



PRAYAS

JEE 2025

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Lecture- 02

Physics

Laws Of Motion

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Topics *to be covered*

1 FBD

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2

3

4



$$(\vec{F}_{\text{net}})_{\text{ext}} = \frac{d\vec{p}}{dt}$$

momentum

$$p = 3t^2 + 4t$$

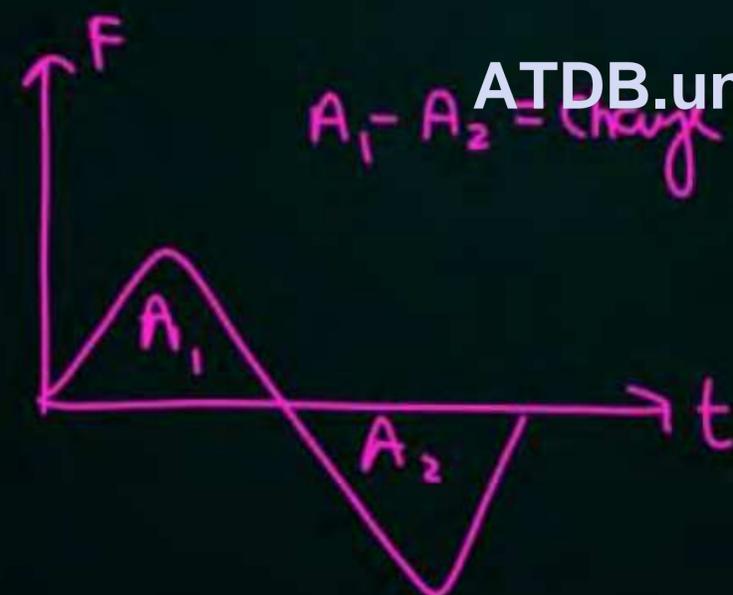
find net force, acc at $t = 2$ sec ($m = 2$ kg)

$$F = \frac{dp}{dt} = 6t + 4$$

$$t = 2 \quad F = 16 \text{ N}$$

$$a = \frac{F}{m} = 8$$

$$\Delta \vec{p} = \int d\vec{p} = \int \vec{F} dt = \text{Area}$$



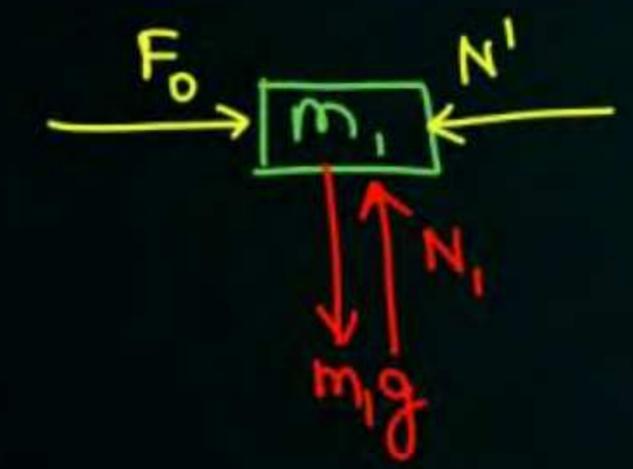
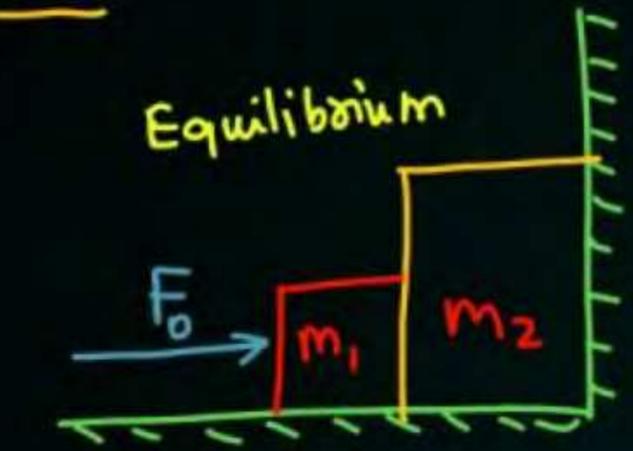
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 $A_1 - A_2 = \text{change in momentum}$



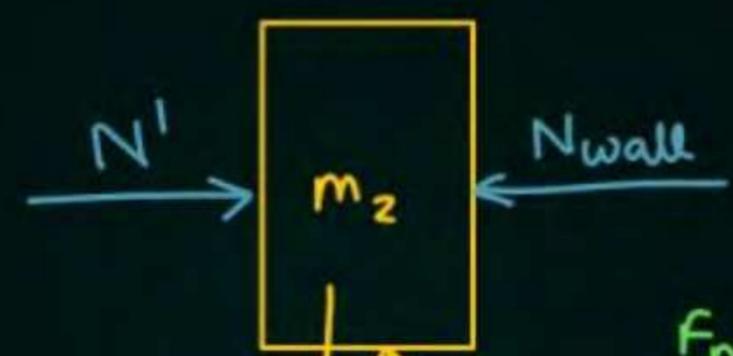
Draw FBD

①

Equilibrium



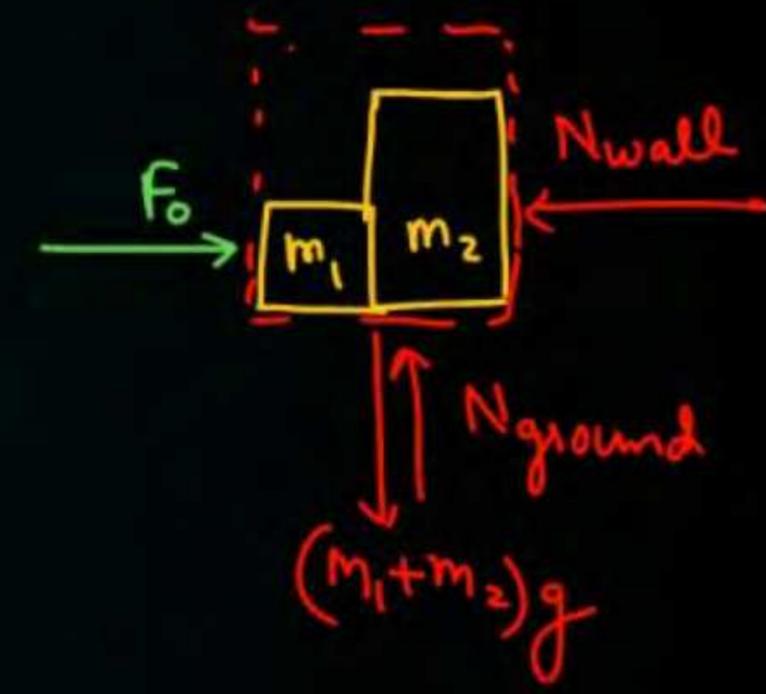
$N_1 = m_1 g$
 $F_0 = N'$

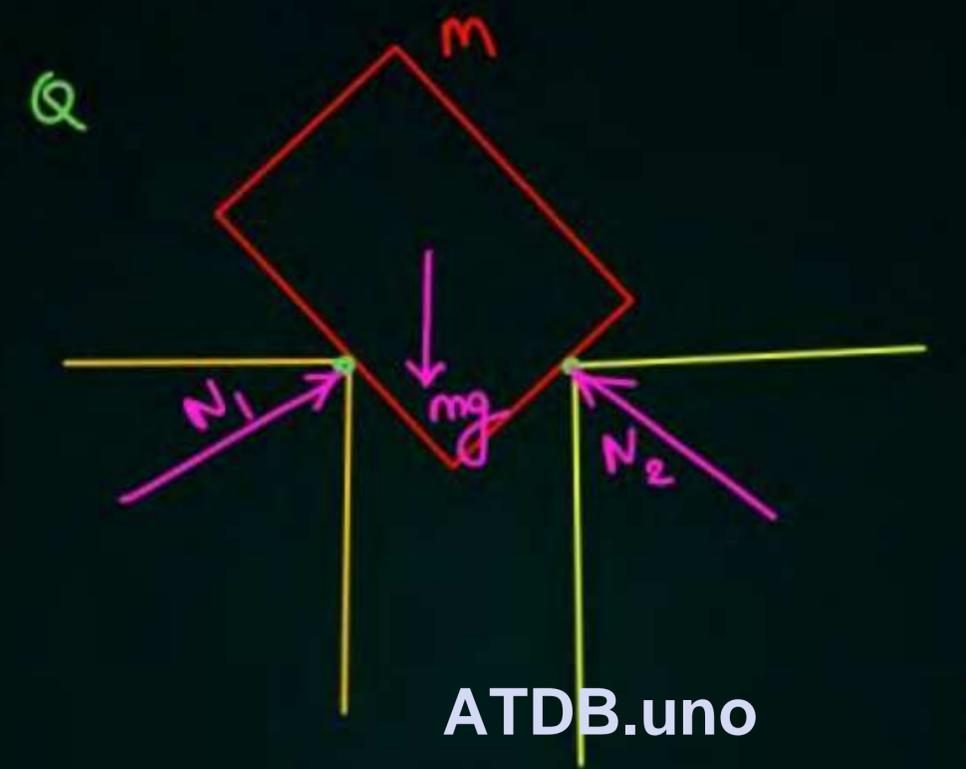
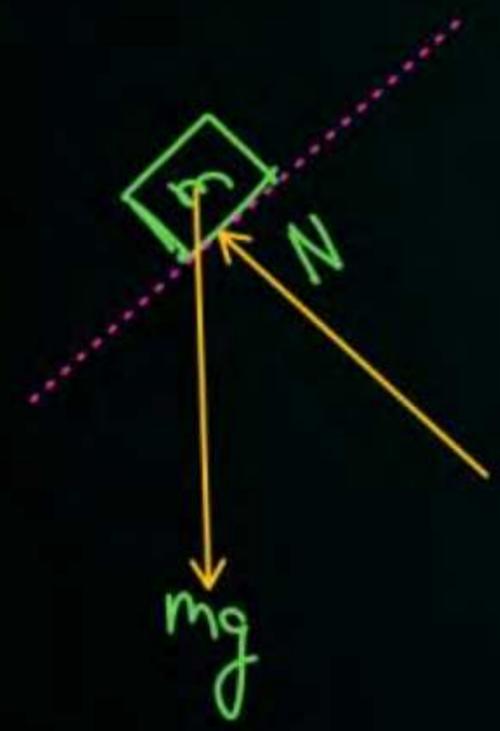
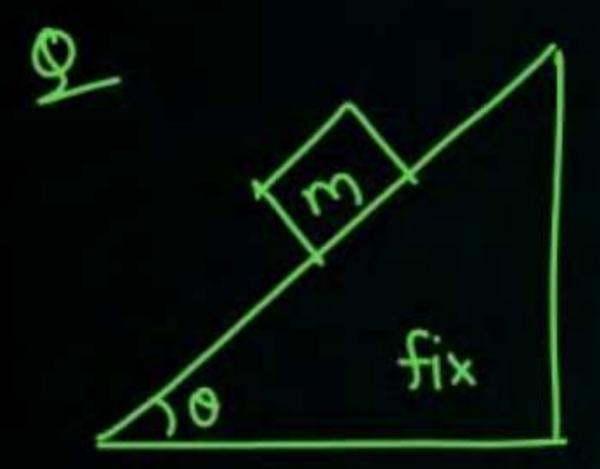


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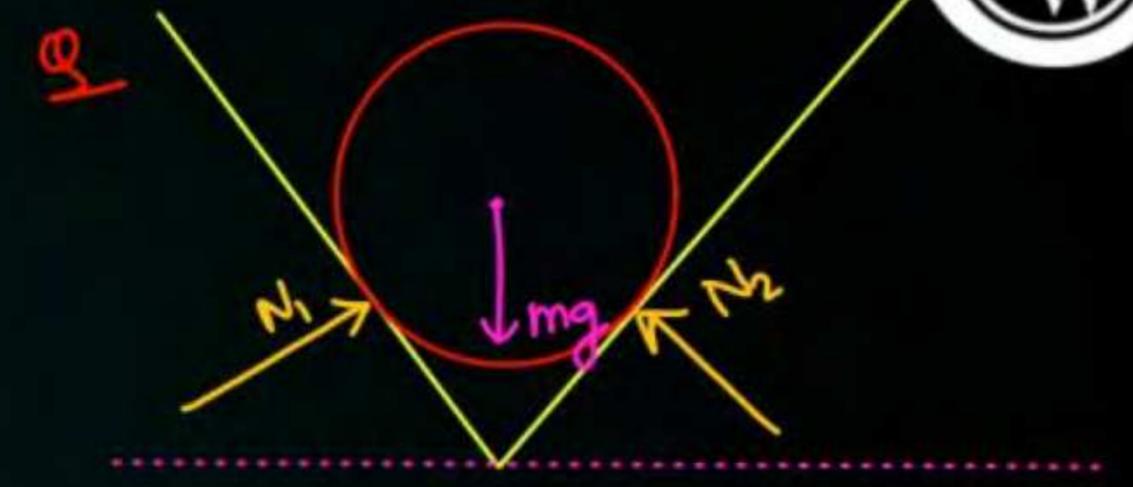
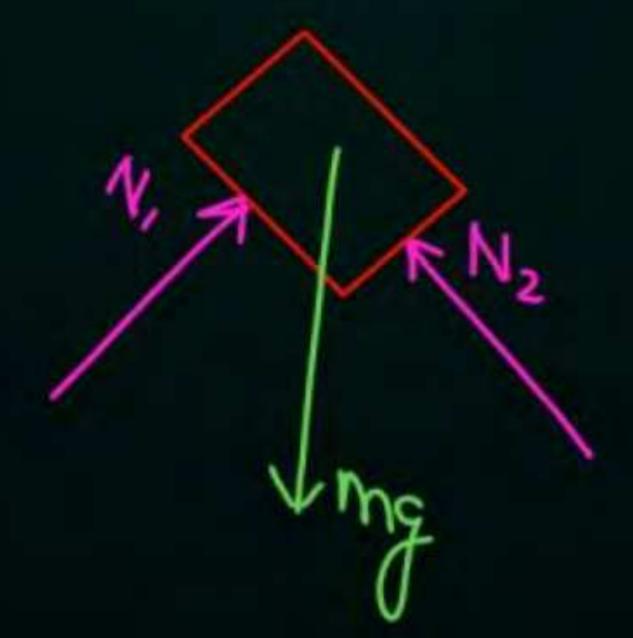
$f_{net} = 0$
 $N' = N_{wall}$
 $N_2 = m_2 g$

FBD of $(m_1 + m_2)$

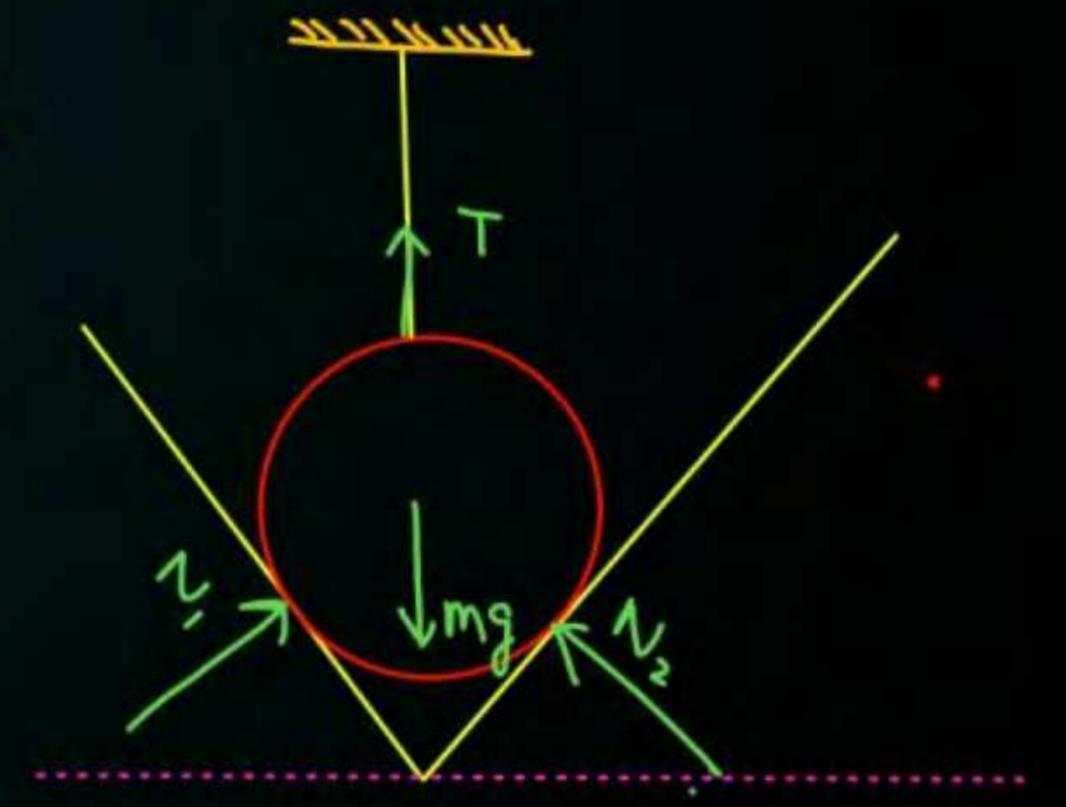


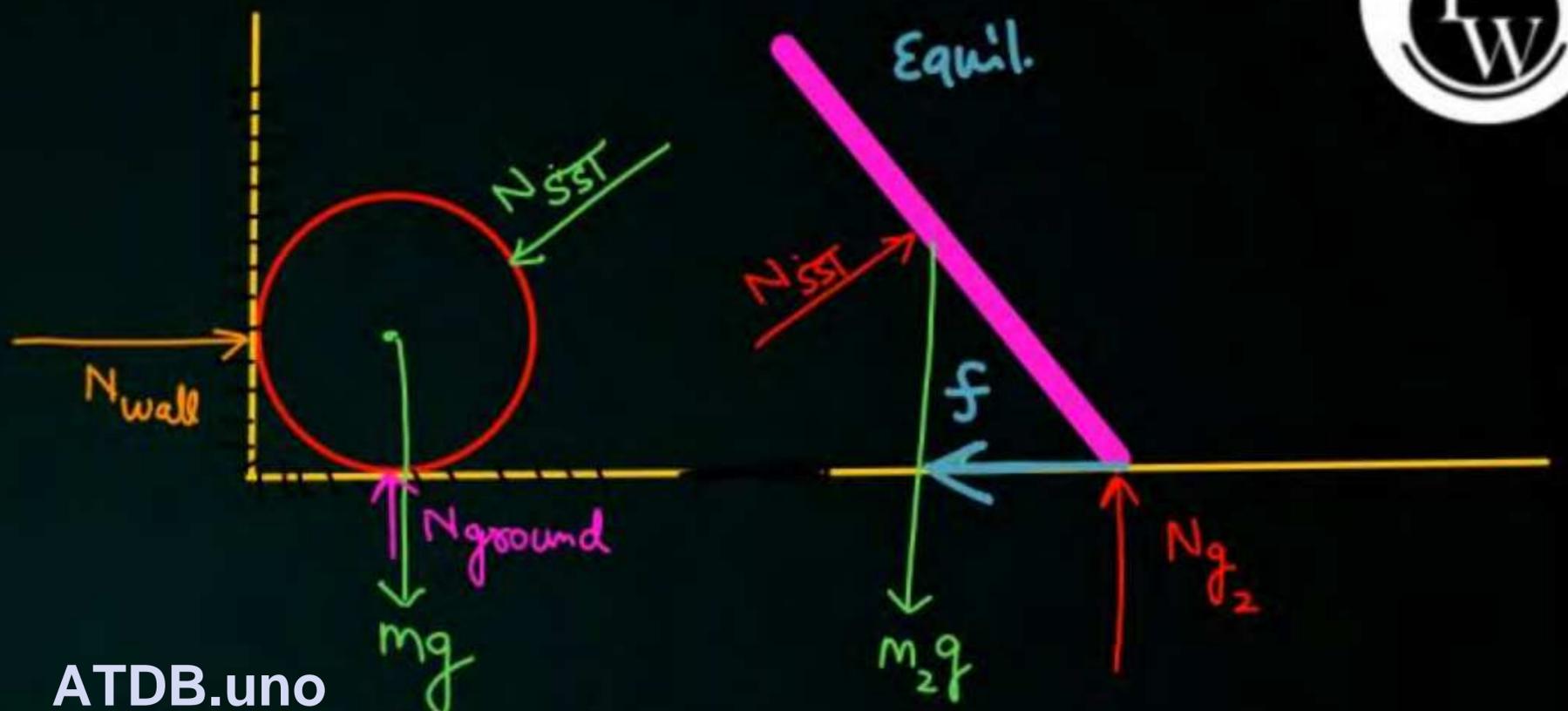
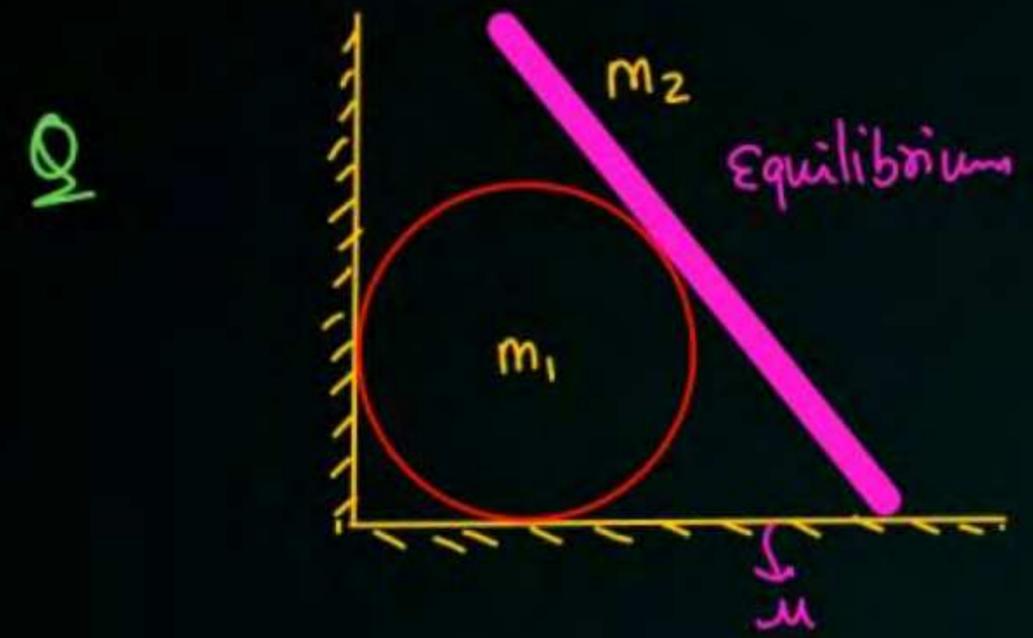


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Q

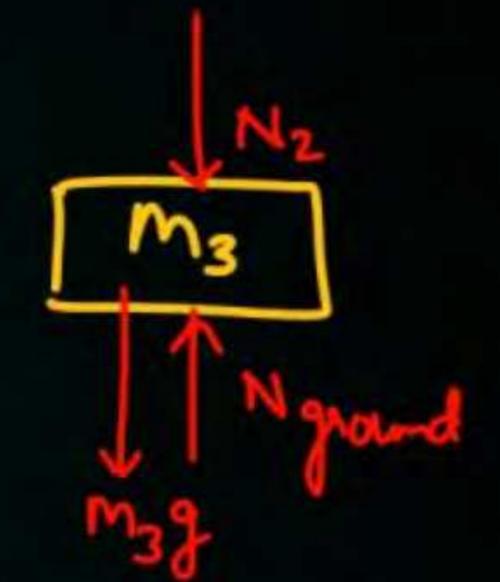
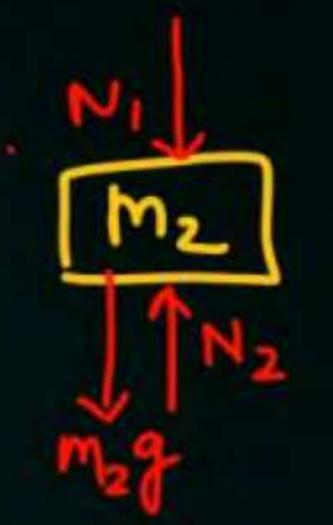
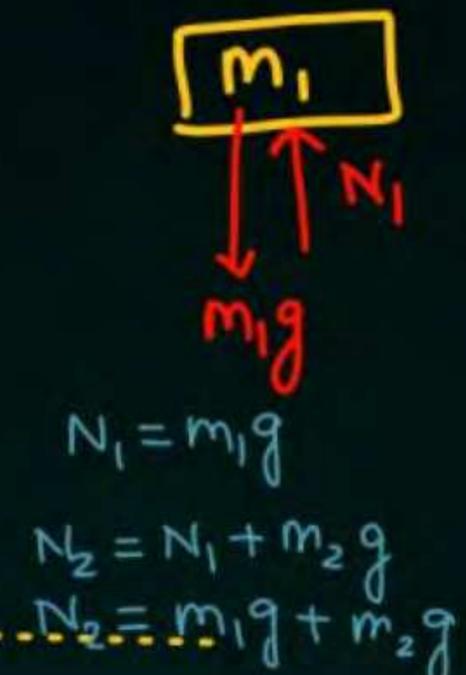




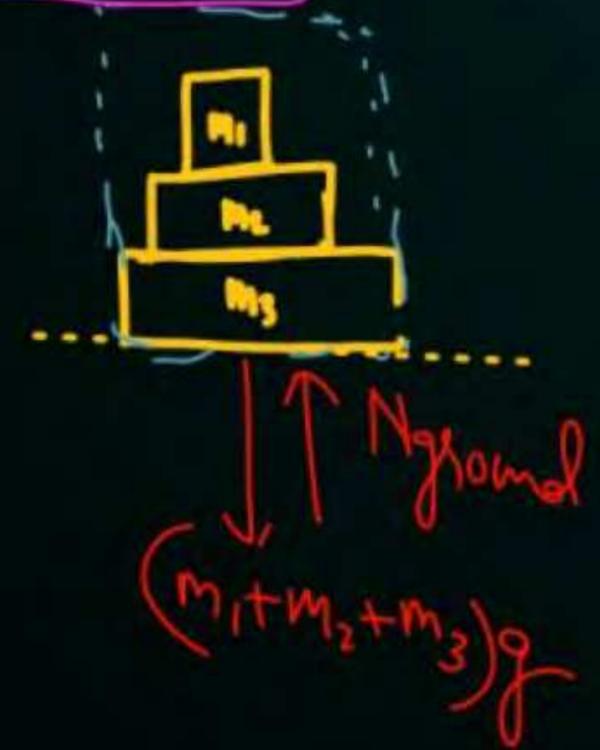
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$$\vec{N}_{wall} + \vec{N}_{ground} + \vec{F}_{mg} + \vec{N}_{SS1} = 0$$

(Equilibrium)



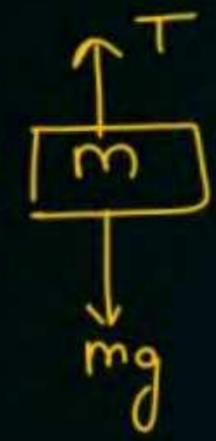
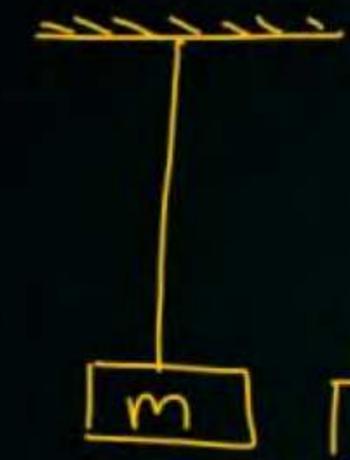
$N_{ground} = N_2 + m_3g$
 $N_{ground} = m_1g + m_2g + m_3g$



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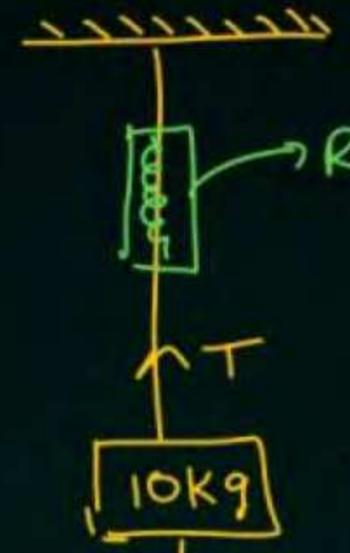


Q

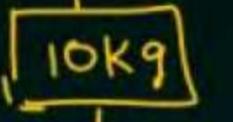


$T = mg$

Q



Reading = $T = 100\text{ N}$



$T = 100$

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Q

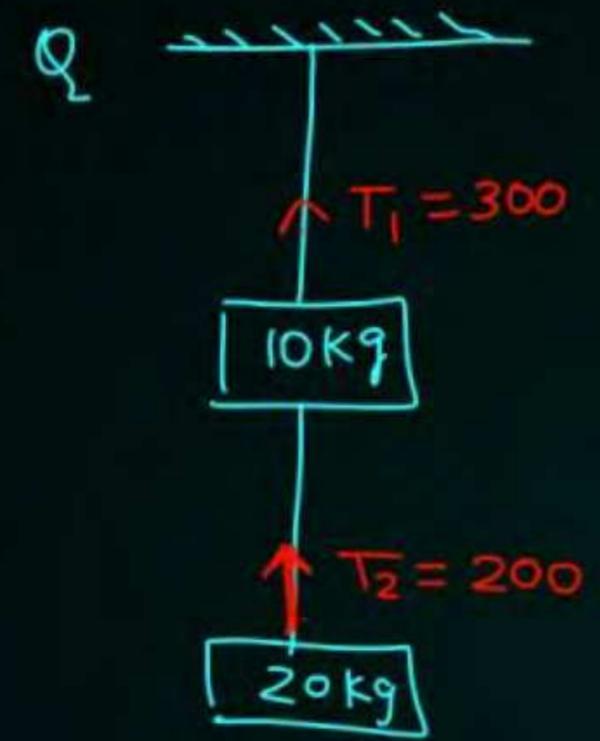
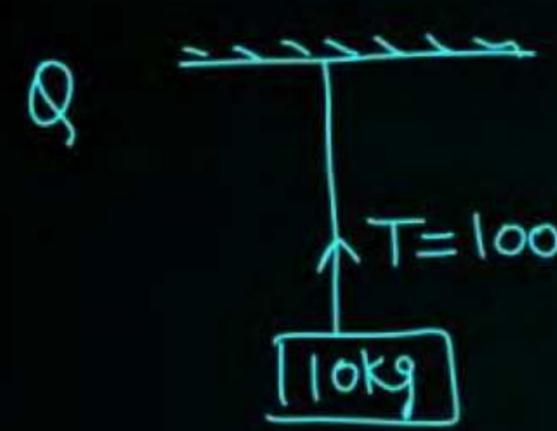
(massless string)



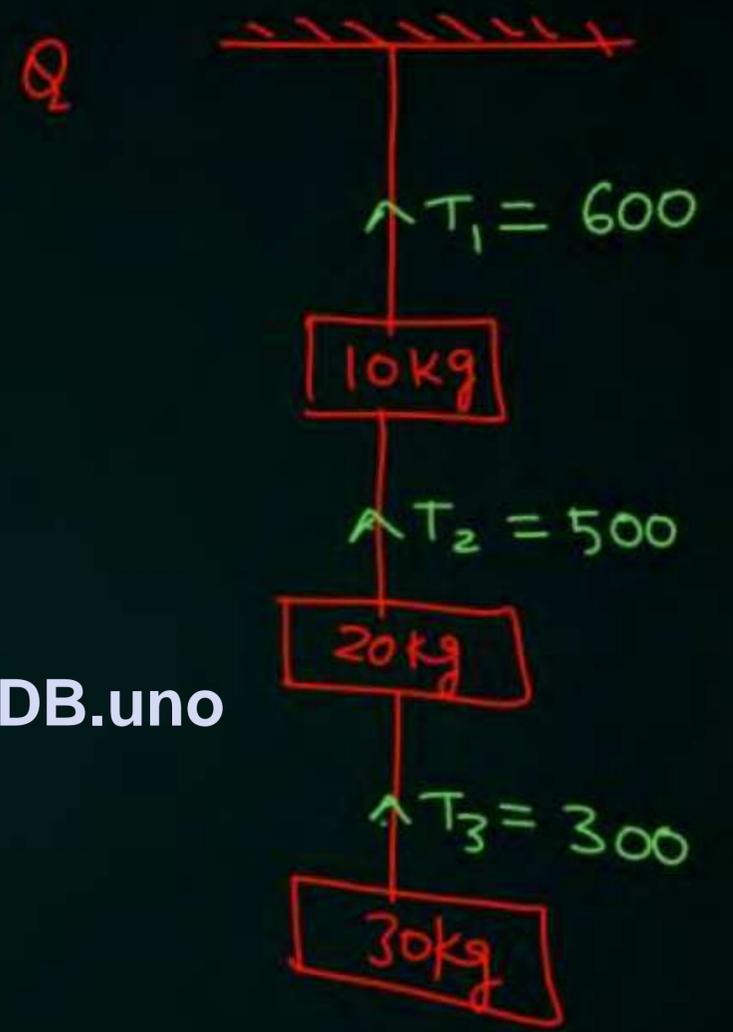
$T_2 = 200$

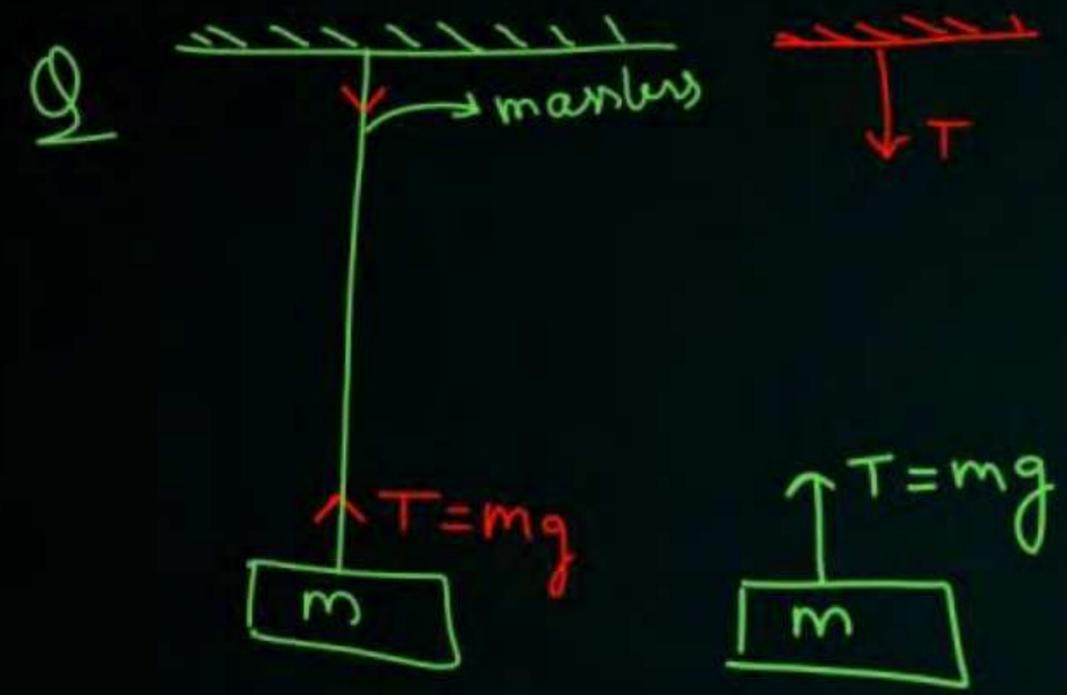
$T_1 = 100 + T_2$

$T_1 = 100 + 200 = 300$

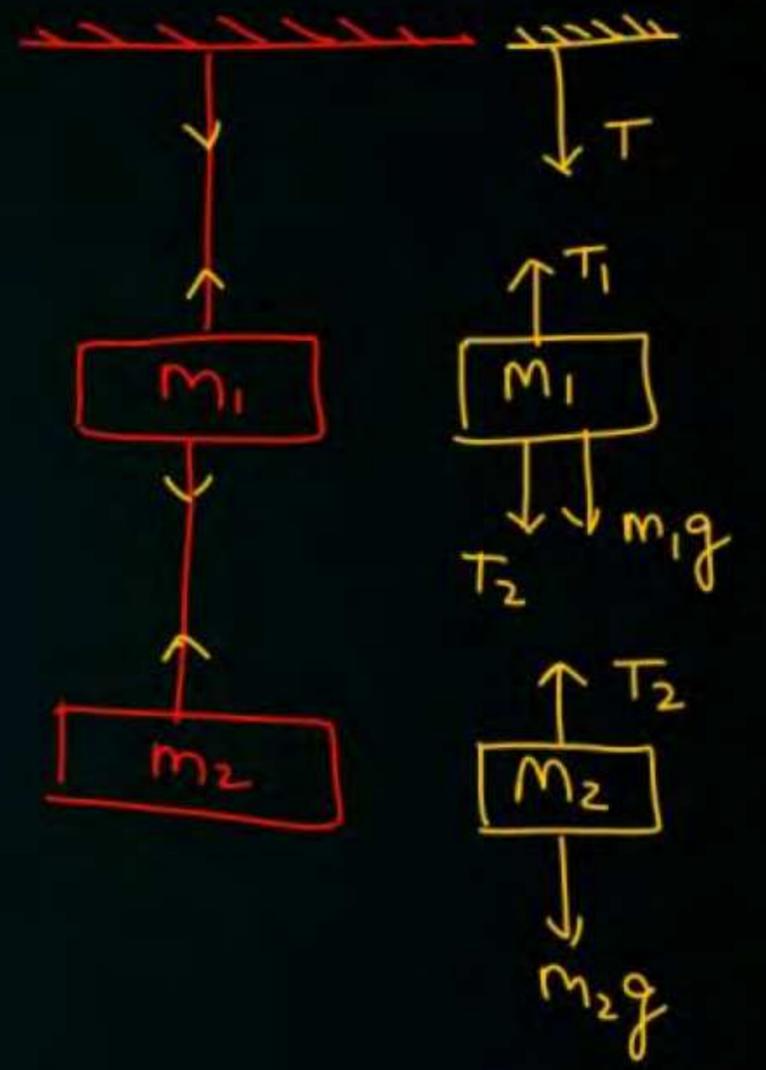


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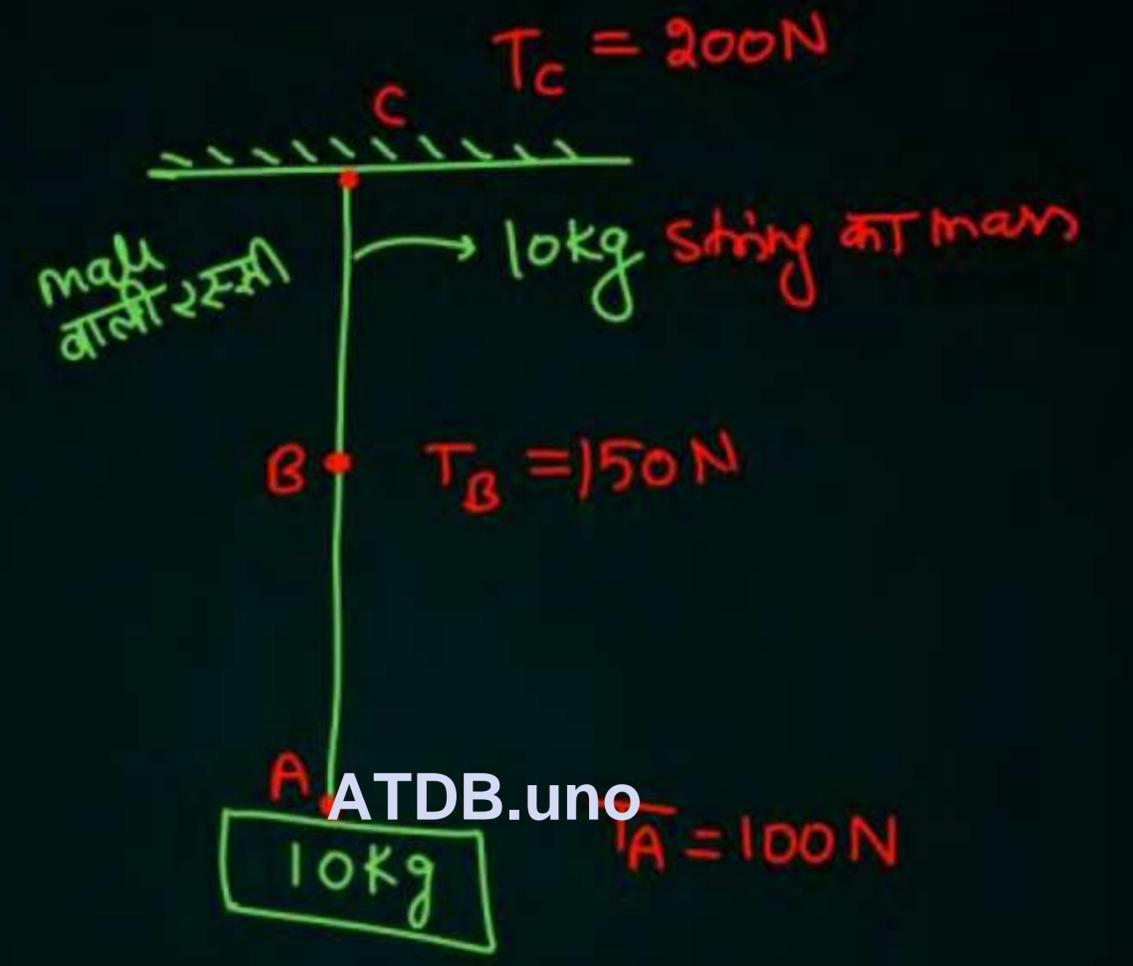
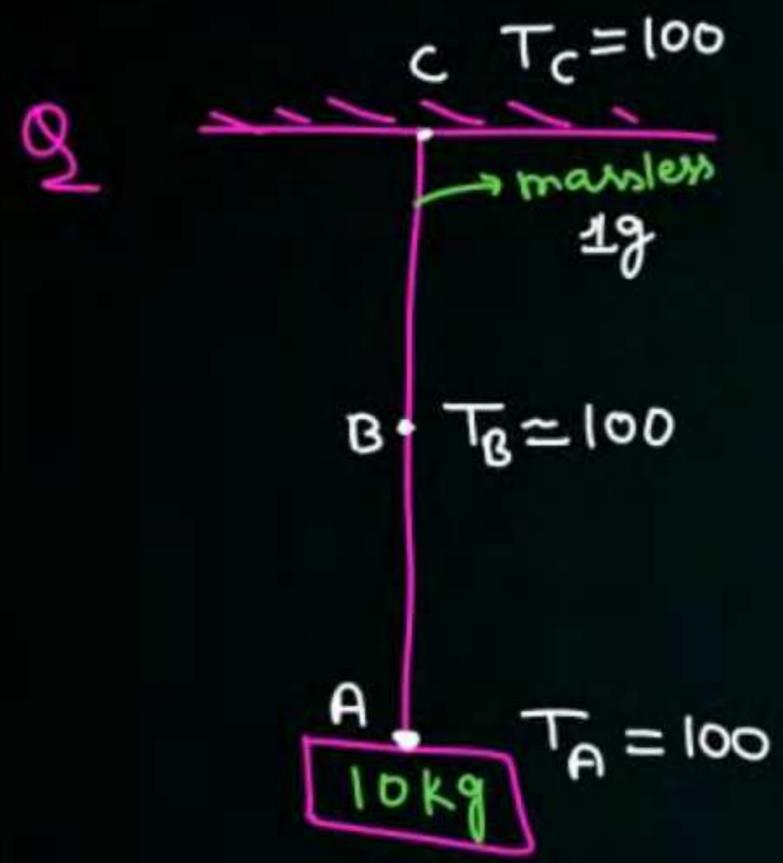
which of the statement are correct



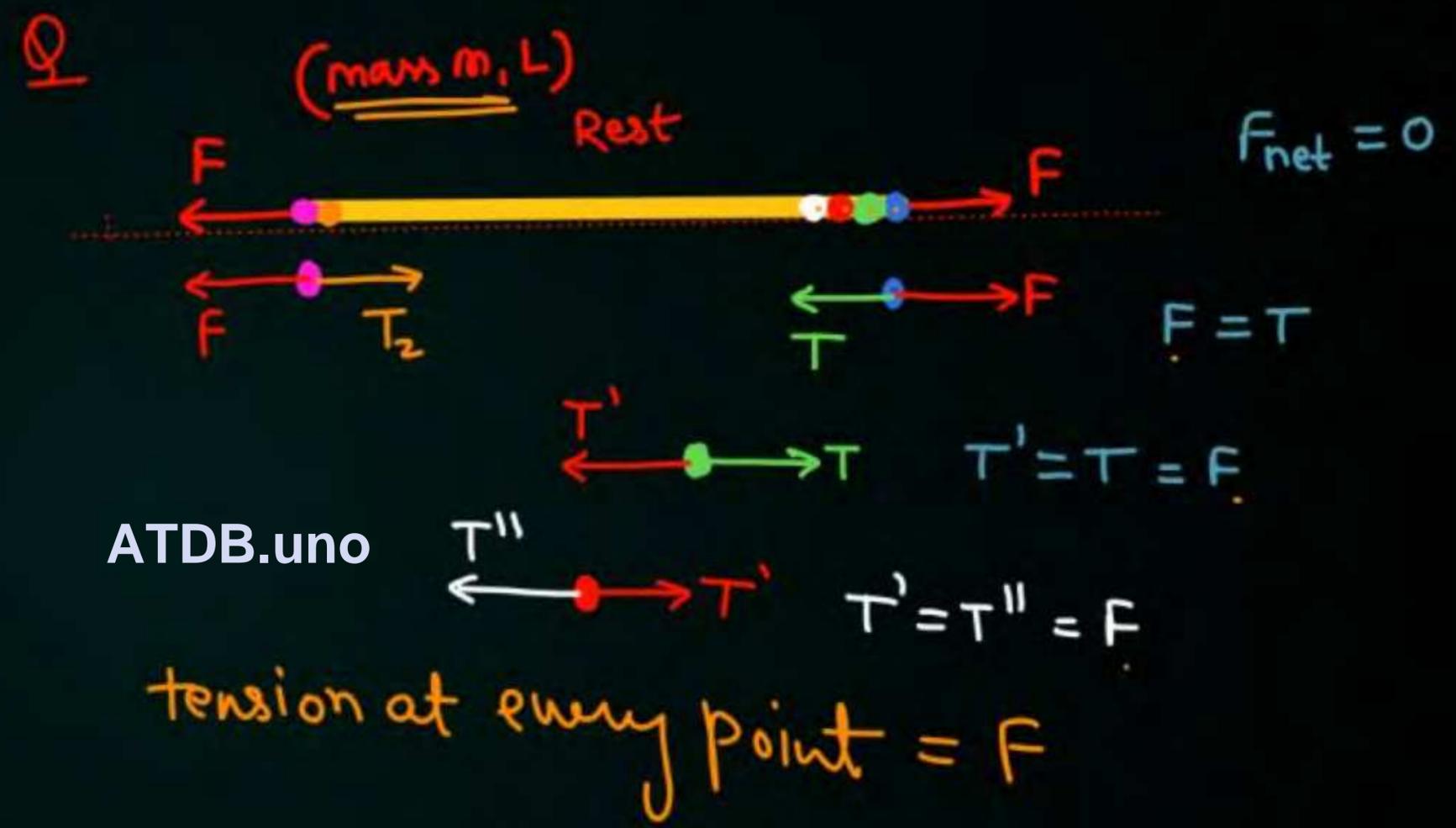
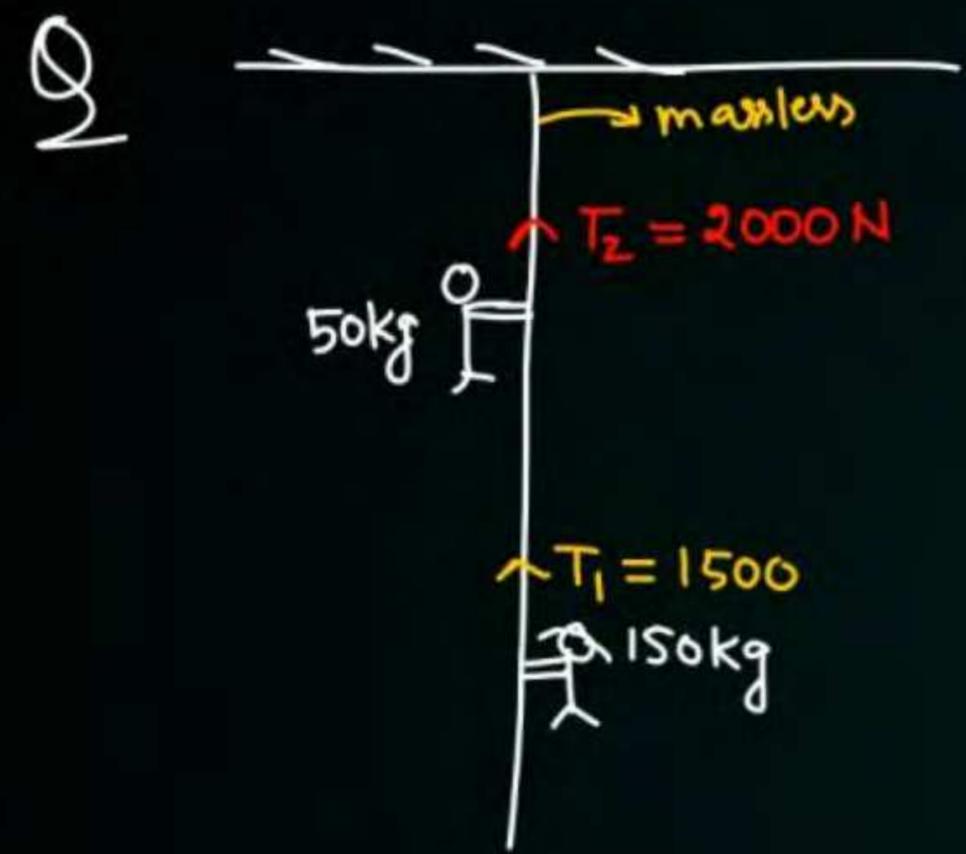
- | | | | | | |
|-----|----------|-------------------|-------|--------------|-------------|
| ① ✓ | marsters | रस्सी में Tension | हमेशा | Same होती है | 84% → wrong |
| ② | " | " | " | अलग | 20% → wrong |
| ③ ✓ | mar वाली | " | " | अलग होती है | 75% → wrong |
| ④ | " | " | " | Same होती है | 20% → wrong |

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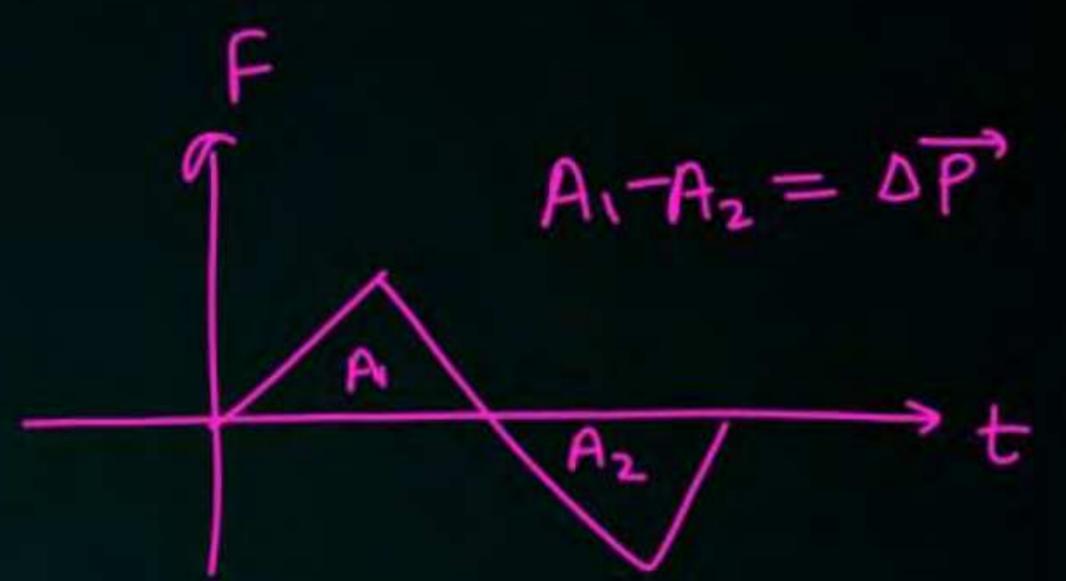
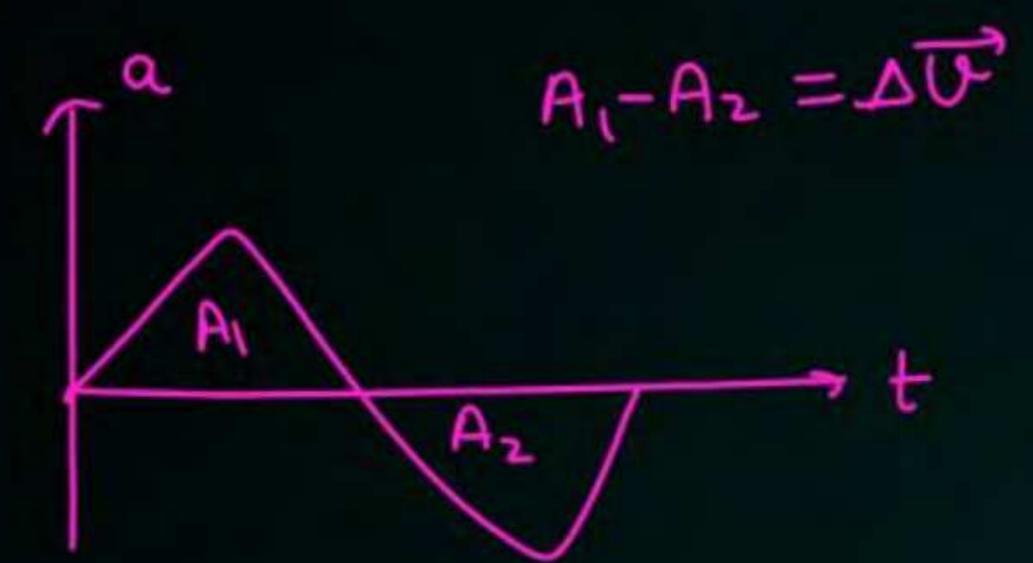
→ ऐसा कोई Rule नहीं है, कुछ भी हो सकता है



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Home work

- Solve Kinematics H.W given to you
- Complete your backlog if you have.

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THANK YOU

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