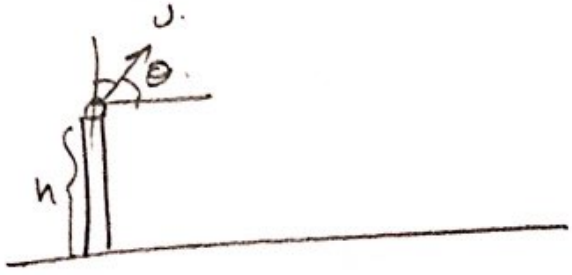
Just write x & y analysis & write equations. – Don't Solve

①

②

③



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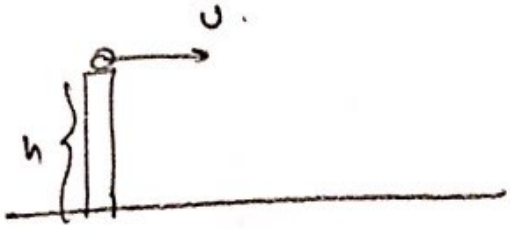

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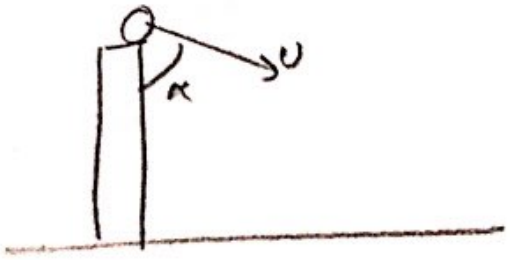

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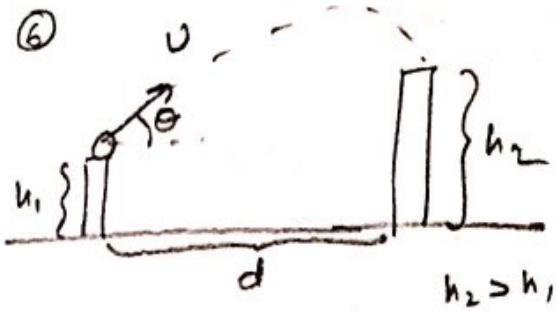
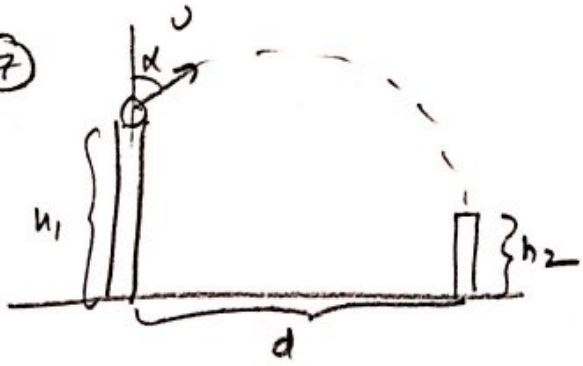


$h_2 > h_1$

⑦



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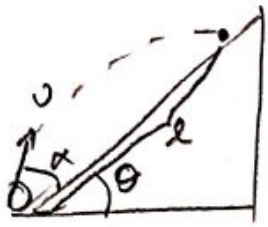
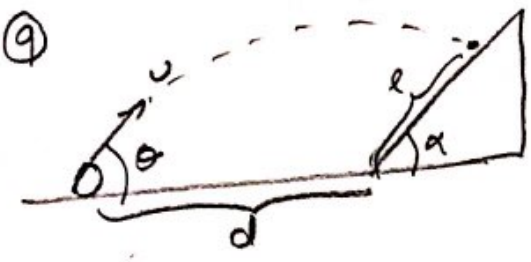


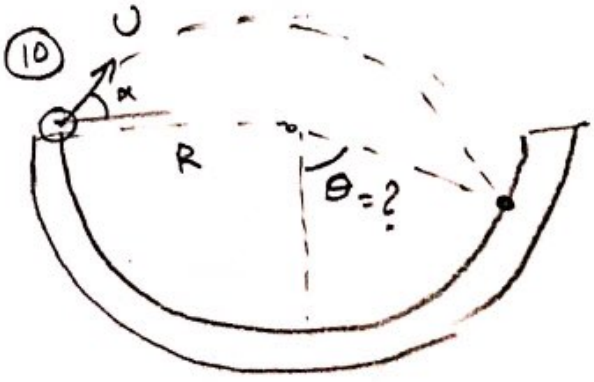
$\ell = ?$

⑨



$\ell = ?$

⑩



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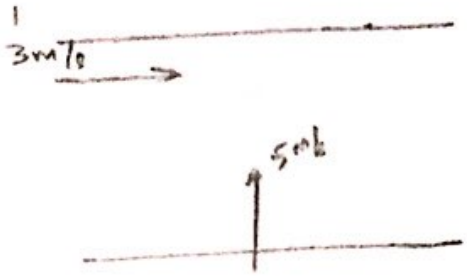
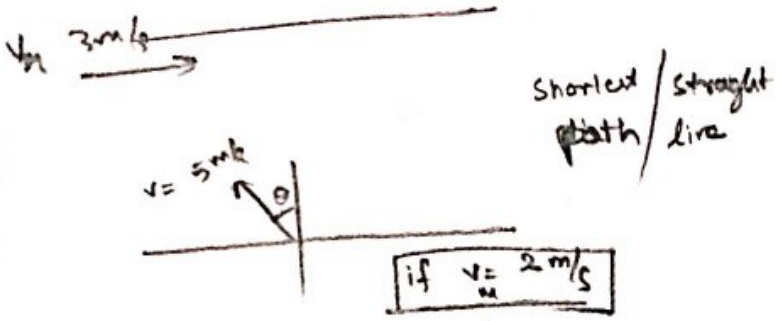
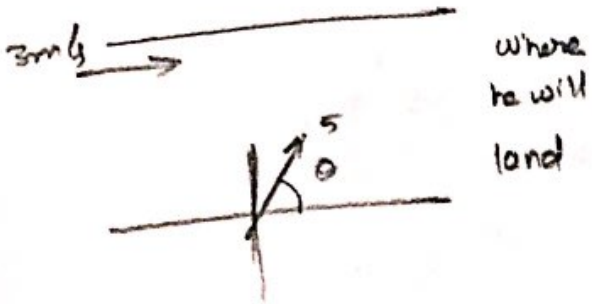
River Man





Shortest path / Straight line

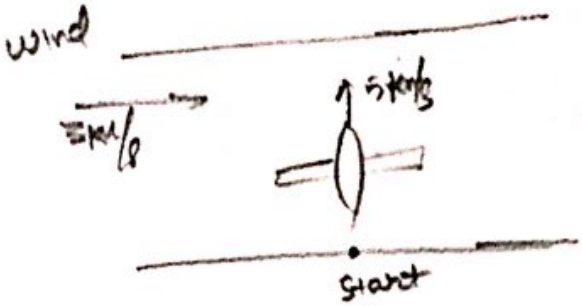


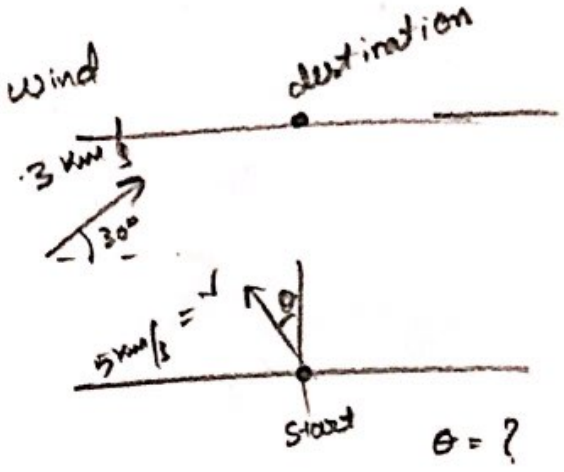
where he will land

he has to walk shortest

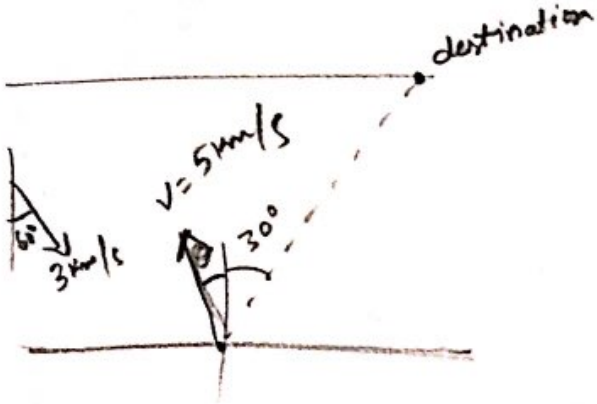
Wind Aeroplane

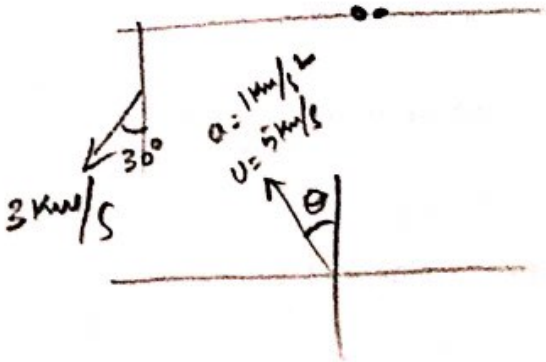
landing = ?





θ = ?





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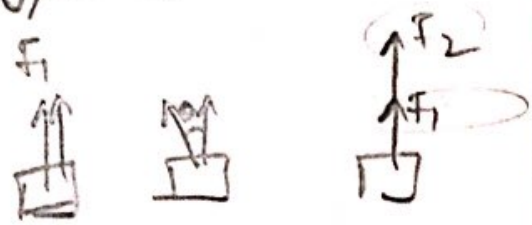
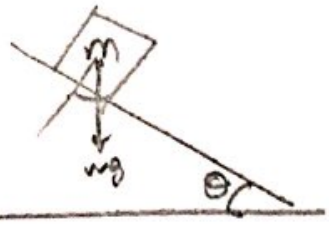
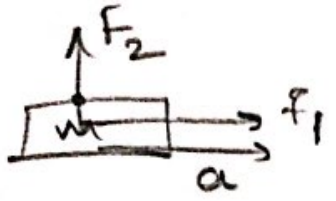
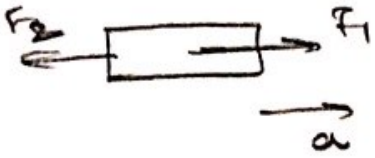
Tips for drawing FBD

Confusing/WRONG WAYS



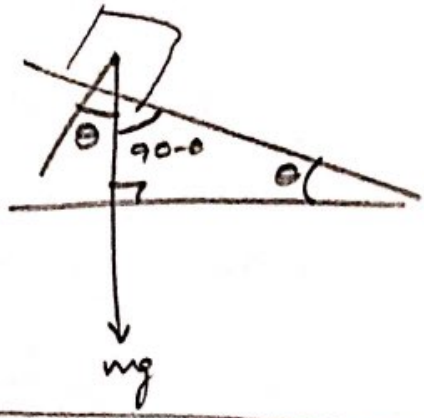


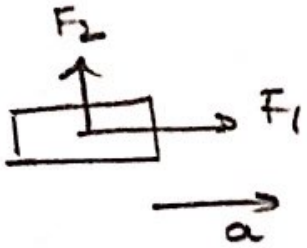




$F_2 = F_1 + ma$ ✗

Better WAYS.





$F_1 - F_2 = ma$

$F_1 = F_2 + ma$

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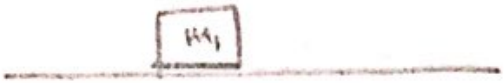
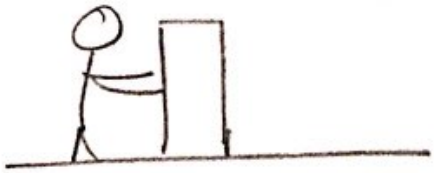
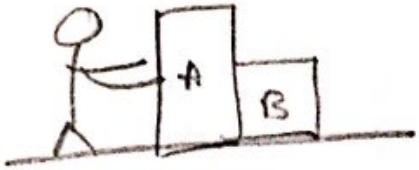
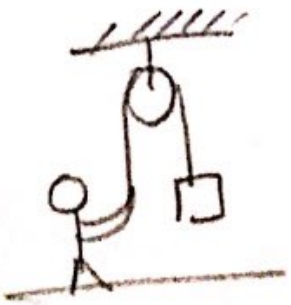
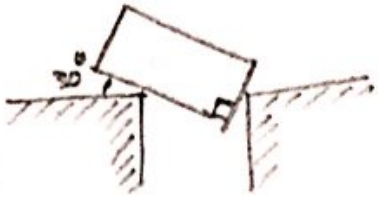
Write as many action reaction pairs

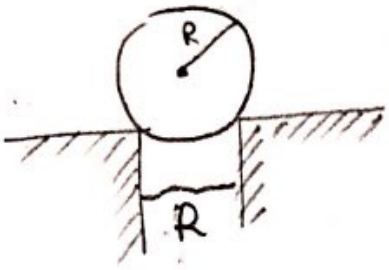


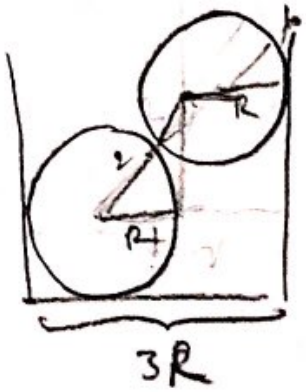


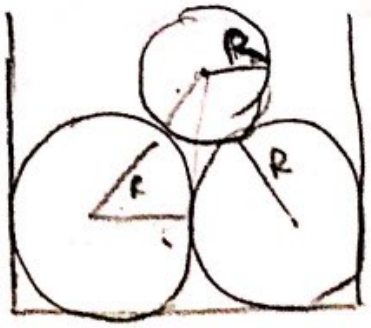












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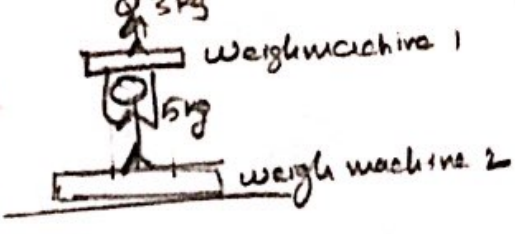
1

2.

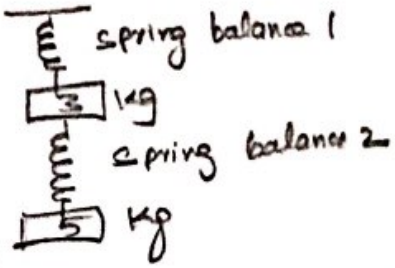
(3)

neglect mass of weighing machine

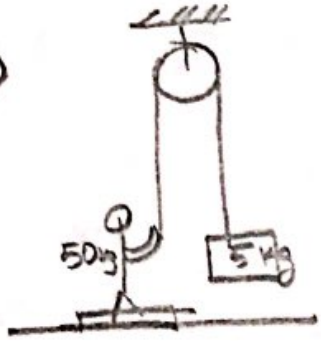


(4)

neglect mass of Spring balance (light balance)

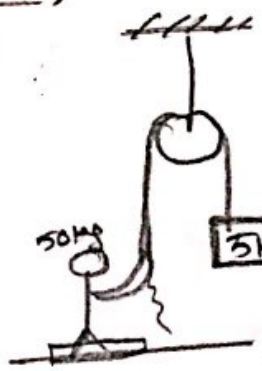


(5)



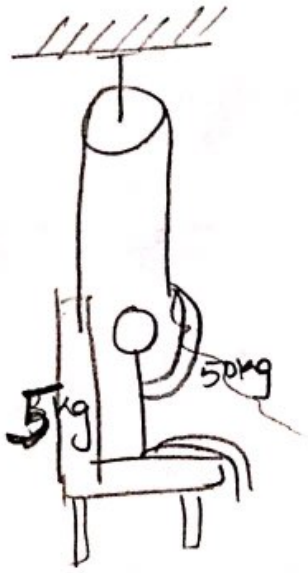
Pulls rope down with 100 N find the reading of weighing machine & acceleration of block

(6)



(pulls or) the man releases slowly the rope in such a way that 5kg comes down with $1 m/s^2$. find tension in the rope, force applied by man on rope & reading of weighing machine.

(7)



find T, N (force by man on chair), F (Force by man on rope)

when Painter

(a) man is stationary (or slowly moving up/down) ($\Rightarrow a=0\ v=0$)

(b) man is pulling the rope in such a way that he goes up along with the chair with $2 m/s^2$

(c) man is pulling (or releasing) the rope in such a way that he goes down along with the chair with $1 m/s^2$

(d) if a weighing sensor is on the chairs bottom. what would be its readings in part A, B, C.

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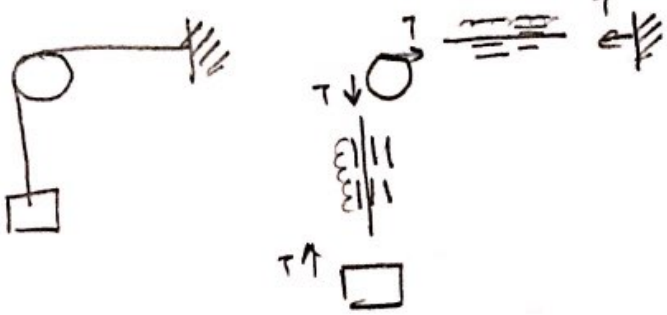
Logics of Ropes

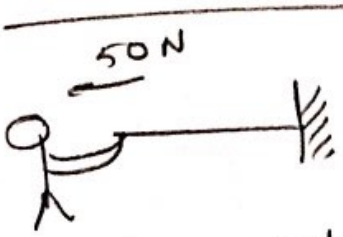
Light Ropes

Ropes can only "PULL", they can never "PUSH"
✓ ✗

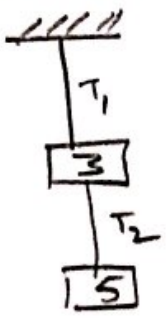
(or)

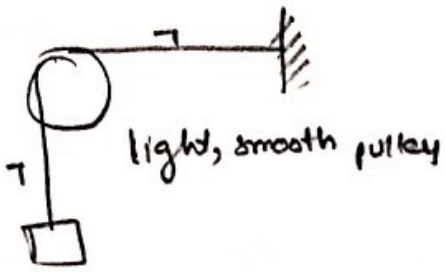
Ropes always try to compress





the forces which pulls the rope = Tension in the rope





diff rope - diff tension | same rope same tension

diff ⇒ mass in between

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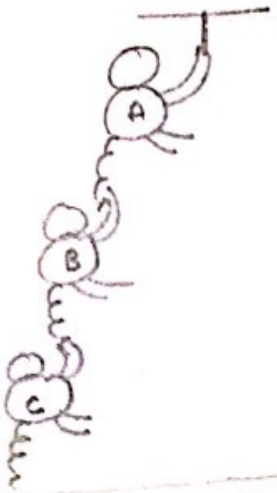
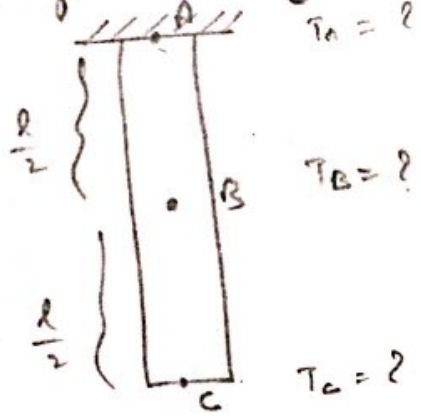
heavy Ropes

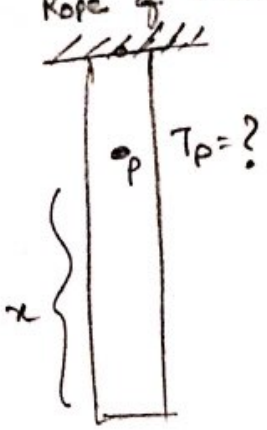


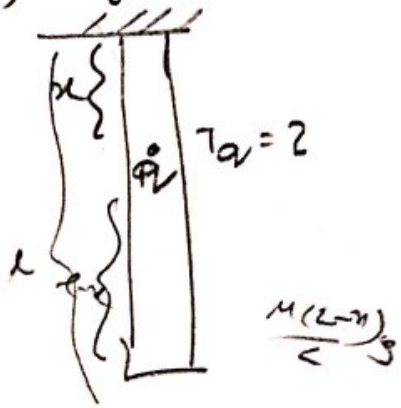
Which monkey suffer most-?
" " " least ?
what is Tension in tail of monkey A,
B,
C,

Rope of Mass M, length ℓ



Rope of Mass M, length ℓ.

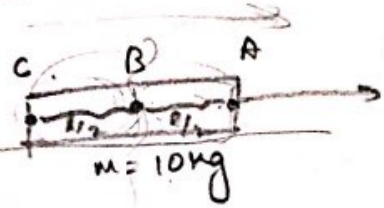




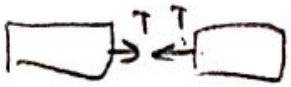
10 → 87
2 → ? $\frac{87}{10} \times 2$

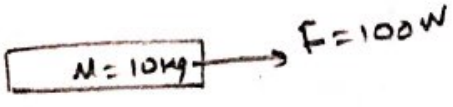
$y\ell = Mx$

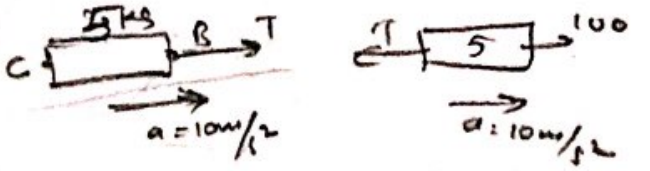
$y = \frac{Mx}{\ell}$



T_C = ? T_A = ?







$100 - T = 5(a)$

$T_B = ma$

$T_B = 5(10) = 50N$

T_B

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