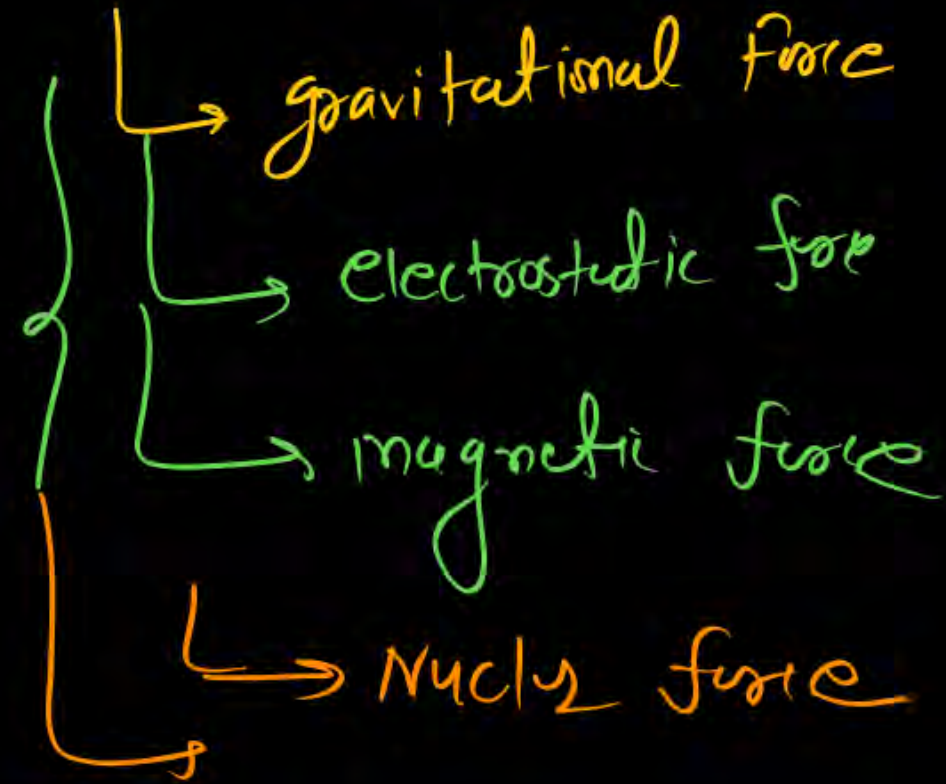
$(N=mg)$ as this action reaction pair??

$N \neq mg$ act on same body

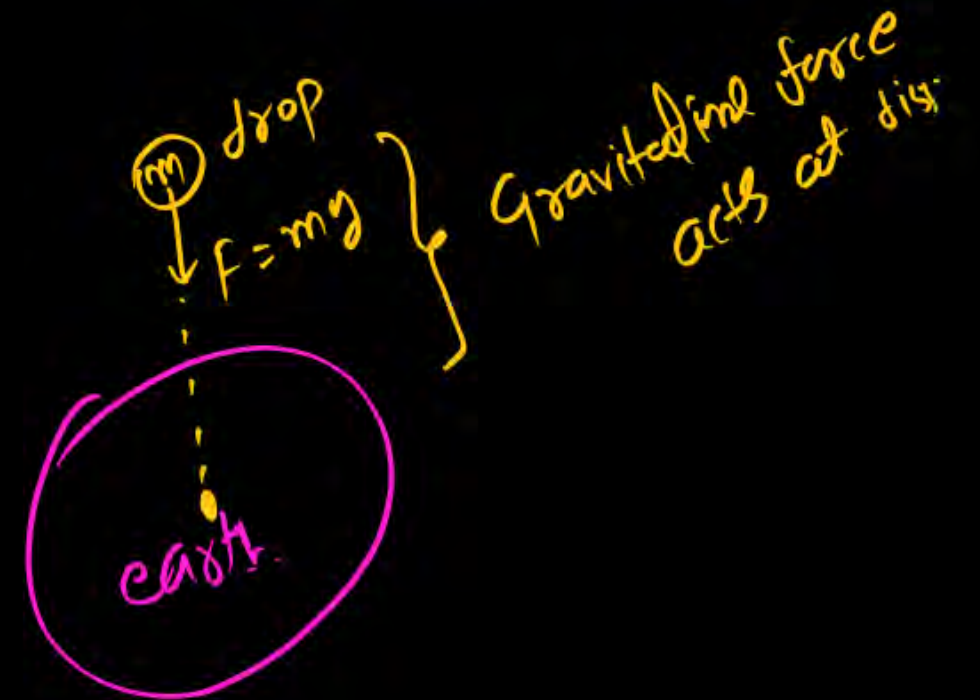
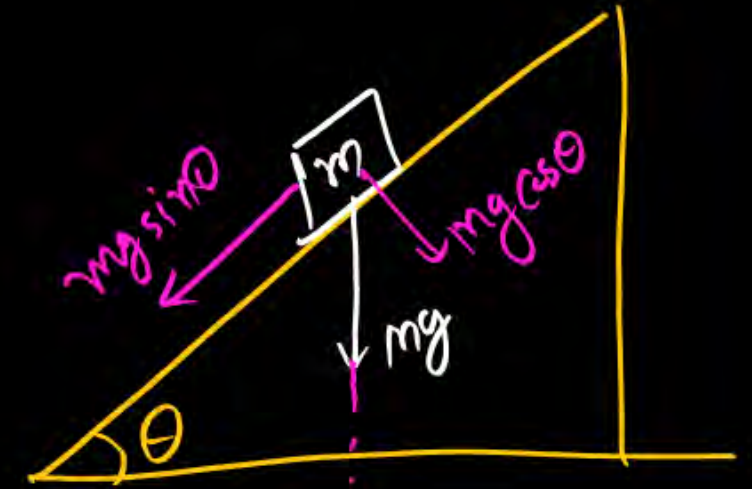
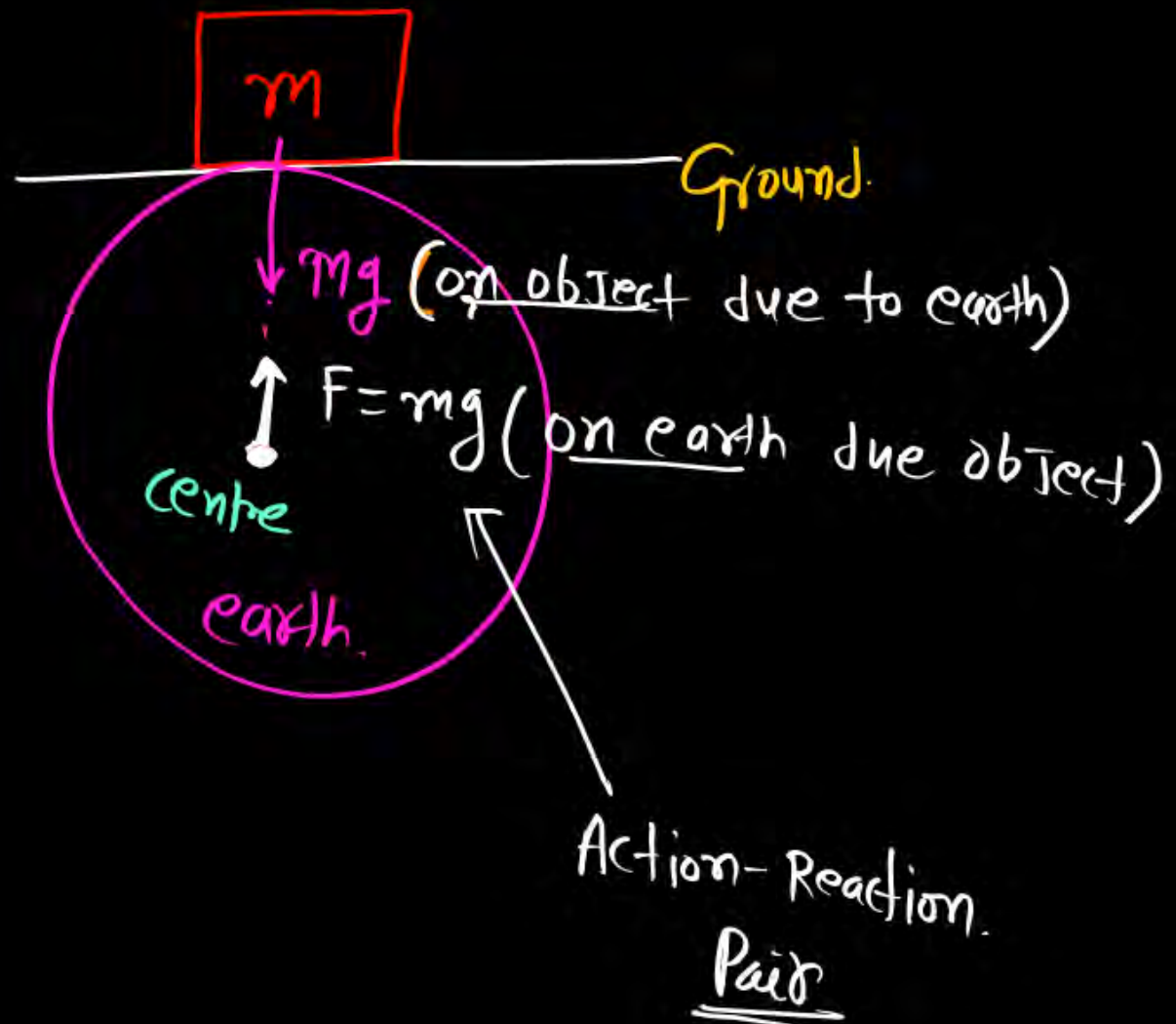
N & mg are diffⁿ nature of force



Non-Contact force



Gravitational force: — weight force \rightarrow direction always towards centre of earth: —

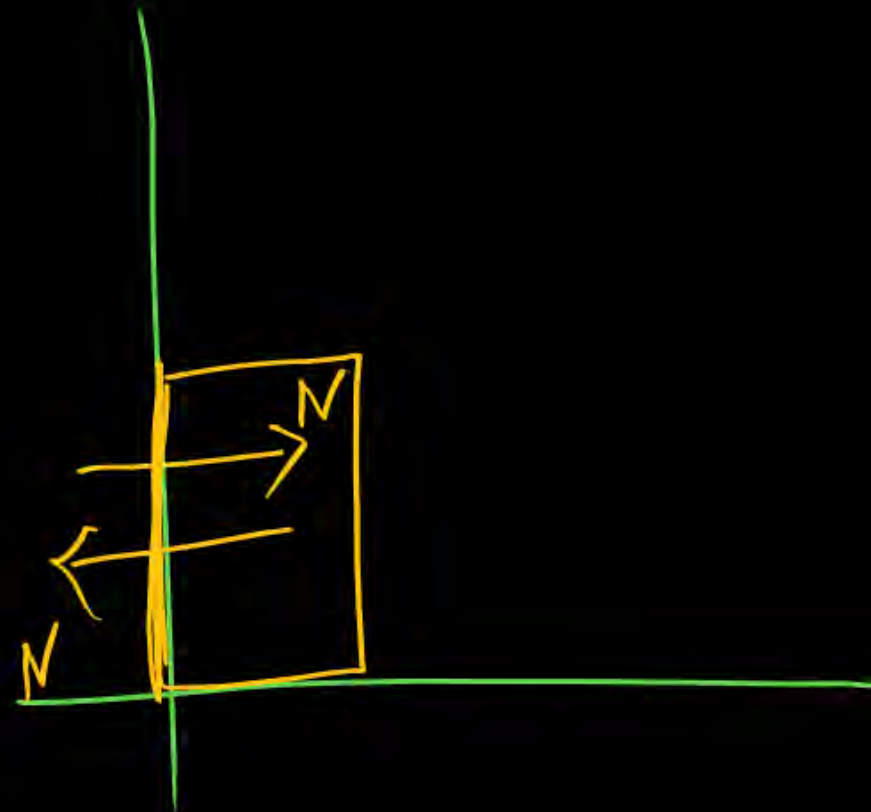
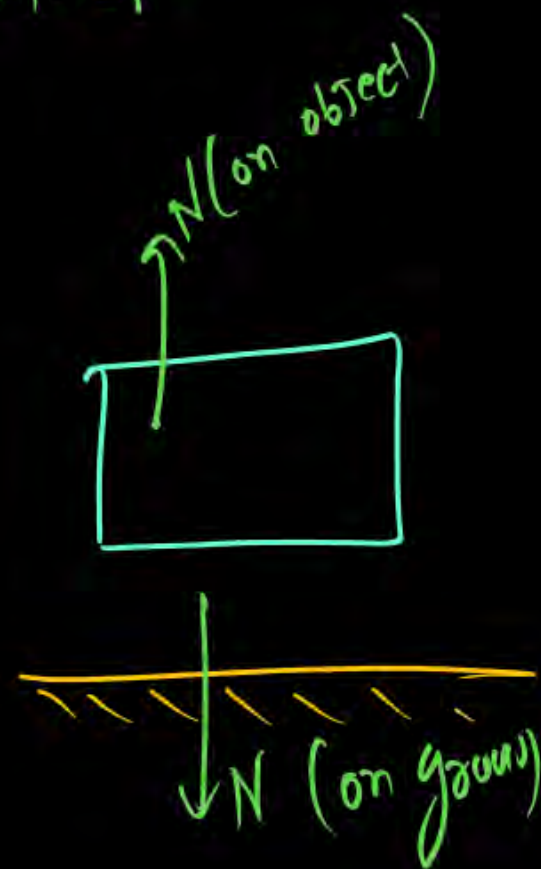
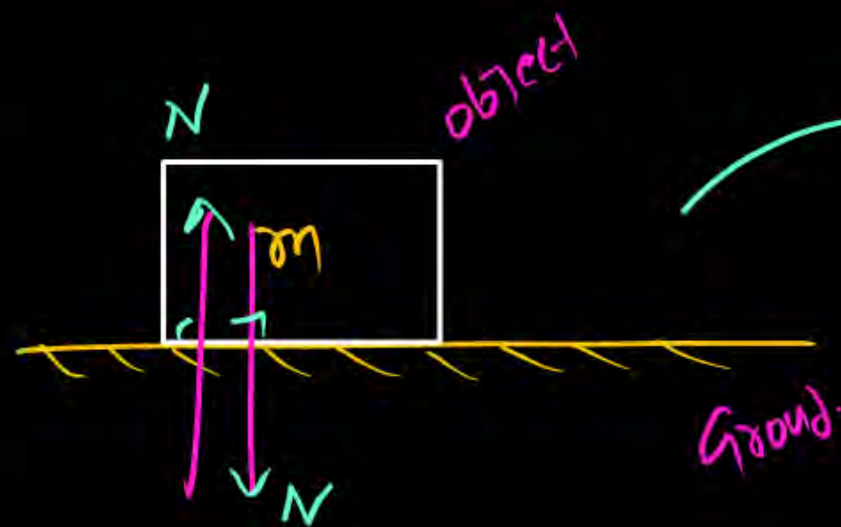


Normal reaction (Normal force)

- due to contact.
- Normal rxn always acts at contact of two body perpendicular to contact surface.

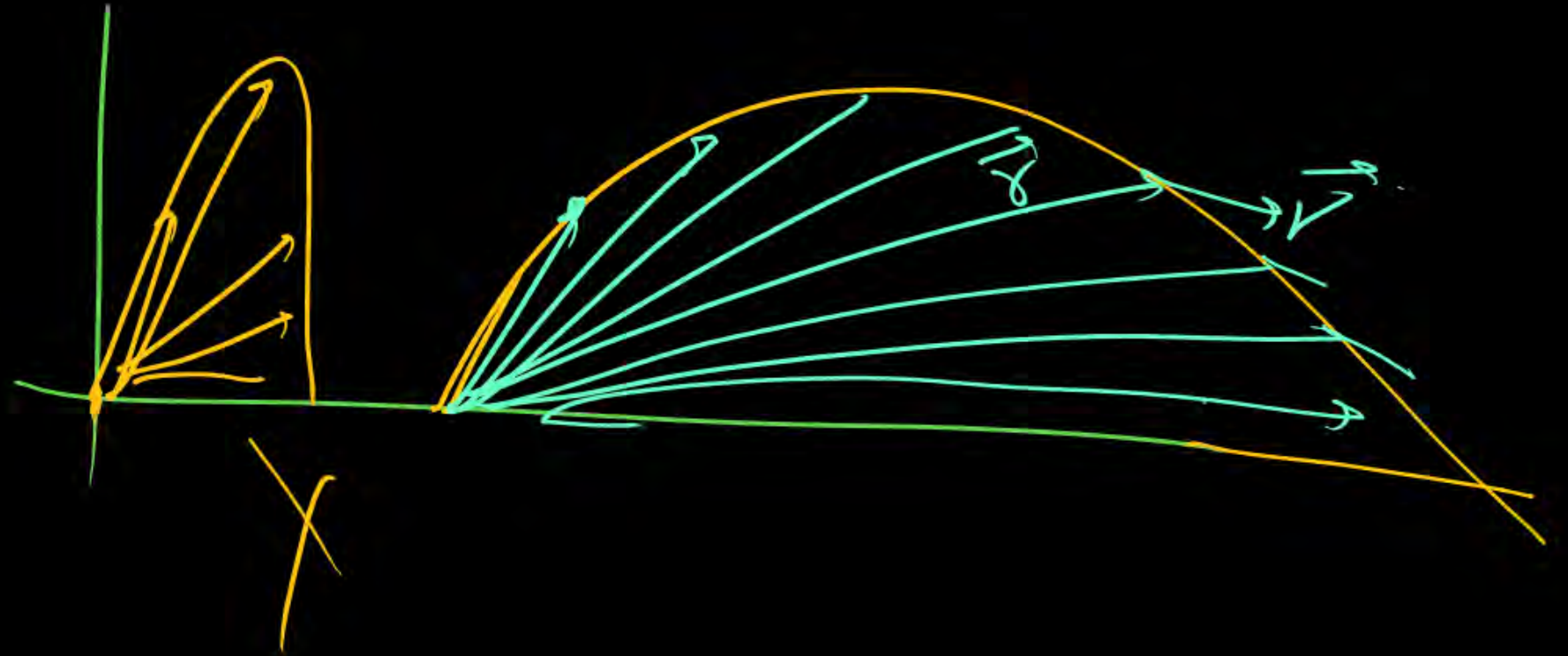
Imp Box for Norm

Jaha Contact hai, Contact Surface ke \perp , do Parallel line draw karo.



Q) Ball is Project at angle θ , then find θ such that its position vector always increase from point of Projection, during Projectile Motion.

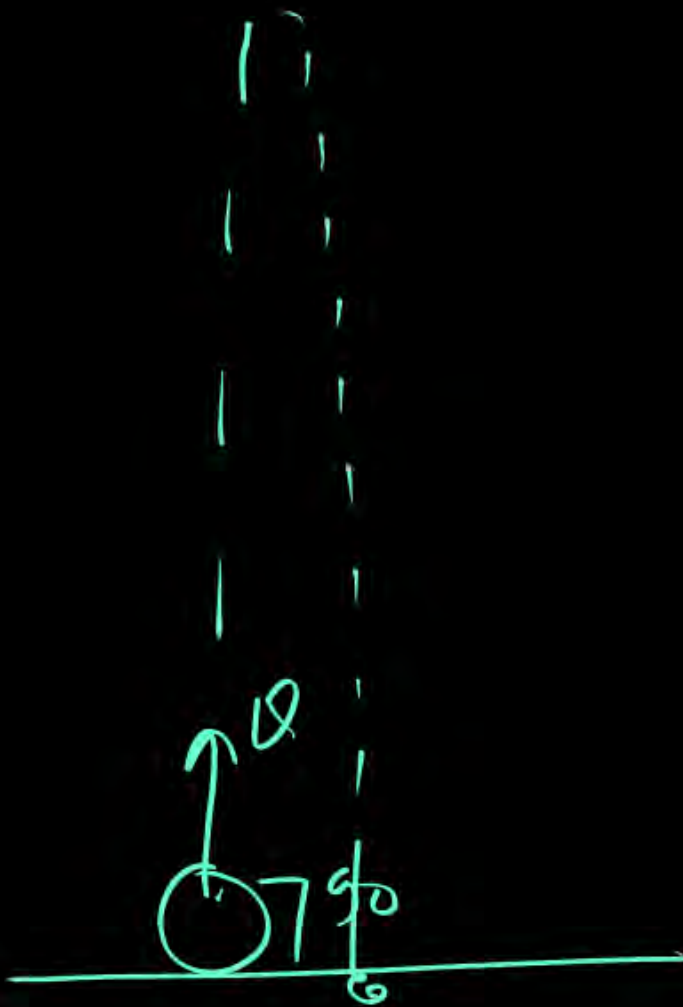
think ~~$\theta = 45^\circ$~~
for R_{max}
 ~~$\theta = 90^\circ$~~
 ~~$\theta = 0^\circ$~~





@MRPHYSICSS

← Mahamantan
← Sangharsh assignment



HOME WORK

→ assignment solution dekh lena

THANK
YOU