YAKEEN NEET 2.0

2026

Laws of motion

PHYSICS

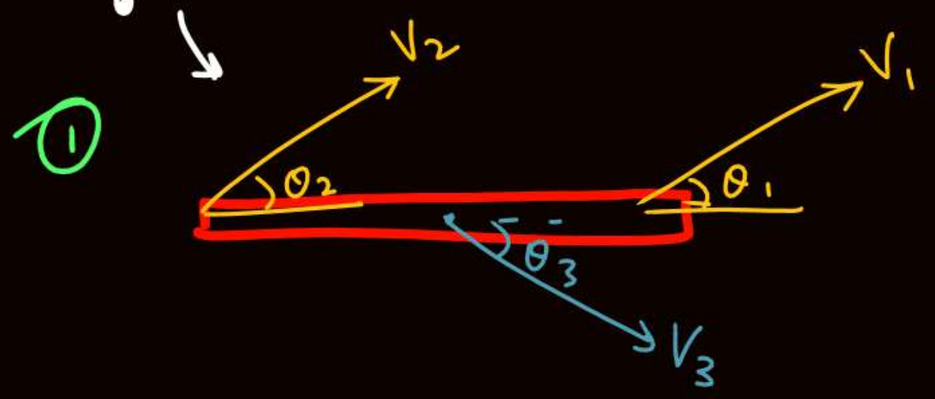
Lecture 09

By - Saleem Ahmed Sir

Todays Goal

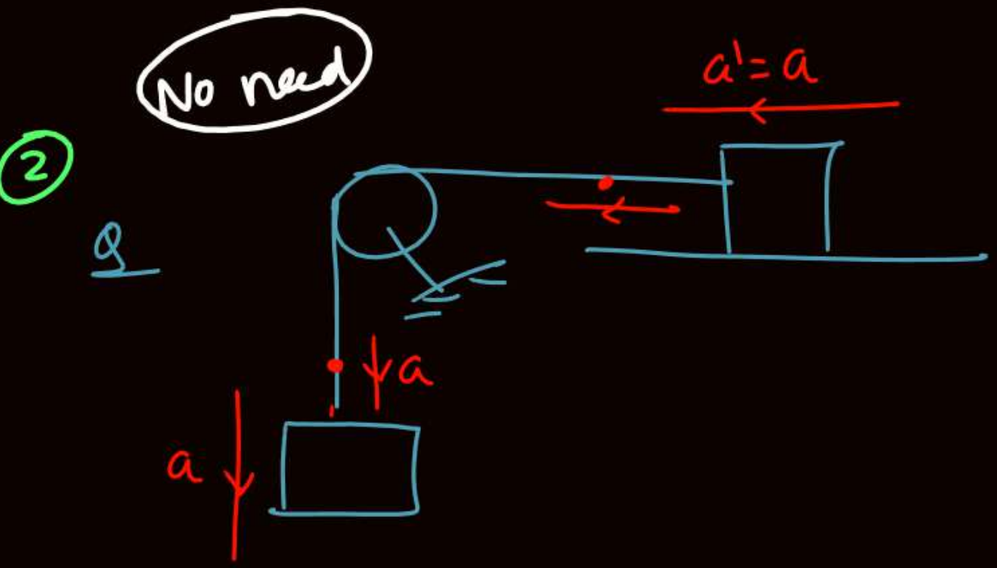
- Constraint motion

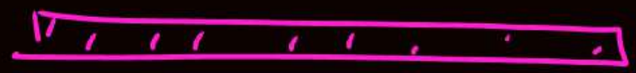
लिखना है



$$V_2\cos\theta_2 = V_1\cos\theta_1 = V_3\cos\theta_3$$

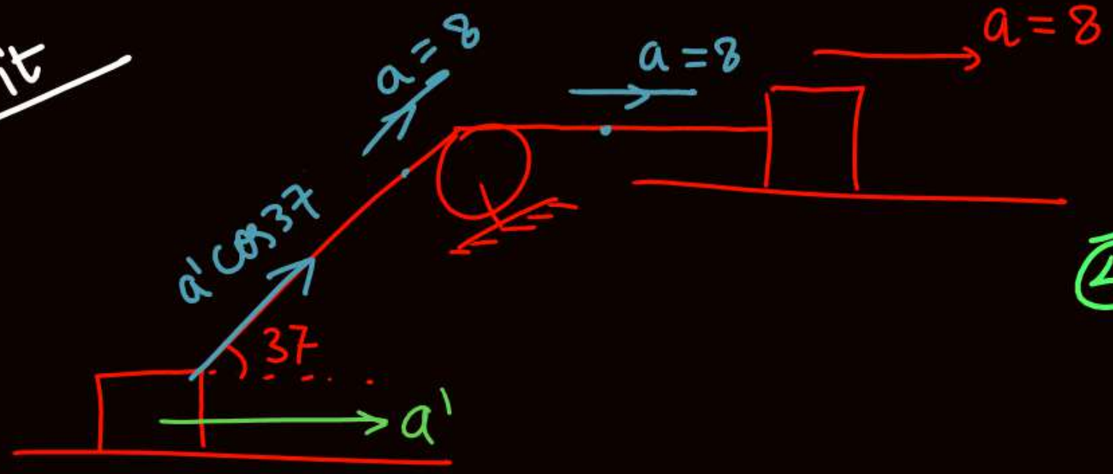
No need





note it

③



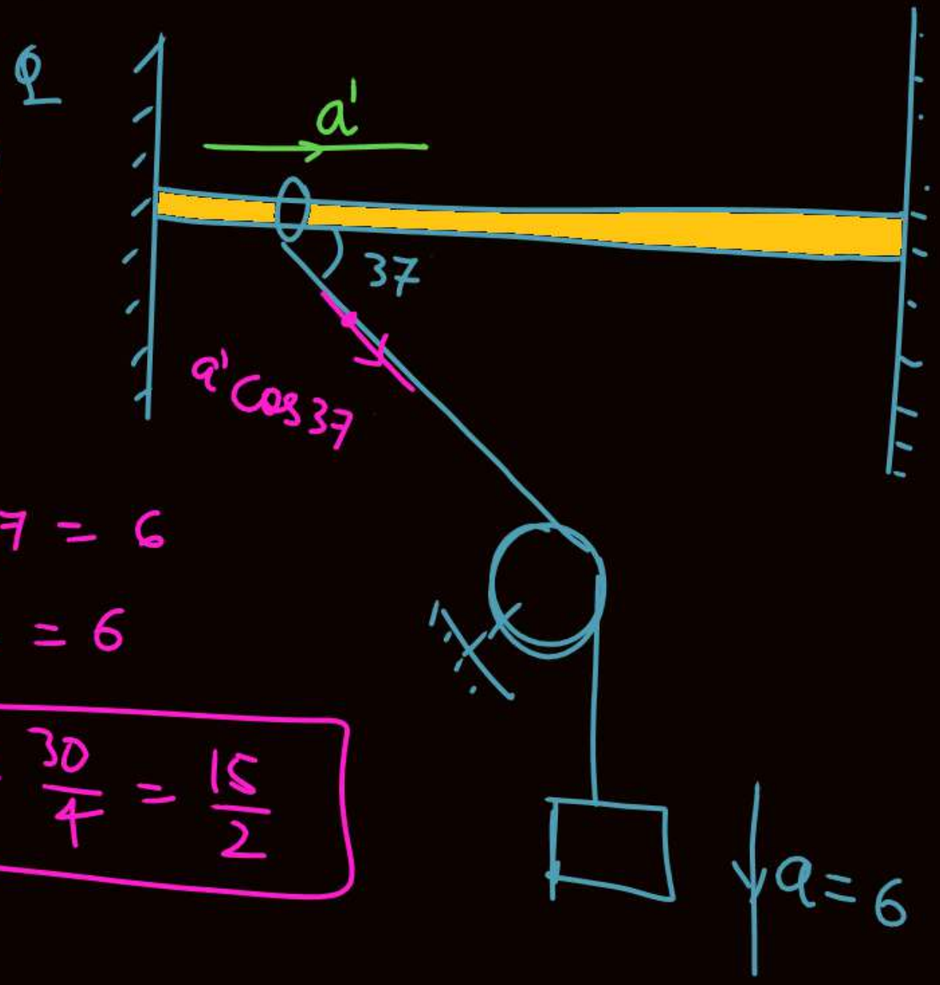
$a'\cos 37 = 8$

$a' \times \frac{4}{5} = 8$

$\boxed{a' = 10}$

note it

④



$a'\cos 37 = 6$

$a' \frac{4}{5} = 6$

$\boxed{a' = \frac{30}{4} = \frac{15}{2}}$

SKC → acc, ↺ Rassi/sod ki taraf tod kar barabar kar do . -

Virtual work methods

$$\sum \vec{F} \cdot \vec{x} = 0 \quad \Rightarrow \quad \vec{F}_1 \cdot \vec{x}_1 + \vec{F}_2 \cdot \vec{x}_2 + \vec{F}_3 \cdot \vec{x}_3 + \dots = 0$$

(work Power Emp

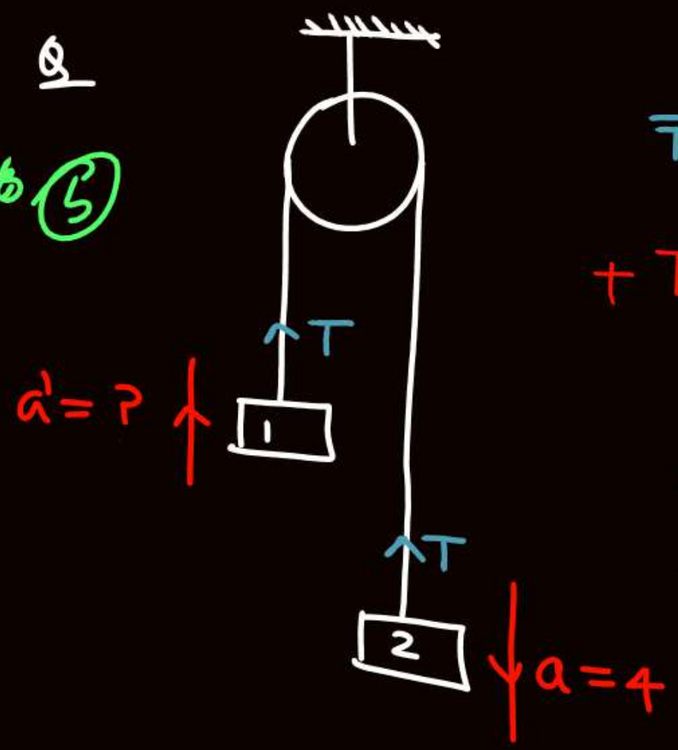
$$\sum \vec{F} \cdot \vec{v} = 0 \quad \Rightarrow \quad \vec{F}_1 \cdot \vec{v}_1 + \vec{F}_2 \cdot \vec{v}_2 + \dots = 0$$

$$\sum \vec{F} \cdot \vec{a} = 0 \quad \Rightarrow \quad \boxed{\vec{F}_1 \cdot \vec{a}_1 + \vec{F}_2 \cdot \vec{a}_2 + \dots = 0}$$

No need

Q

(5)



$\vec{T_1}.\vec{a_1} + \vec{T_2}.\vec{a_2} = 0$

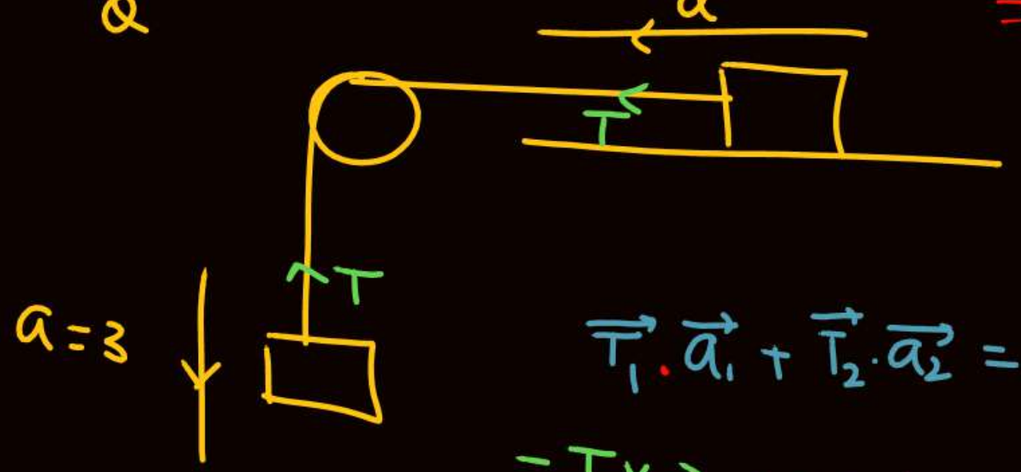
$+Ta' - T \times 4 = 0$

$a' - 4 = 0$

$\boxed{a' = 4}$

(6)

Q



If $\theta = 0$, $\vec{A}.\vec{B} = AB$

$\theta = 180^\circ \Rightarrow \vec{A}.\vec{B} = AB\cos 180$

$= -AB$

$\vec{T_1}.\vec{a_1} + \vec{T_2}.\vec{a_2} = 0$

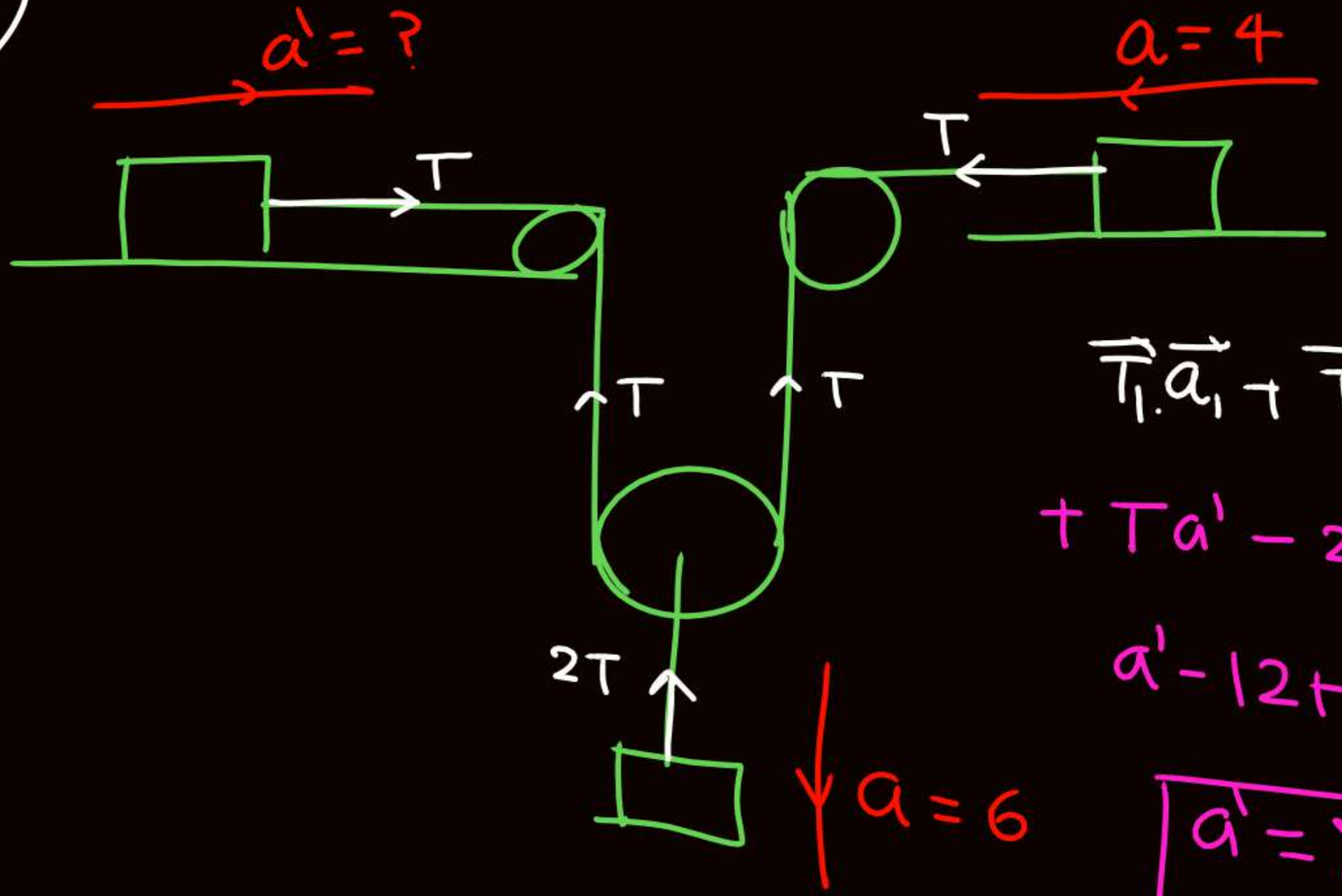
$-T \times 3 + Ta' = 0$

$a' = 3$

note

Q

(7)



$$\vec{T}_1\vec{a}_1 + \vec{T}_2\vec{a}_2 + \vec{T}_3\vec{a}_3 = 0$$

$$+Ta' - 2T \times 6 + T \times 4 = 0$$

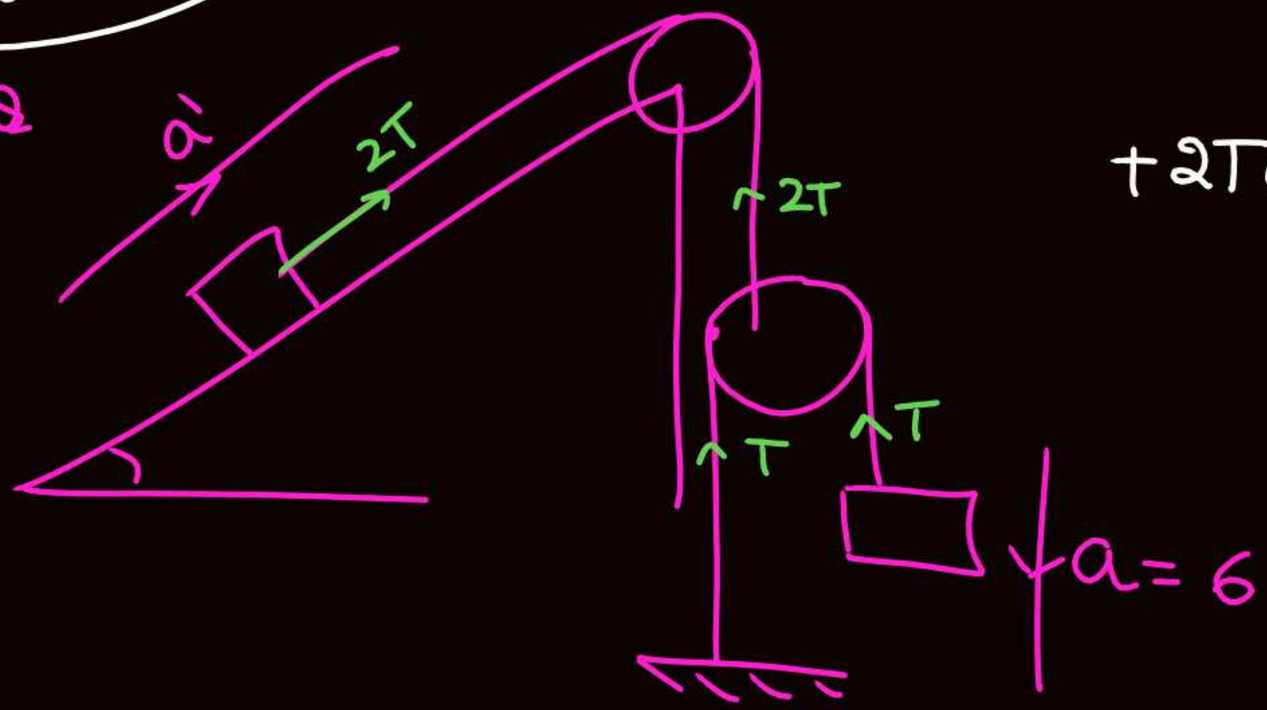
$$a' - 12 + 4 = 0$$

$$\boxed{a' = 8}$$

hote it

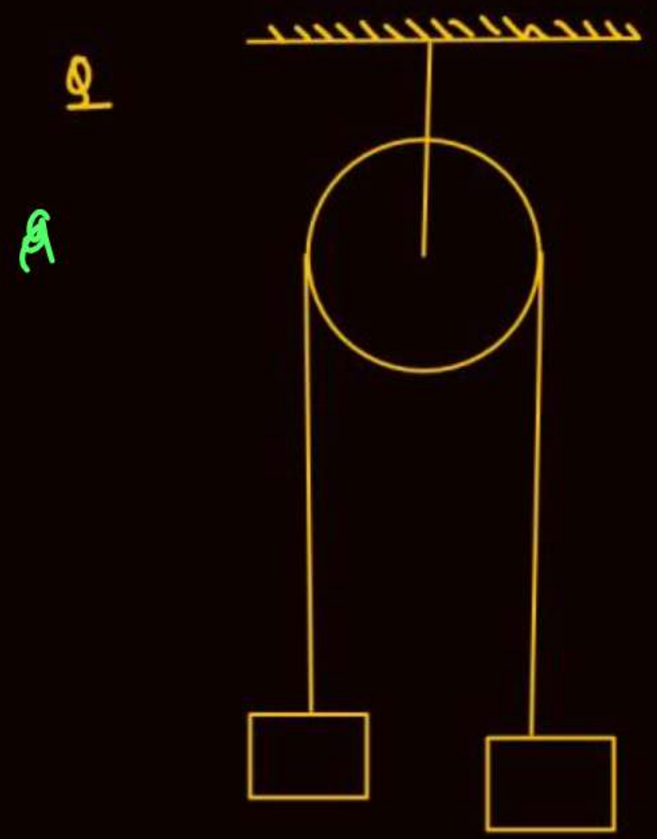
8

(8)

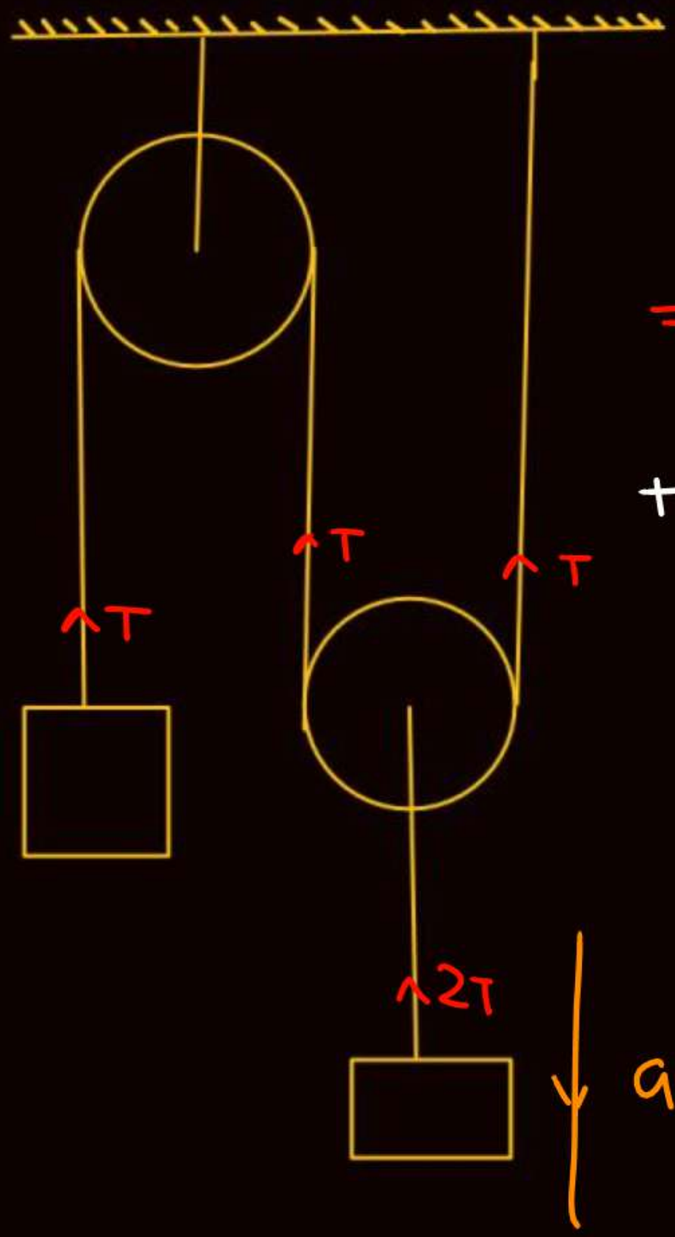


$$+2Ta' - T \times 6 = 0$$

$$\boxed{a' = 3}$$



note it



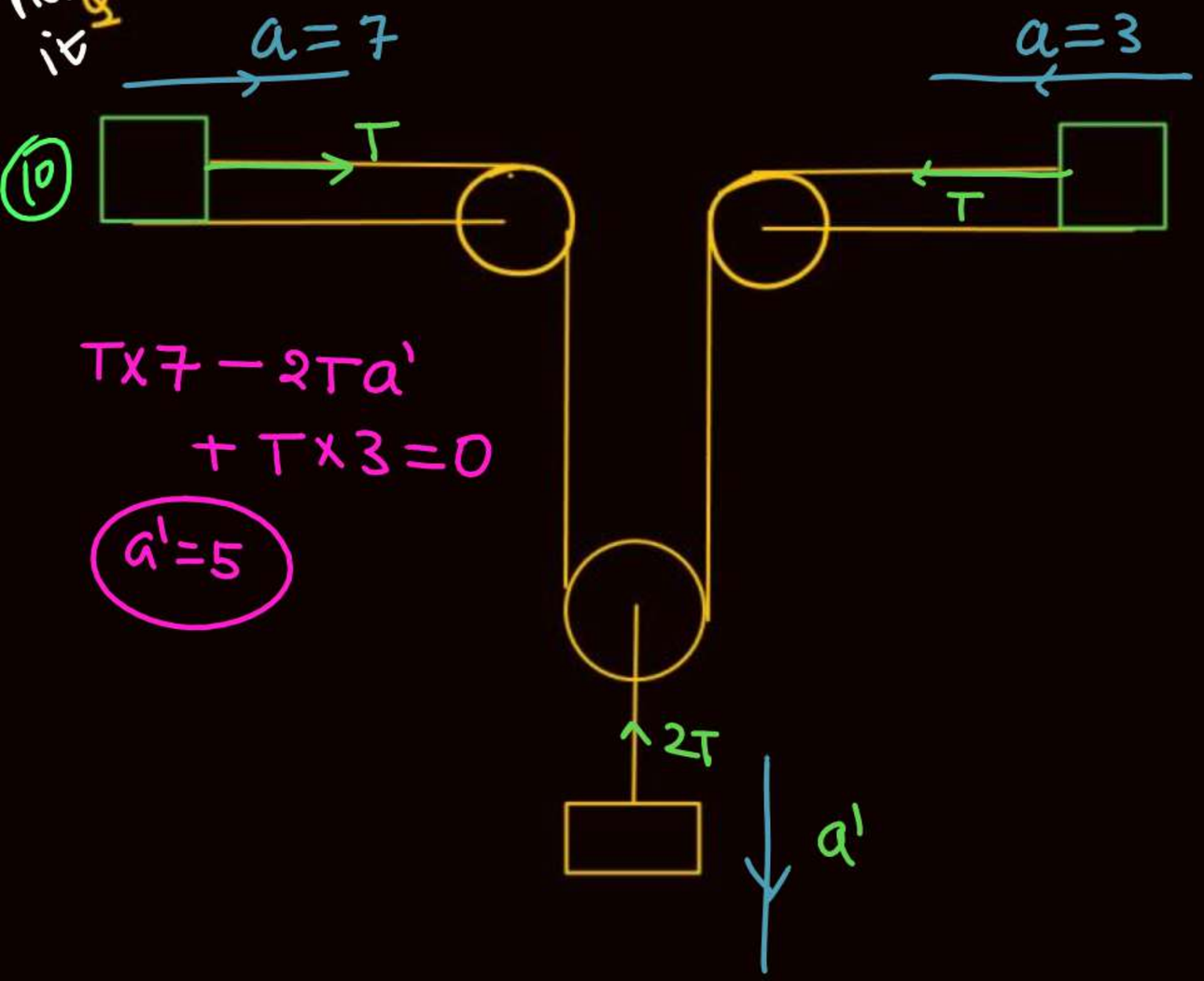
$$\vec{T_1}\vec{a_1} + \vec{T_2}\vec{a_2} = 0$$

$$+Ta' - 2T \times 8 = 0$$

$$\boxed{a' = 16}$$

note it

Q

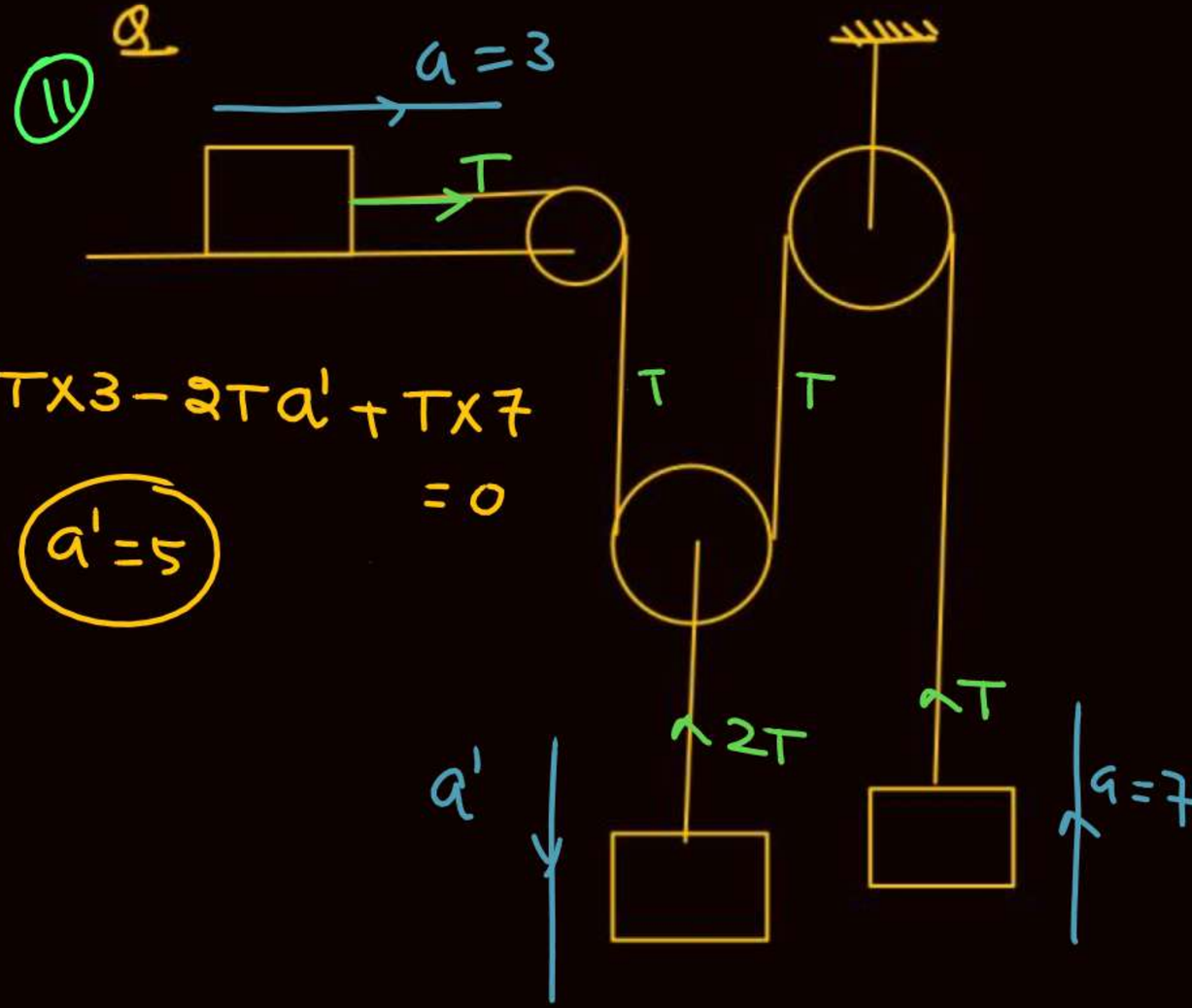


$T \times 7 - 2Ta' + T \times 3 = 0$

$a' = 5$

note it

Q

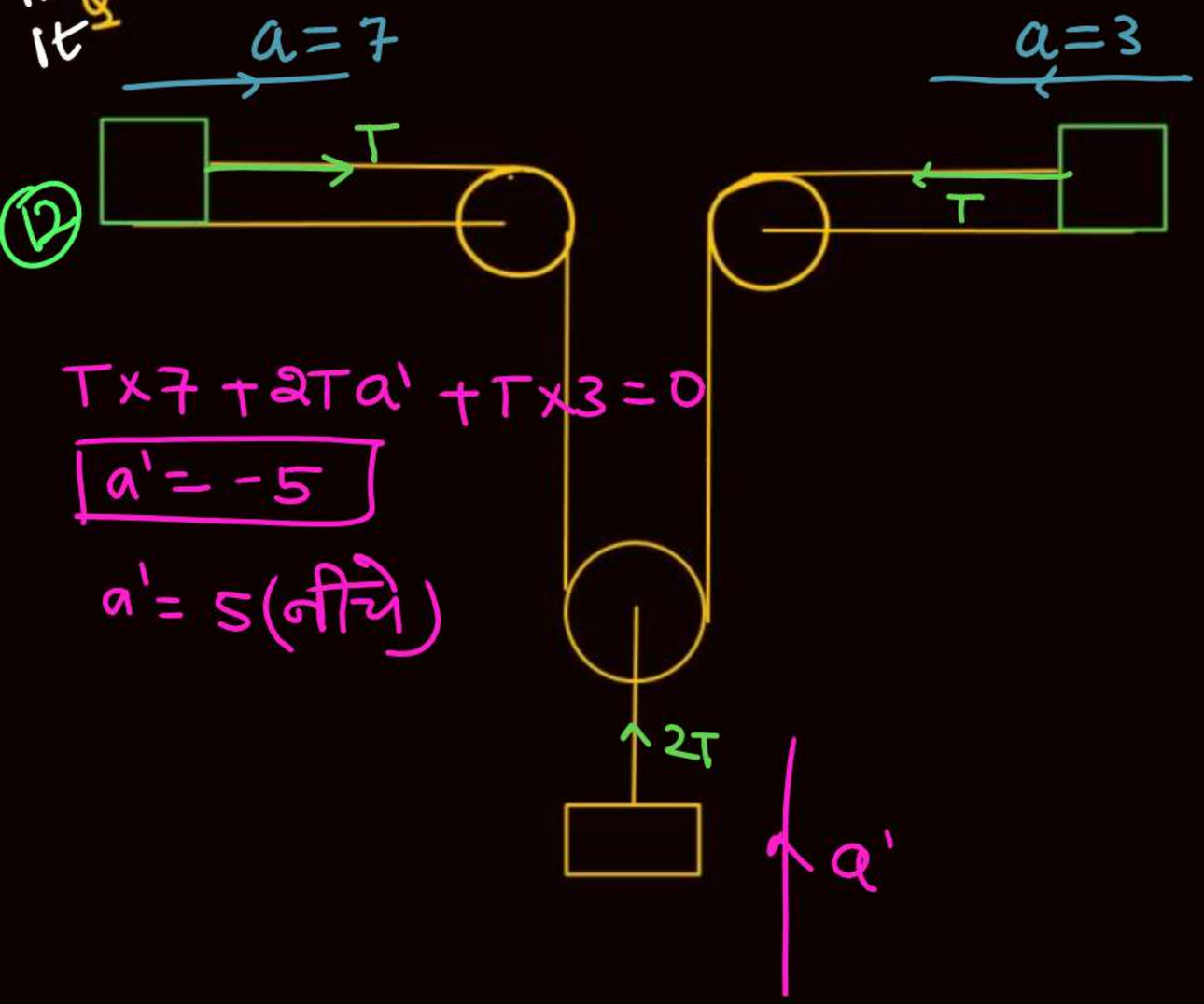


$T \times 3 - 2Ta' + T \times 7 = 0$

$a' = 5$

note it

Q



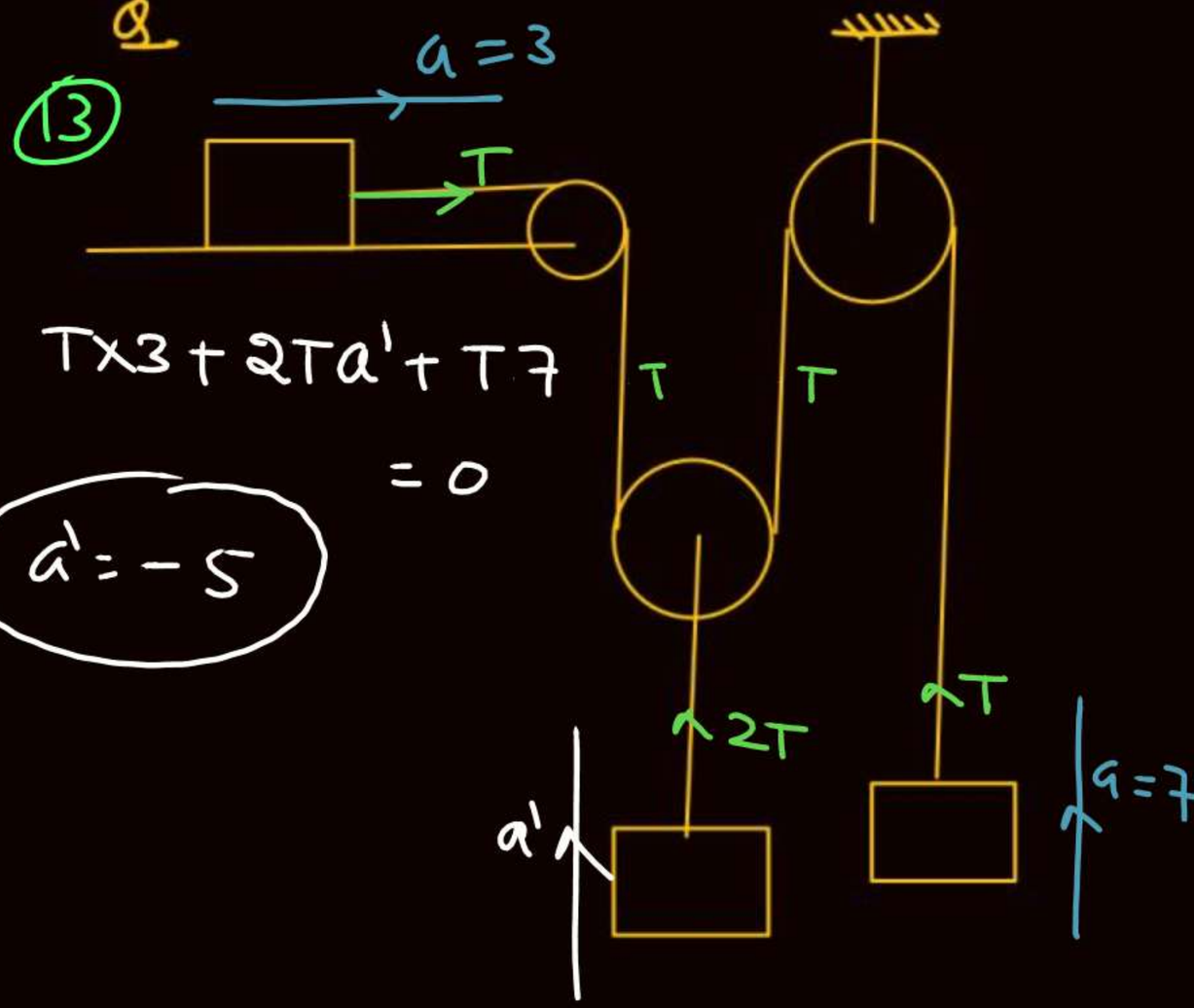
$T \times 7 + 2Ta' + T \times 3 = 0$

$\boxed{a' = -5}$

$a' = 5$ (नीचे)

note it

Q



$T \times 3 + 2Ta' + T7 = 0$

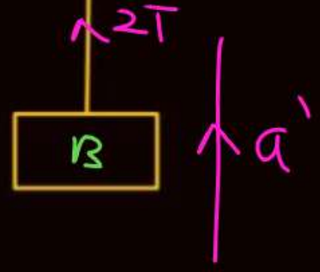
$a' = -5$

Q (14)

find acc of block B

Sol:

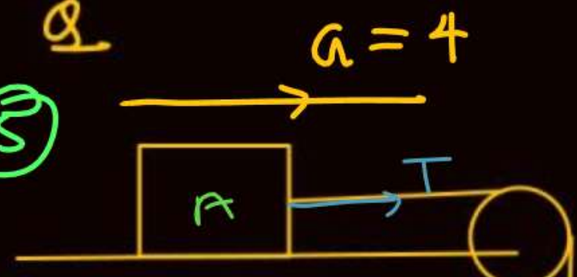
$T \times 2 + 2Ta' - T \times 6 = 0$



$2 + 2a' - 6 = 0$

$\boxed{a' = 1}$

Q (15)

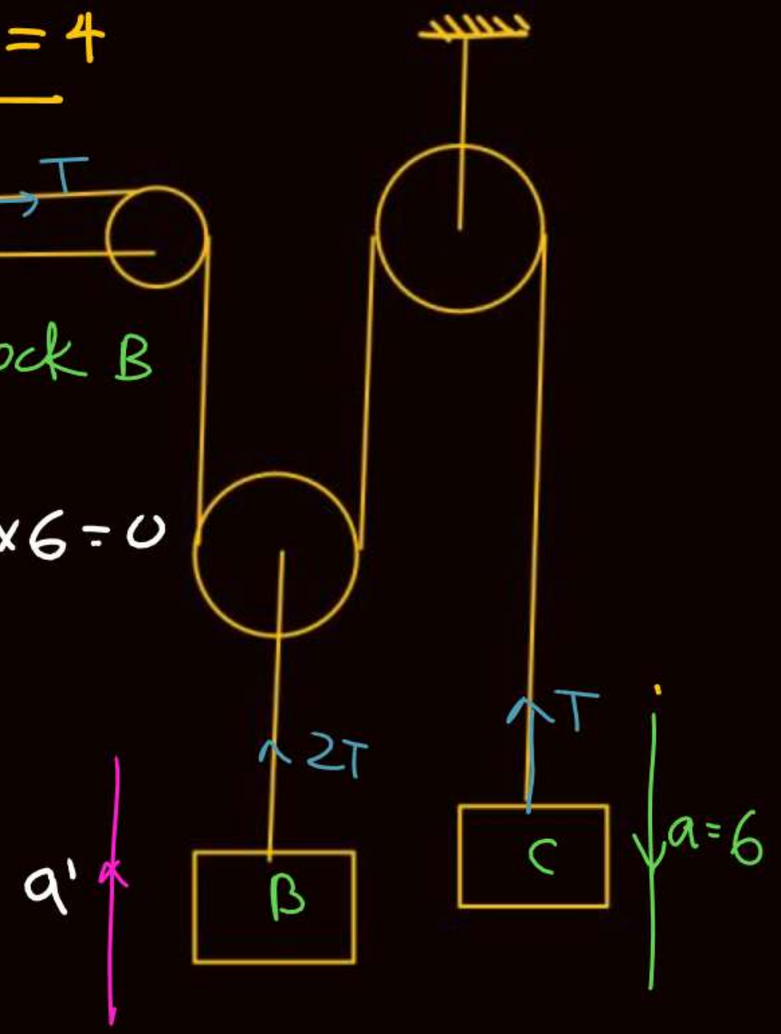


find acc. of block B

$T \times 4 + 2Ta' - T \times 6 = 0$

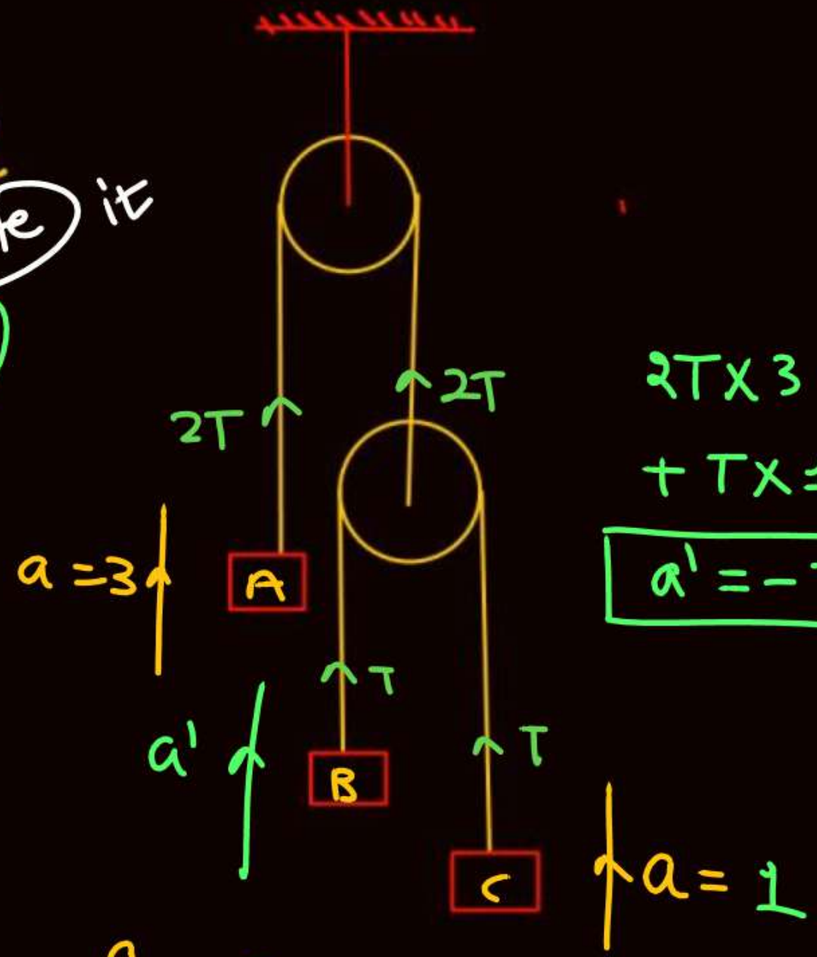
$4 + 2a' - 6 = 0$

$\boxed{a' = 1}$



Q note it

16

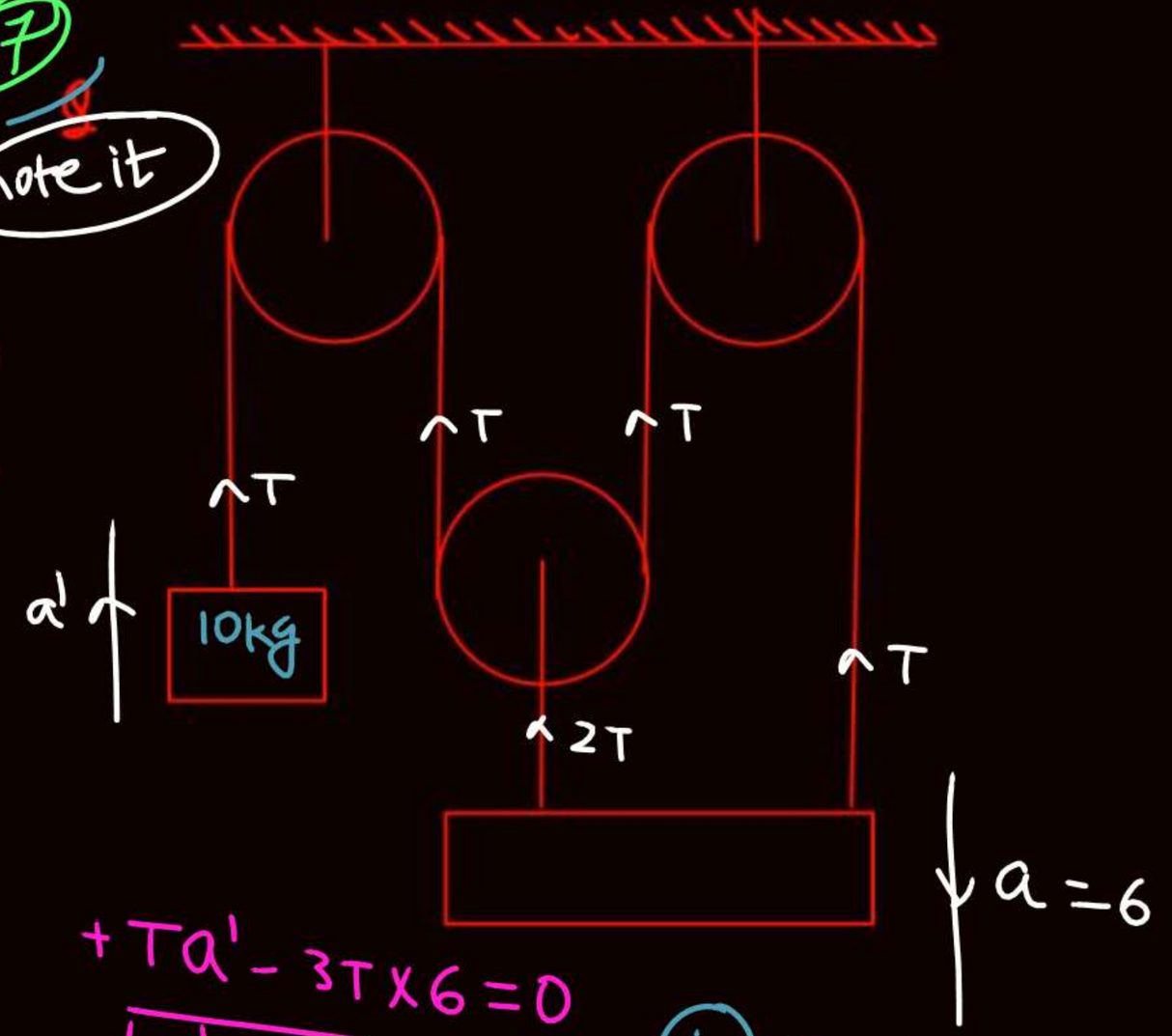


$a_B = ?$

$2T \times 3 + Ta' + T \times 1 = 0$

$a' = -7$

17 Q note it



$+Ta' - 3T \times 6 = 0$

$a' = 18$

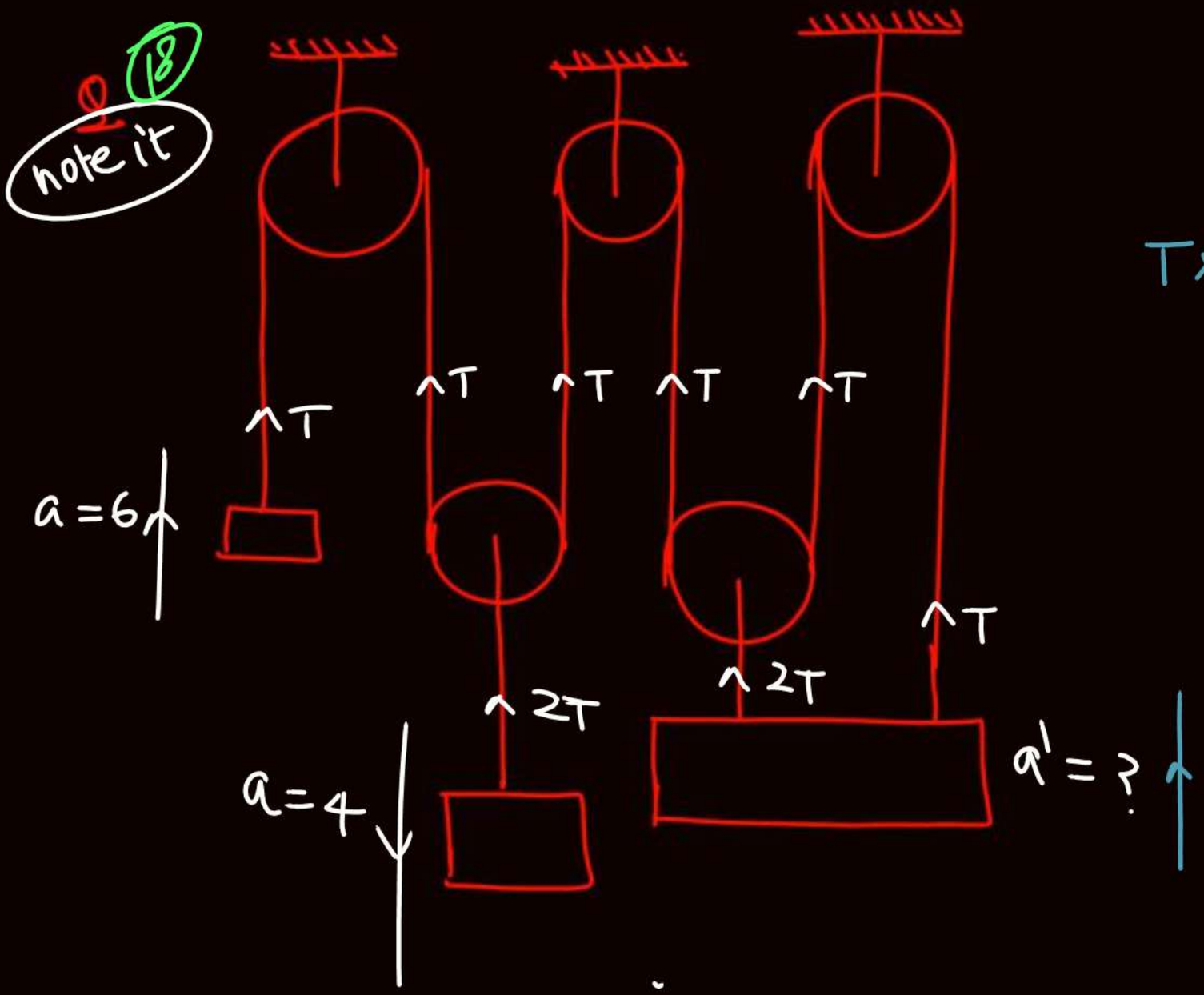
(b) $T = ?$

$T - 100 = 10 \times 18$

$T = 280$

Q 18

note it



$$T \times 6 - 2T \times 4 - 3T \times a' = 0$$

$$6 - 8 = 3a'$$

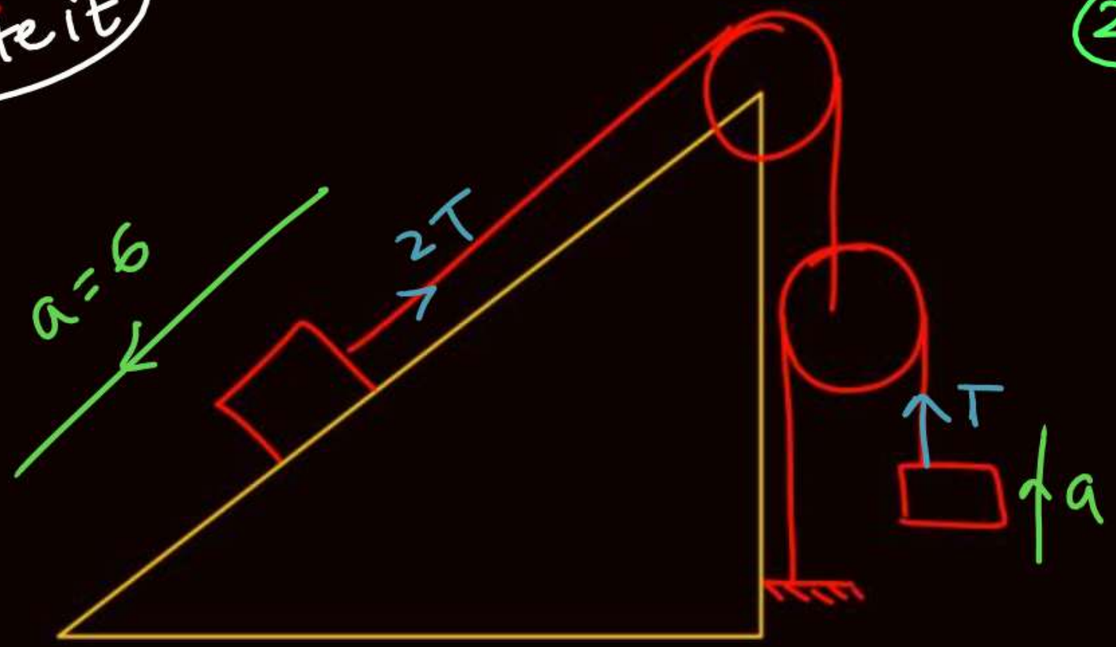
$$a' = \ominus \frac{2}{3}$$

Neeche

Q

note it

19

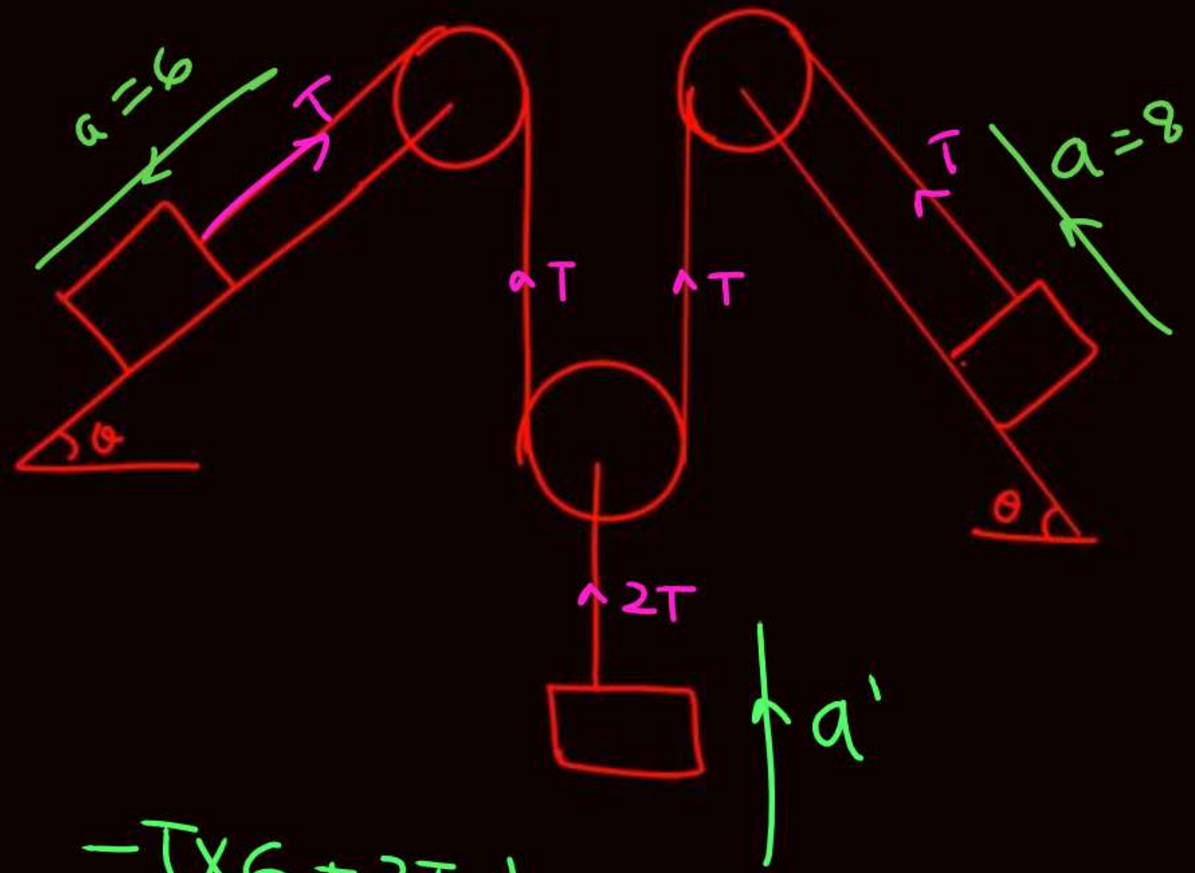


$-2T \times 6 + T.a = 0$

$a = 12$

note it

20 Q

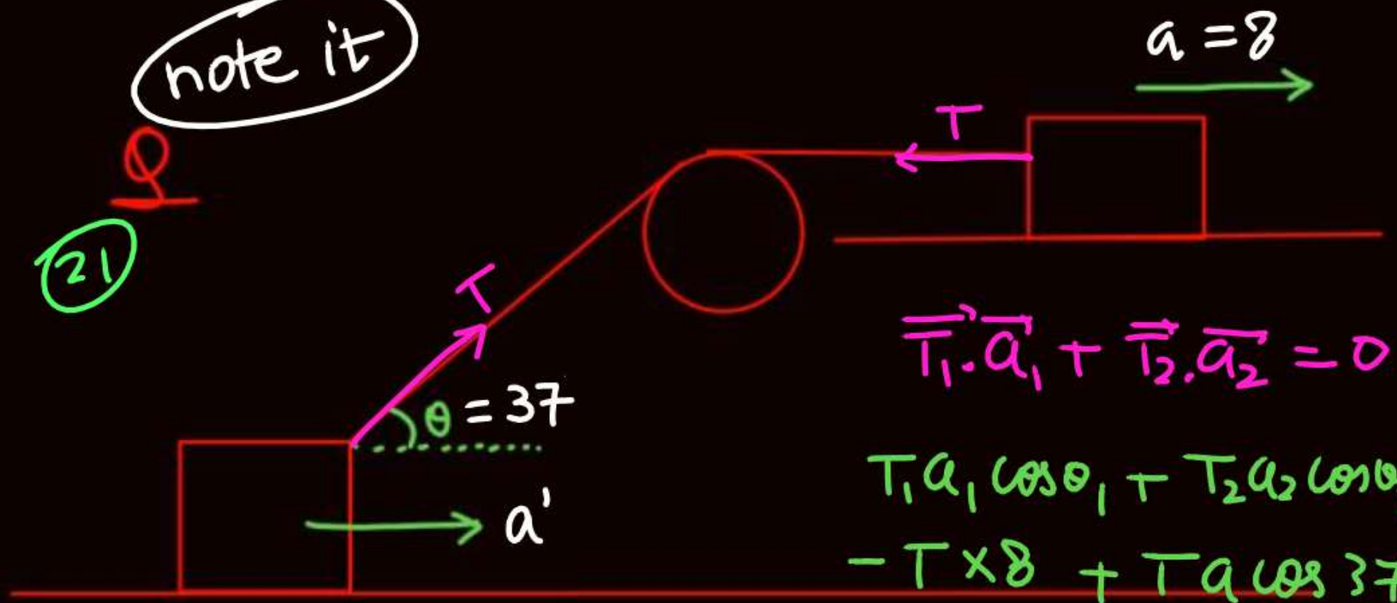


$-T \times 6 + 2Ta' + T \times 8 = 0$

$a' = -1$

note it

21



$\vec{T_1}.\vec{a_1} + \vec{T_2}.\vec{a_2} = 0$

$T_1 a_1 \cos\theta_1 + T_2 a_2 \cos\theta_2 = 0$

$-T \times 8 + T a \cos 37^\circ = 0$

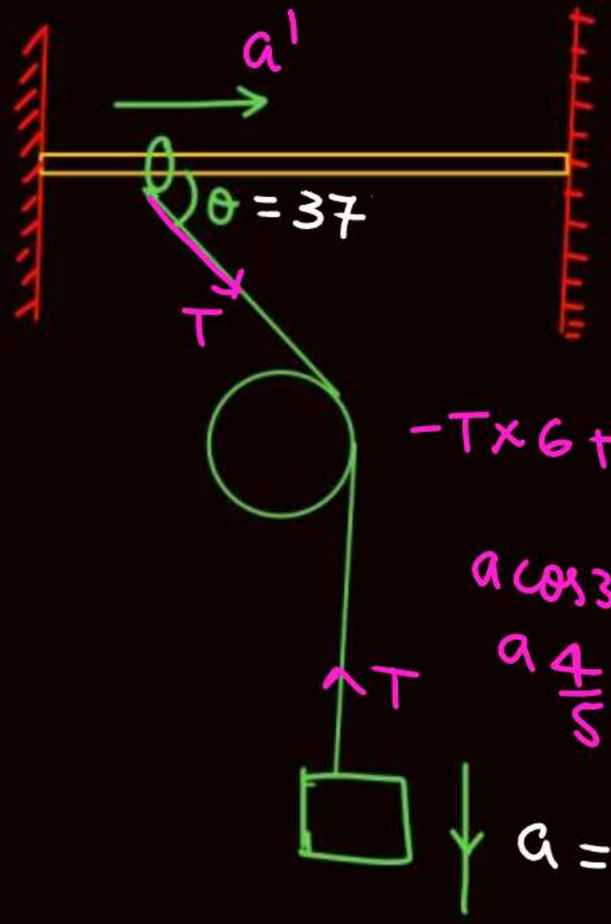
$a\cos 37^\circ = 8$

$a \times \frac{4}{5} = 8$

$\boxed{a = 10}$

note it

22



$-T \times 6 + T a \cos 37^\circ = 0$

$a\cos 37 = 6$

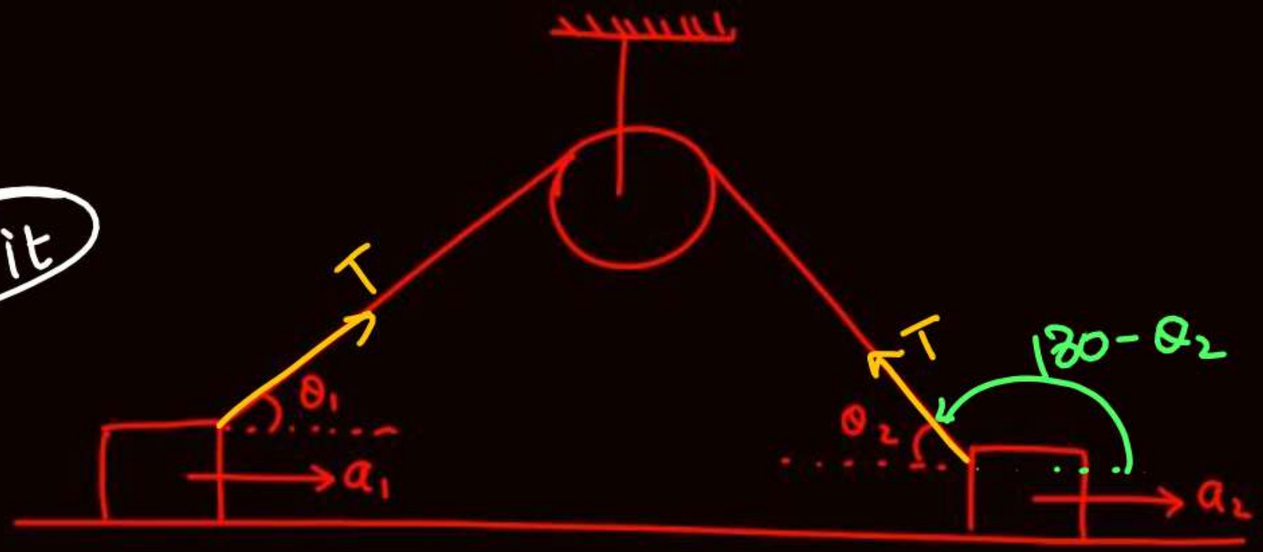
$a\frac{4}{5} = 6$

$a = \frac{30}{4}$

Q

note it

23



$$\vec{T_1}\cdot\vec{a_1} + \vec{T_2}\cdot\vec{a_2} = 0$$

$$T a_1 \cos\theta_1 + T a_2 \cos(180-\theta_2) = 0$$

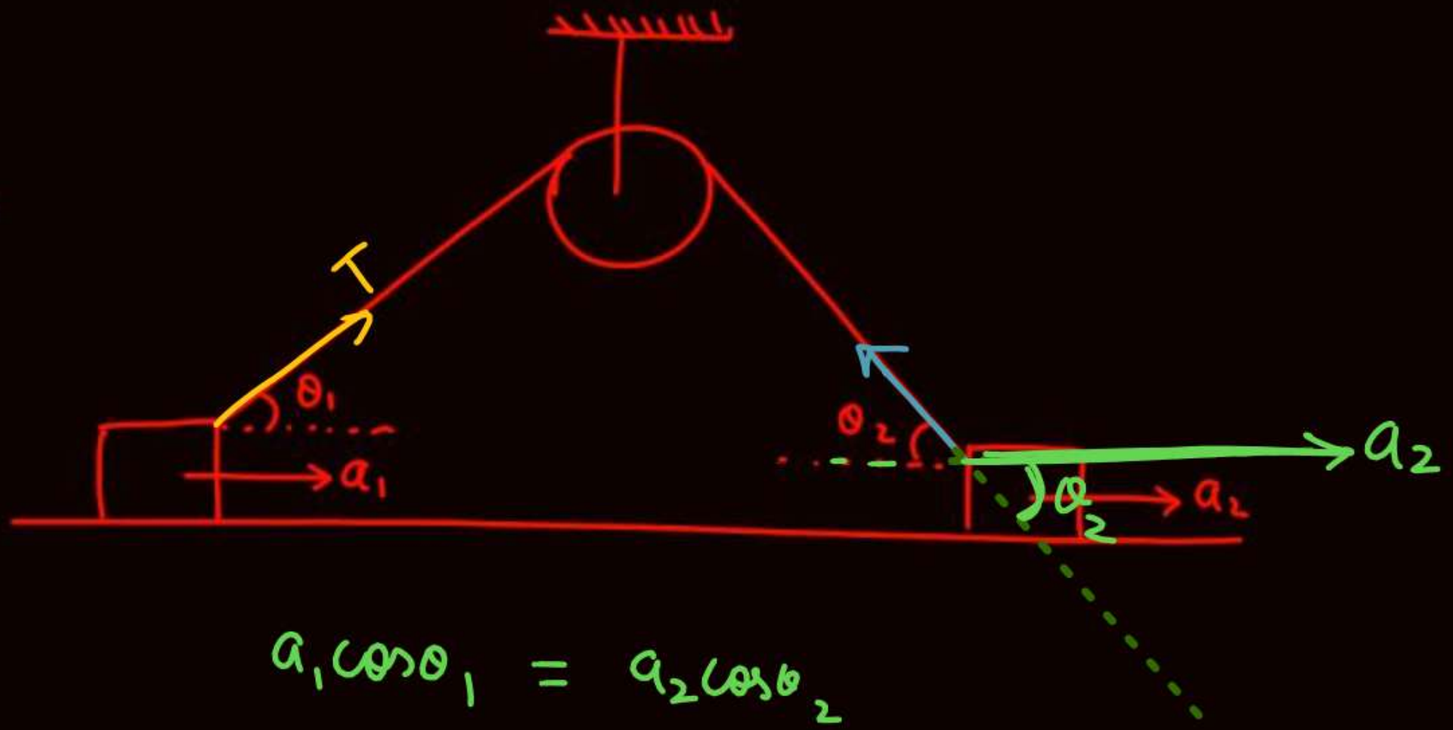
$$a_1\cos\theta_1 - a_2\cos\theta_2 = 0$$

$$\boxed{a_1\cos\theta_1 = a_2\cos\theta_2}$$

Q.

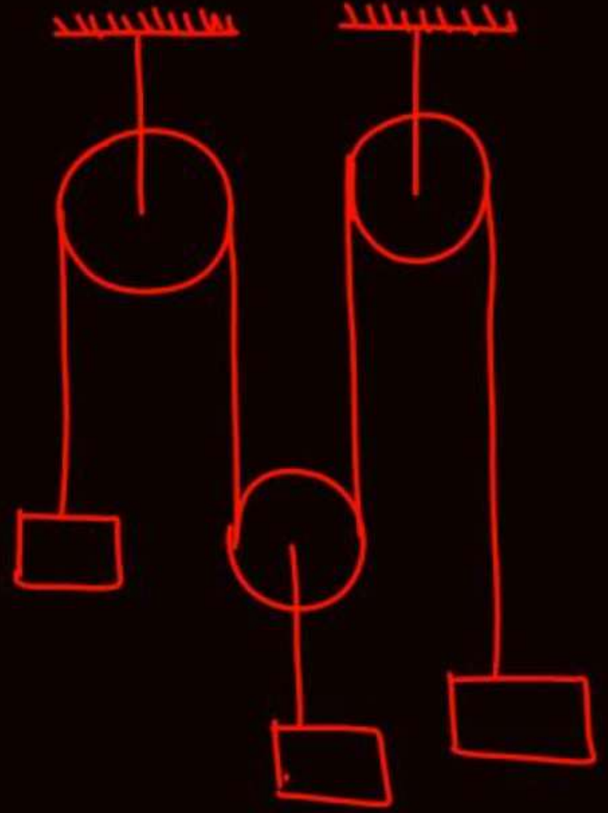
m-2

2D



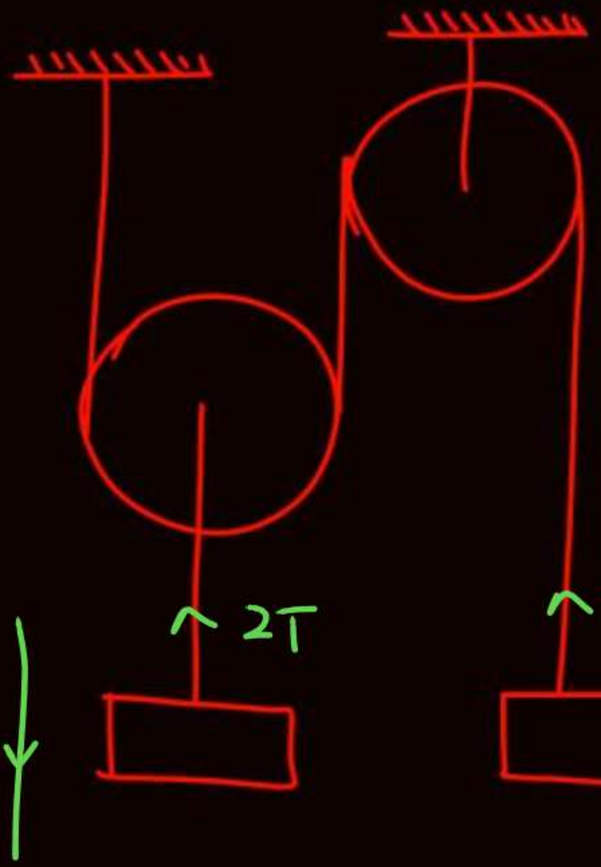
$$a_1 \cos\theta_1 = a_2 \cos\theta_2$$

Q



Q

24



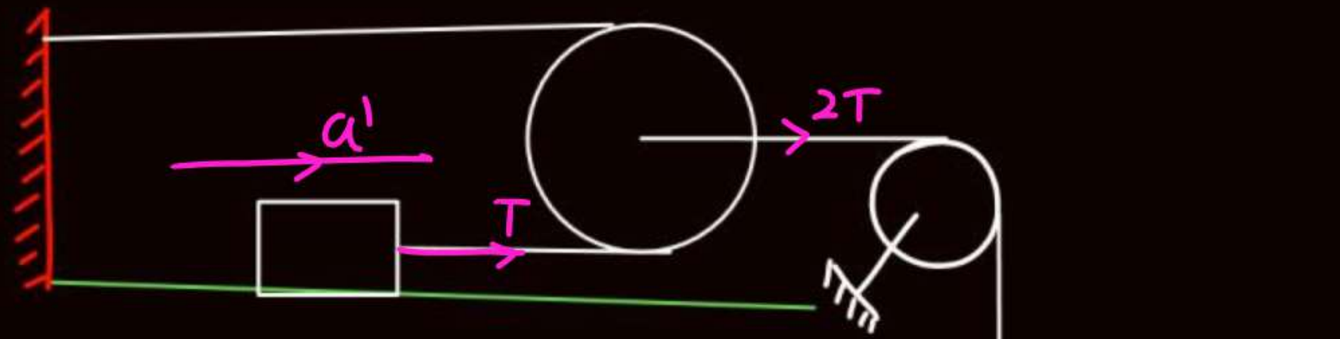
$$-2T \times 6 + T \times a' = 0$$

$$a' = 12$$

Q

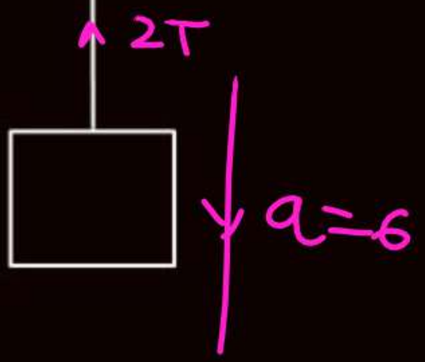
note it

25



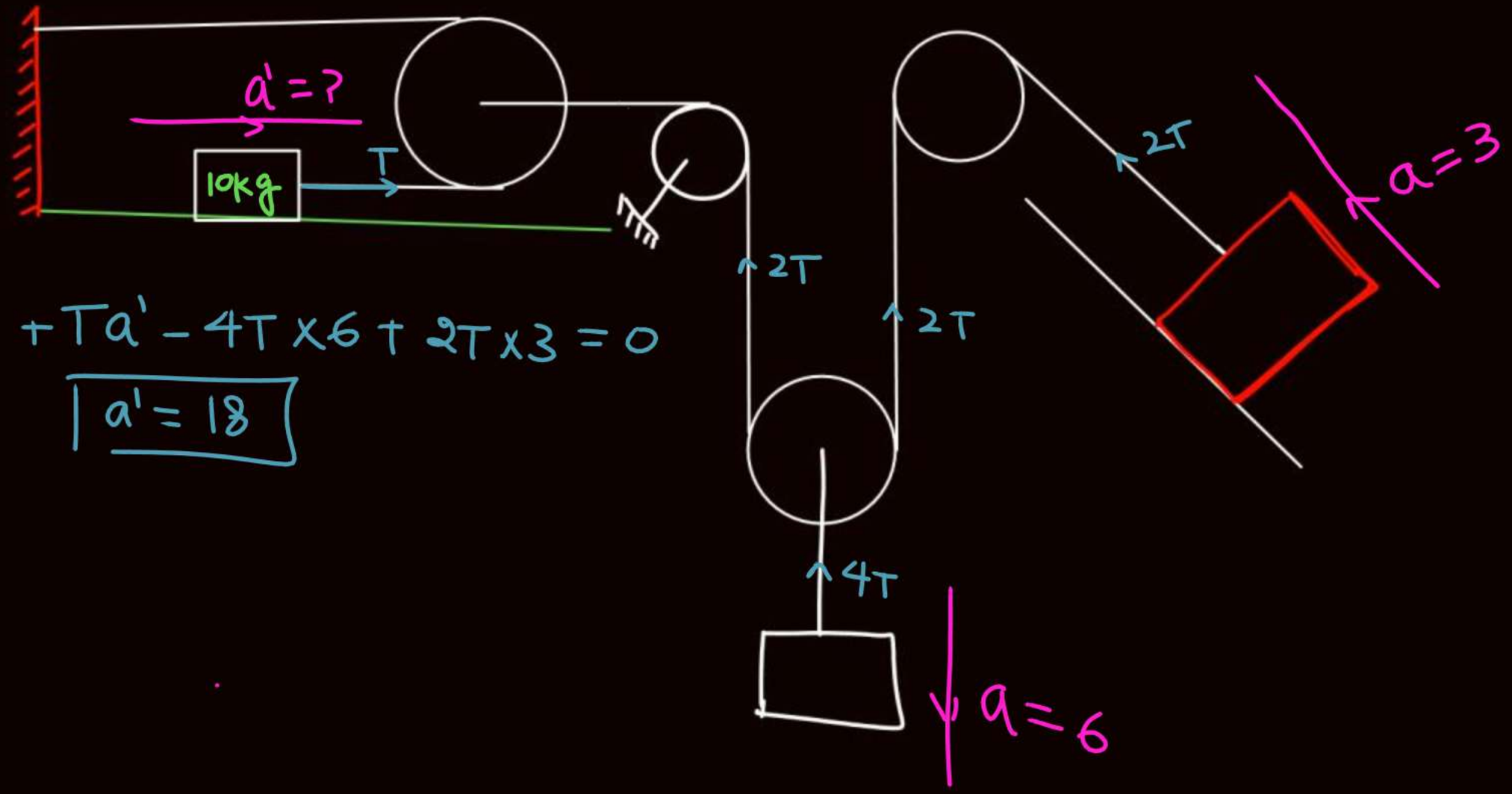
$Ta' - 2T \times 6 = 0$

$a' = 12$



note it

26



$$+Ta' - 4T \times 6 + 2T \times 3 = 0$$

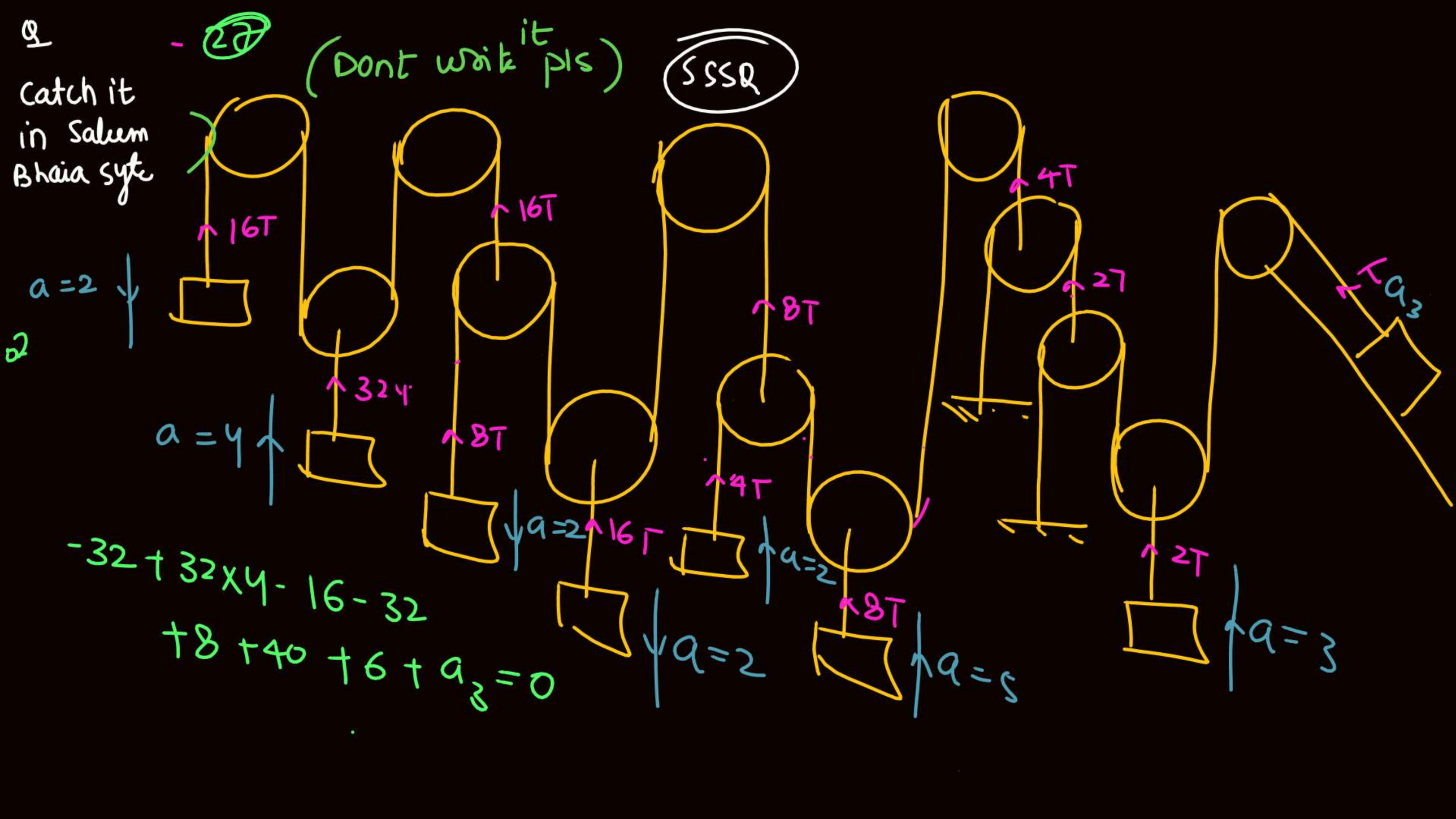
$$\boxed{a' = 18}$$

Q - 27

Catch it in Salem Bhaia syte

(Dont write it pls)

SSSR



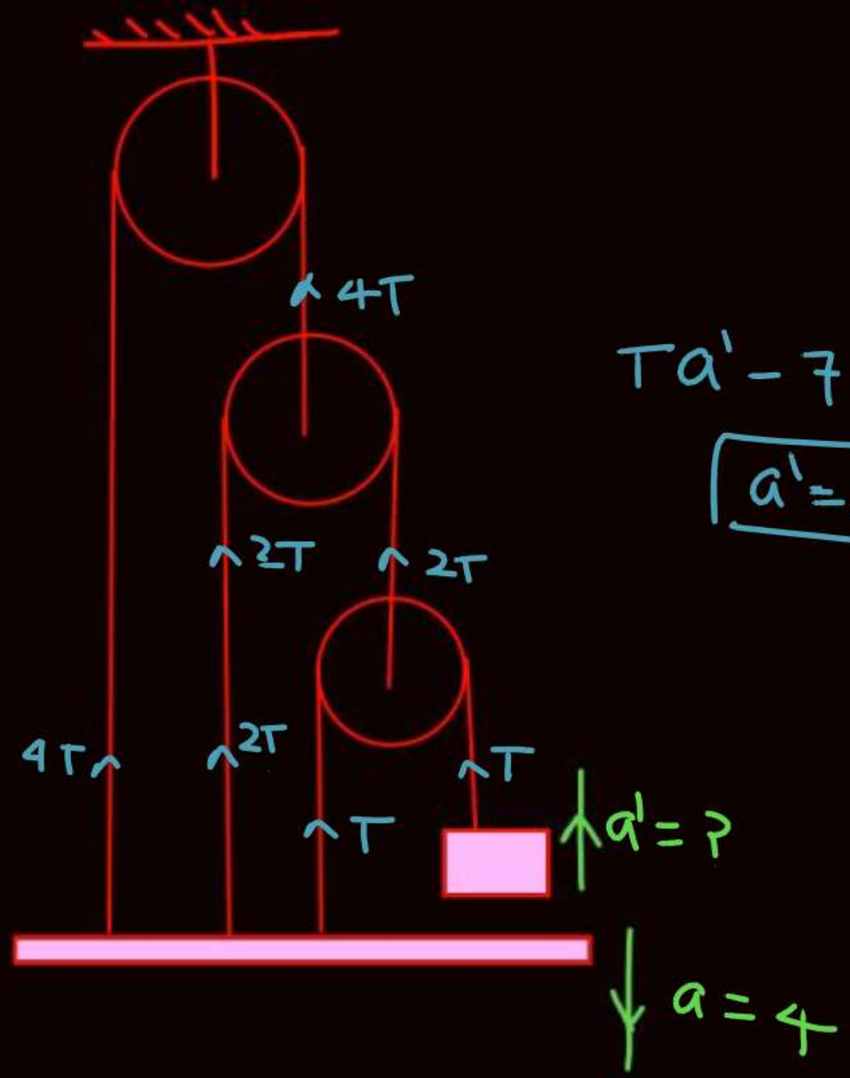
$-32 + 32 \times 4 - 16 - 32$

$+8 + 40 + 6 + a_3 = 0$

Q

note it

(28)



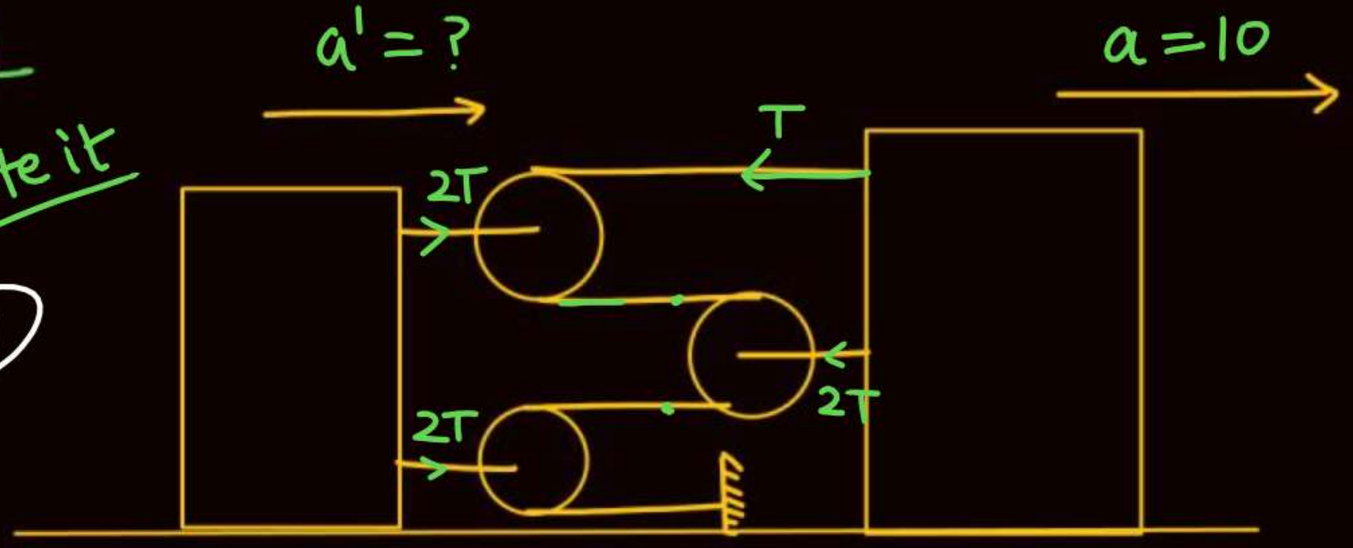
$Ta' - 7T \times 4 = 0$

$a' = 28$

Q

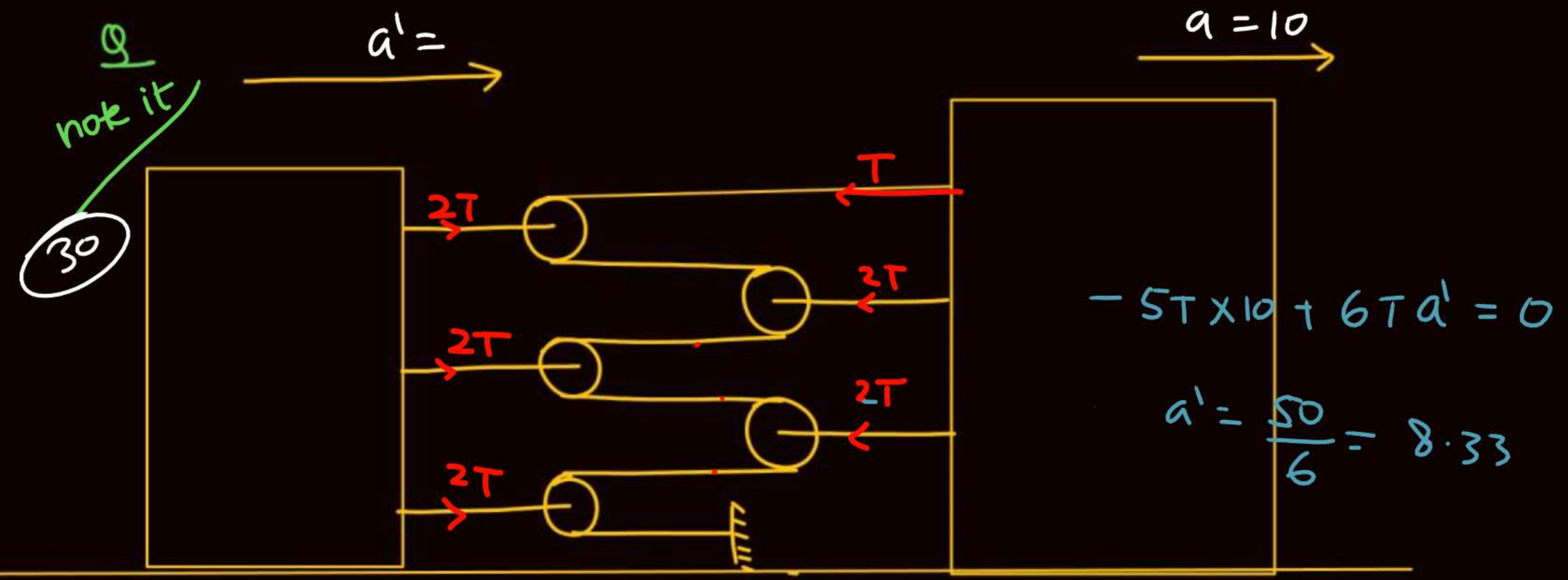
note it

29



$$-3T \times 10 + 4T a' = 0$$

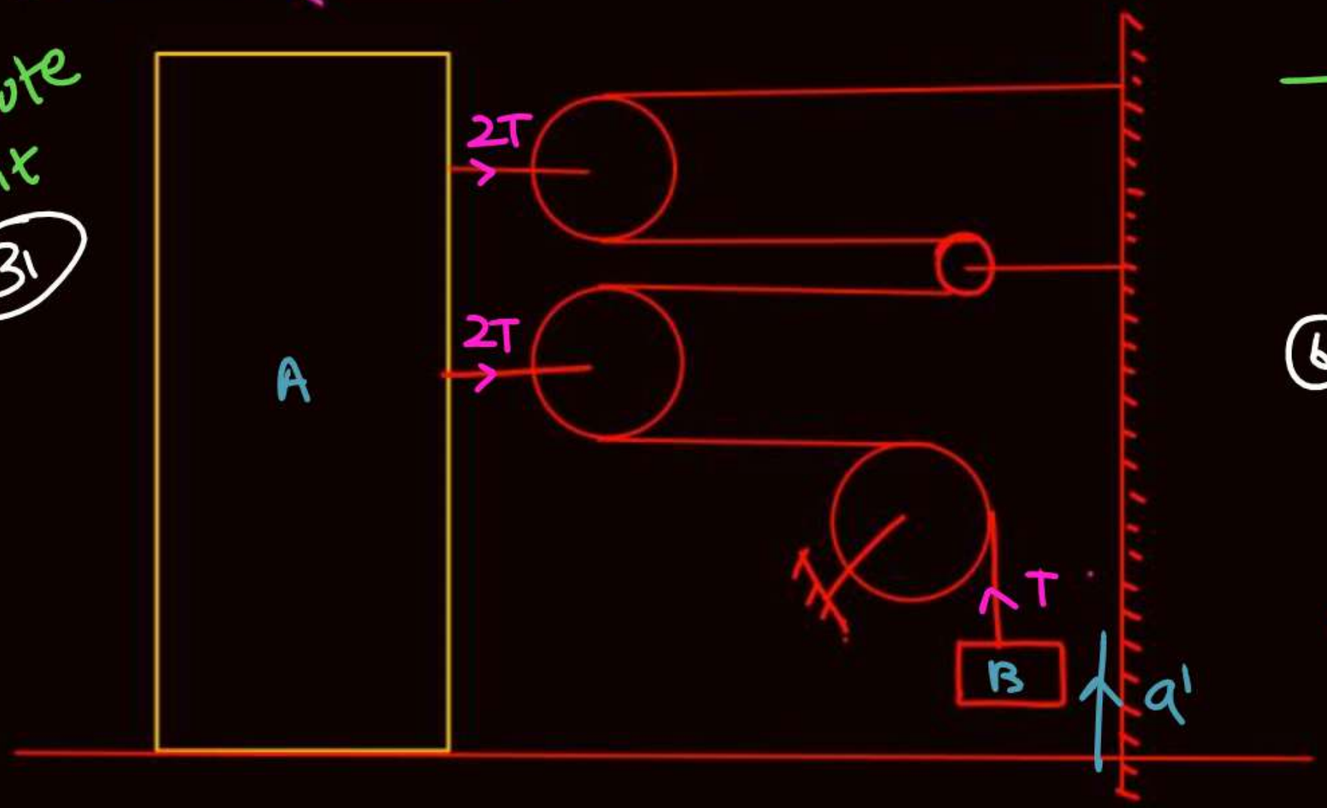
$$a' = \frac{30}{4} = 7.5$$



$$-5T \times 10 + 6T a' = 0$$

$$a' = \frac{50}{6} = 8.33$$

Q $a = 4$



note it

(31)

$$-4T \times 4 + Ta' = 0$$

$$\boxed{a' = 16}$$

(b) $\vec{a}_{A/B} = \vec{a}_A - \vec{a}_B$

$= -4\hat{i} - 16\hat{j}$

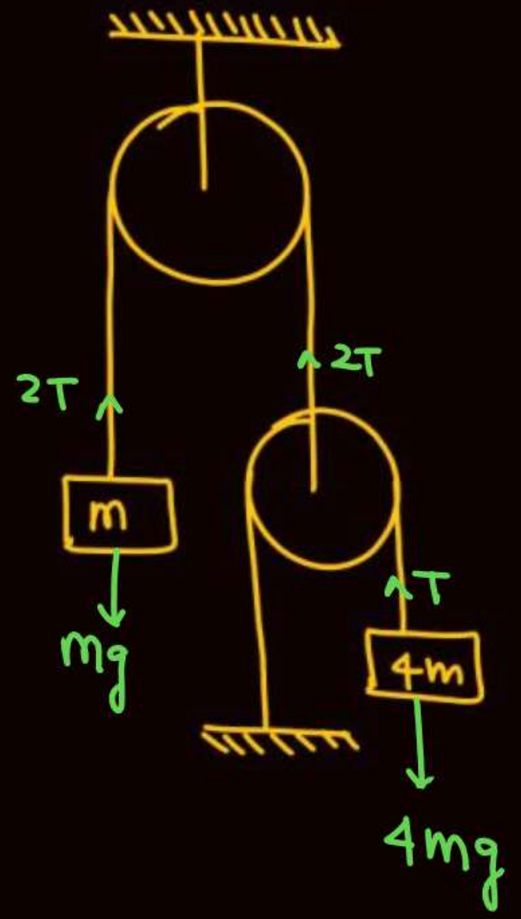
$a_{A/B} = \sqrt{4^2 + 16^2} = 4\sqrt{17}$

Q

B

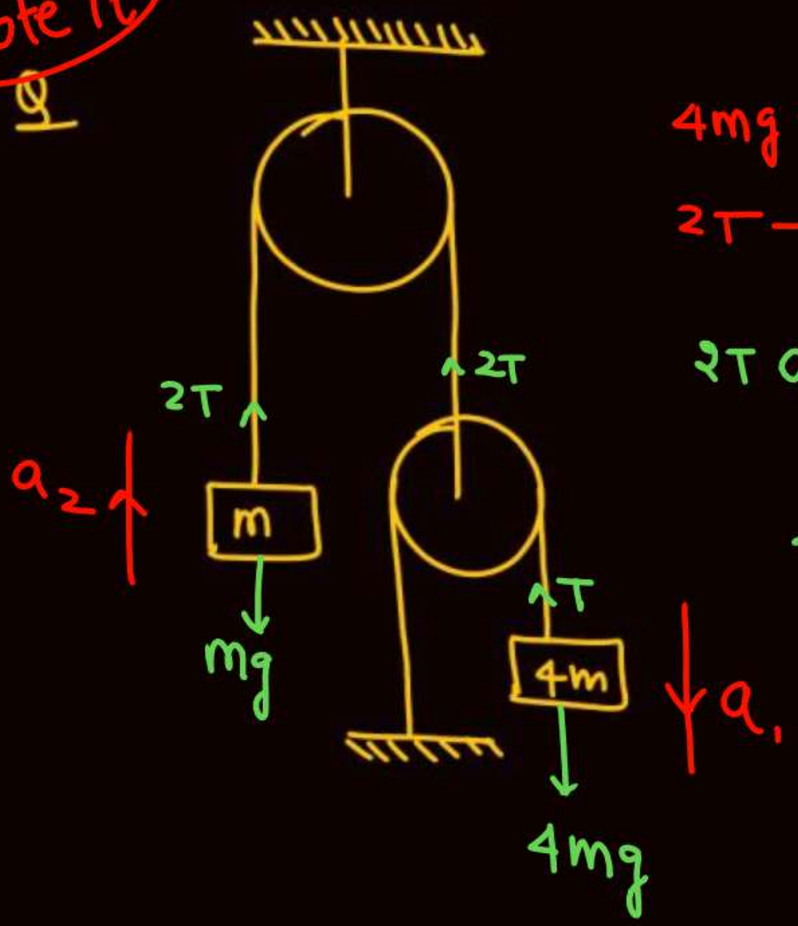
32

Find acc. of each mass.



Find acc. of each mass.

note it



a_1, a_2, T

$4mg - T = 4ma_1$ — (1)

$2T - mg = ma_2$ — (2)

$2Ta_2 - Ta_1 = 0$

$a_1 = 2a_2$ — (3)

Let $a_2 = a$

$a_1 = 2a$

$4mg - T = 8ma$

$2T - mg = ma$

$8mg - 2T = 16ma$

$7mg = 17ma$

$a = \frac{7g}{17} = a_2$

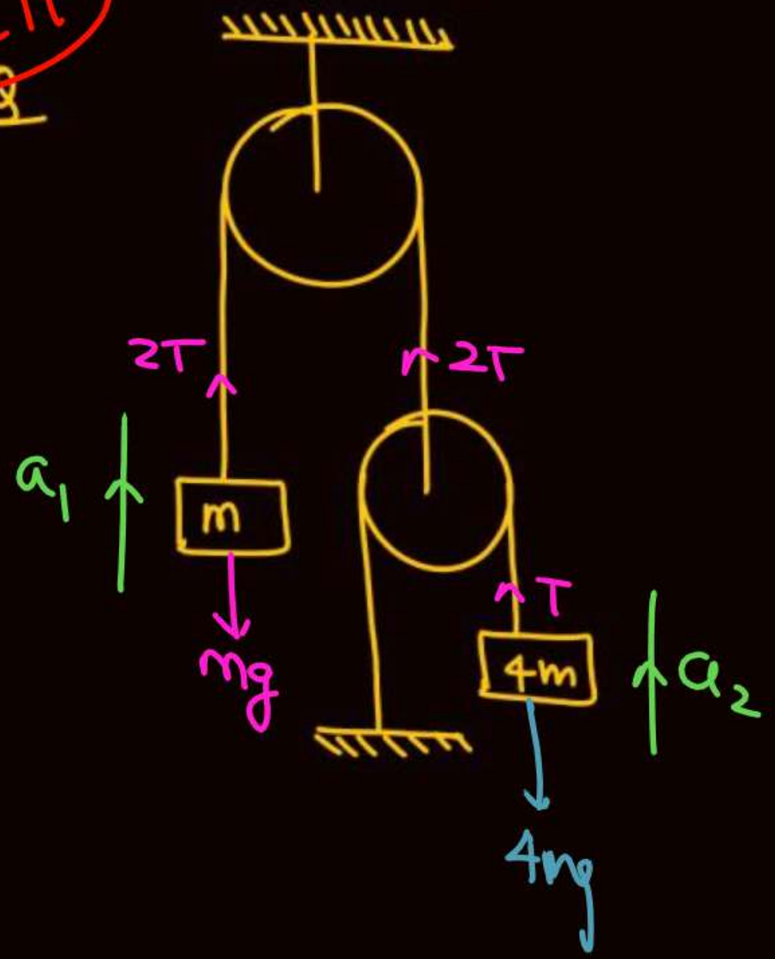
$a_1 = \frac{14g}{17}$

style SSS Methode

Saleem Bhai'a style method (mension in your copy) so that apko yad rahe

Find acc. of each mass.

note it



$$2Ta_1 + Ta_2 = 0$$

$$2a_1 + a_2 = 0$$

$$2\left(\frac{2T-mg}{m}\right) + \left(\frac{T-4mg}{4m}\right) = 0$$

$$16T - 8mg + T - 4mg = 0$$

$$\boxed{T = \frac{12mg}{17}}$$

$$a_1 = \frac{2T-mg}{m}$$

$$= \frac{2T}{m} - g$$

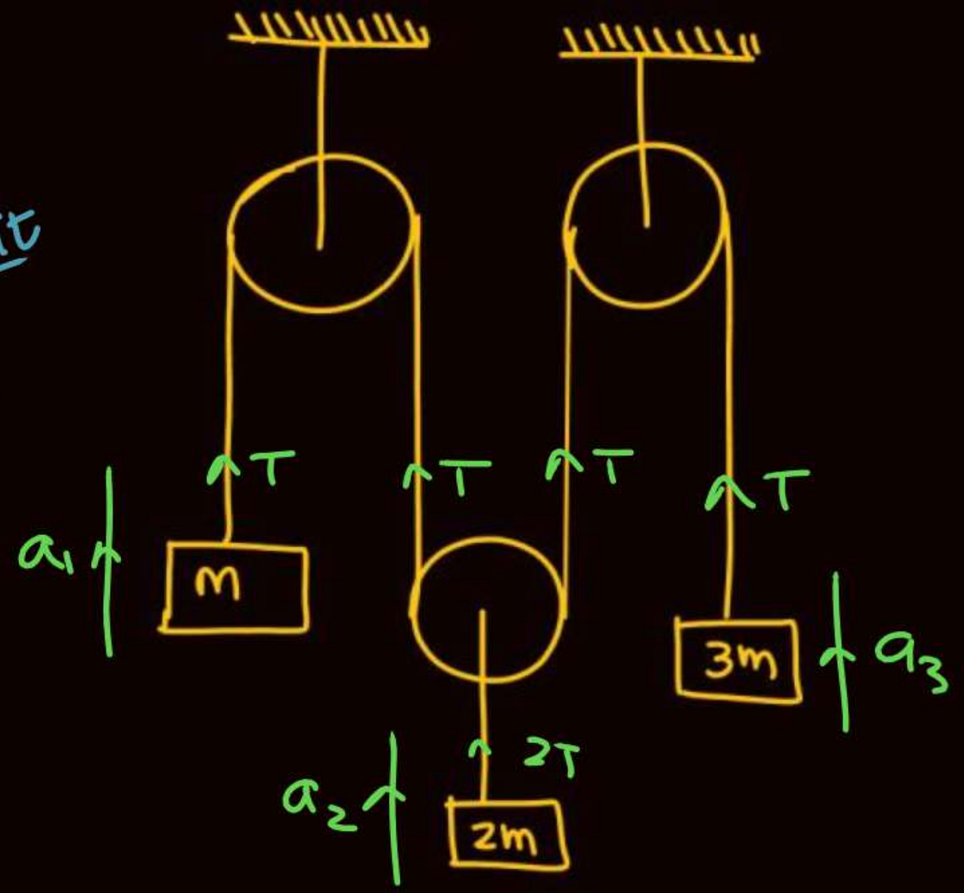
$$= \frac{24g}{17} - g$$

$$= \frac{7g}{17}$$

Q

nok it

33



$$Ta_1 + 2Ta_2 + Ta_3 = 0$$

$$a_1 + 2a_2 + a_3 = 0$$

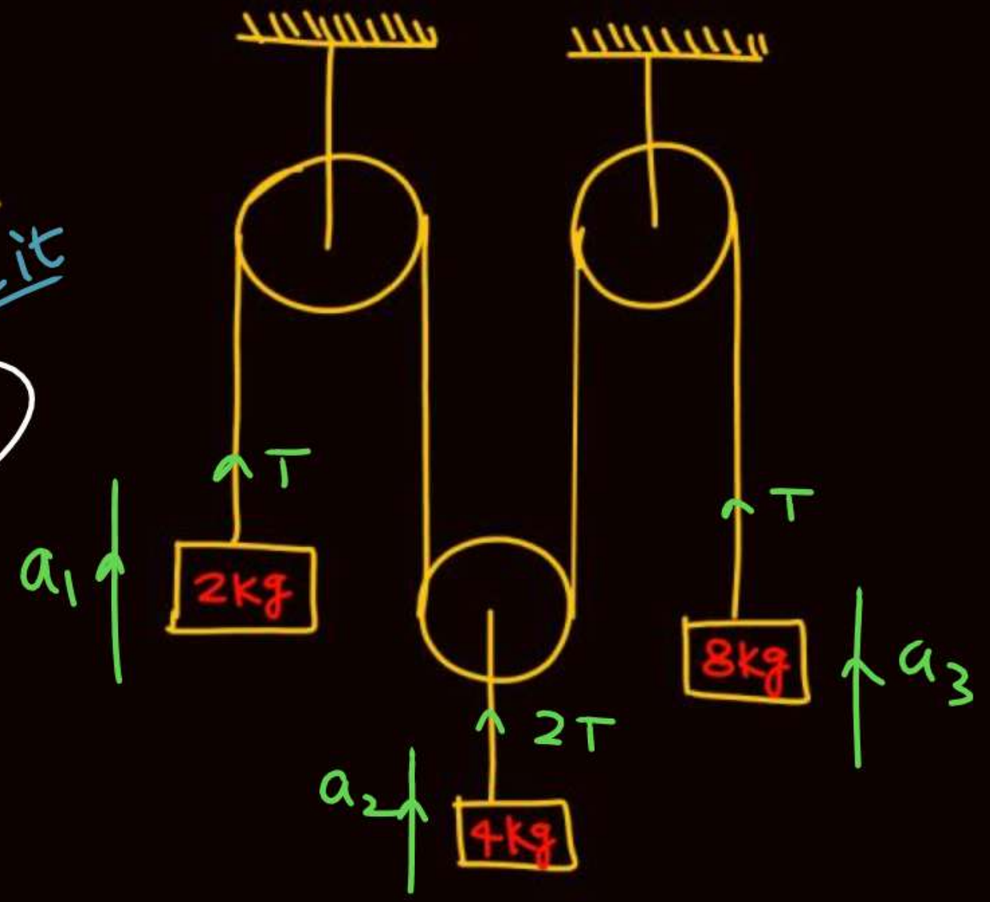
$$\frac{T - mg}{m} + \frac{2(2T - 2mg)}{2m} + \frac{T - 3mg}{3m} = 0$$

$T =$ ✓

Q

note it

(39)



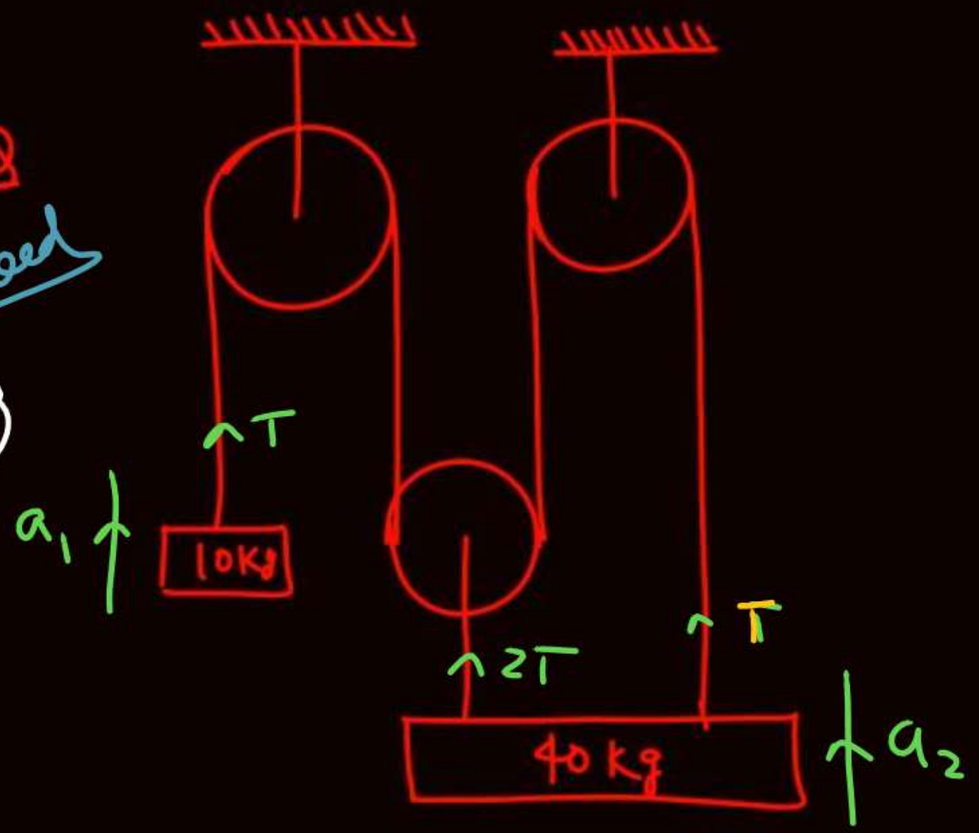
$$a_1 + 2a_2 + a_3 = 0$$

$$\frac{T-20}{2} + 2\left(\frac{2T-40}{4}\right) + \left(\frac{T-80}{8}\right) = 0$$

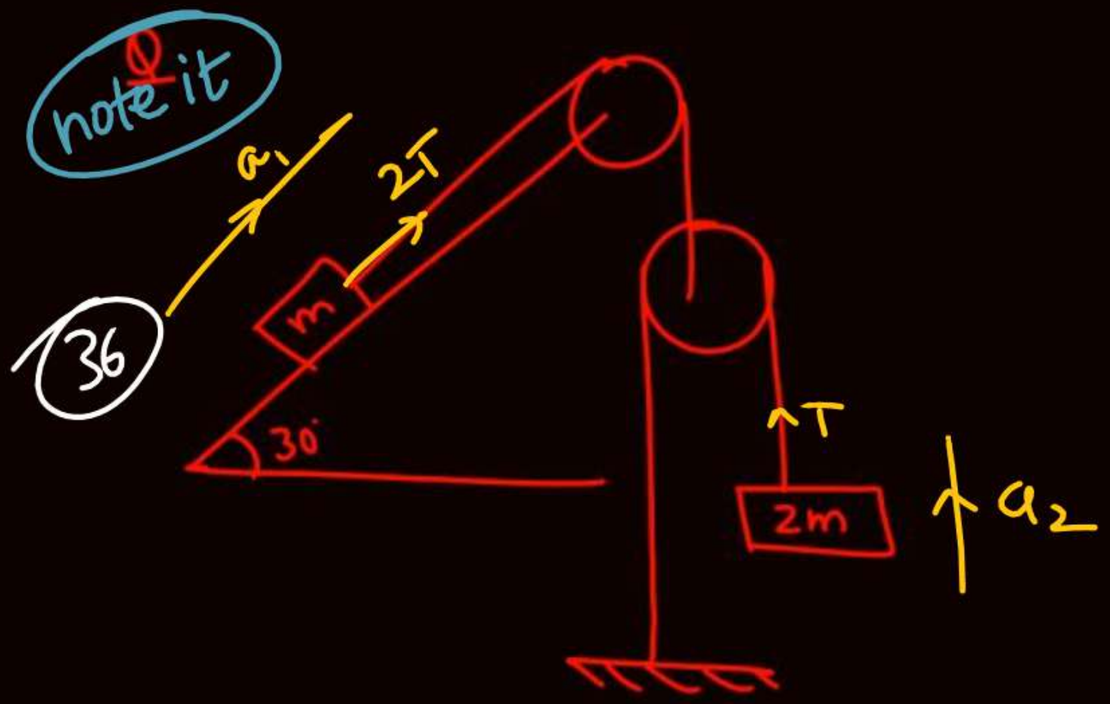
Q

no need

(35)



$$\frac{T-100}{10} + 3\left(\frac{3T-400}{40}\right) = 0$$



$$2a_1 + a_2 = 0$$

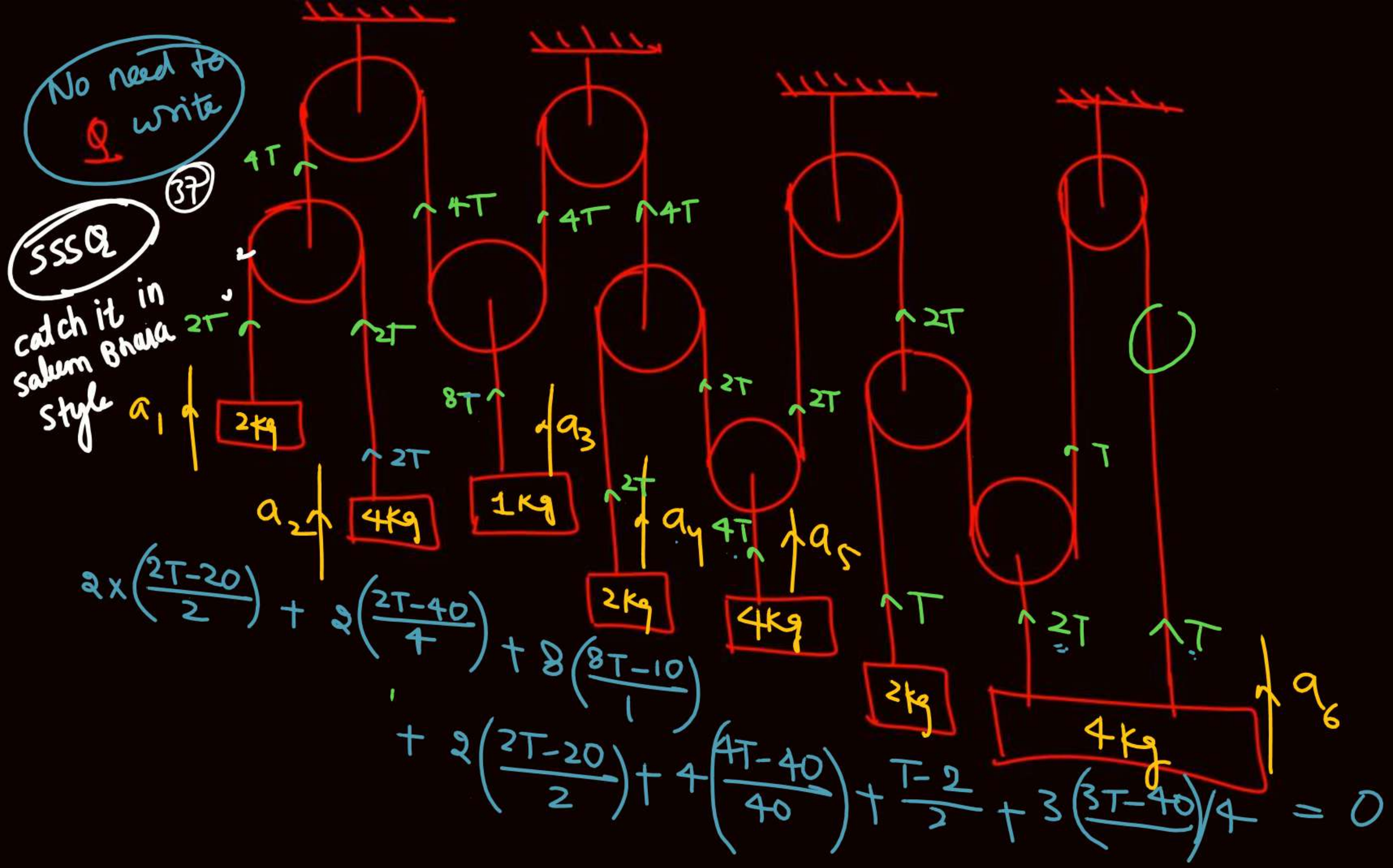
$$2\left(\frac{2T - mg\sin\theta}{m}\right) + \left(\frac{T - 2mg}{2m}\right) = 0$$

No need to write

37

SSSQ

catch it in Saleem Bhaia style



$$2\times\left(\frac{2T-20}{2}\right)+2\left(\frac{2T-40}{4}\right)+8\left(\frac{8T-10}{1}\right)$$

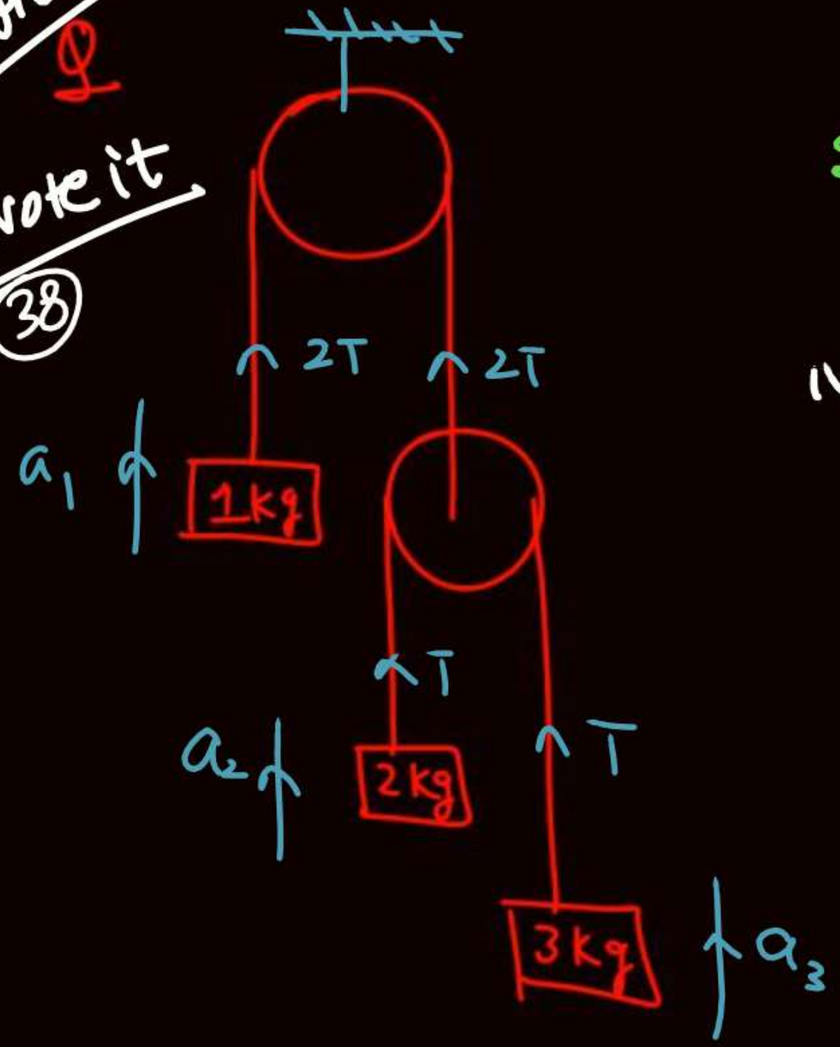
$$+2\left(\frac{2T-20}{2}\right)+4\left(\frac{4T-40}{40}\right)+\frac{T-2}{2}+3\left(\frac{3T-40}{4}\right)=0$$

HCV

Q

Note it

38

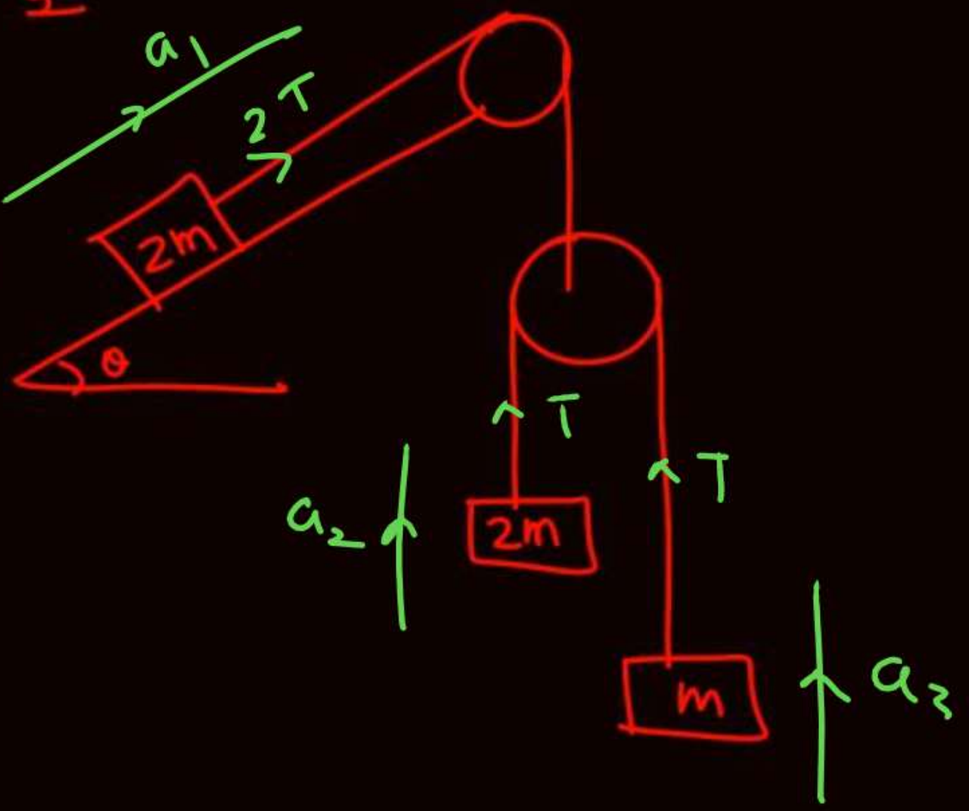


$$2\left(\frac{2T-10}{1}\right)+\left(\frac{T-20}{2}\right)+\frac{T-30}{3}=0$$

Now Solve

note it

(39)



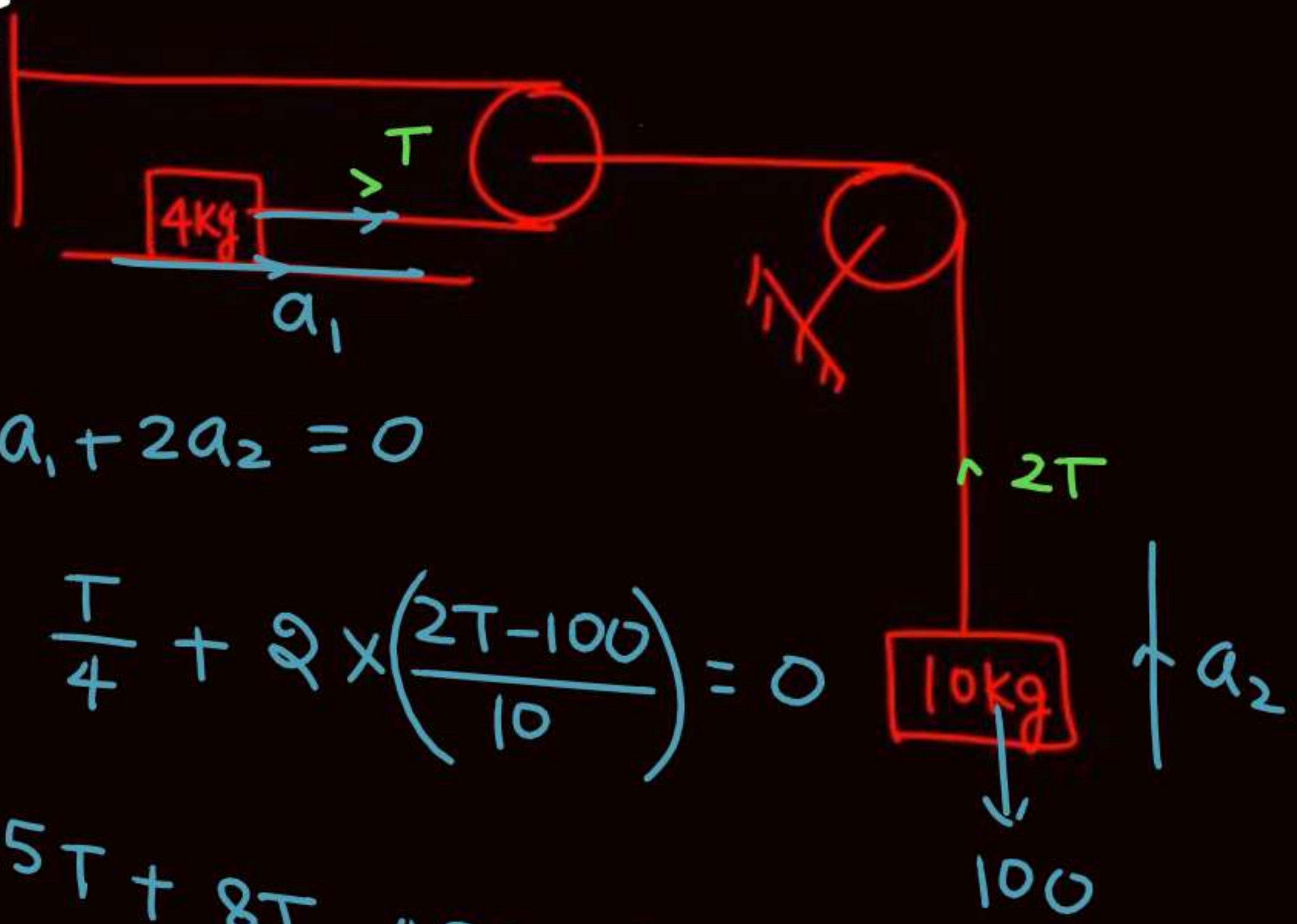
$$2\left(\frac{2T-2mg\sin\theta}{2m}\right)+\frac{T-2mg}{2m}$$

$$+\frac{T-mg}{m}=0$$

Q tecv

note it

(40)



$$a_1 + 2a_2 = 0$$

$$\frac{T}{4} + 2 \times \left(\frac{2T-100}{10}\right) = 0$$

$$5T + 8T - 400 = 0$$

$$T = \frac{400}{13}$$

$$a_1 = \frac{T}{4} = \frac{400}{13 \times 4} = \frac{100}{3}$$

$$a_1 + 2a_2 = 0$$

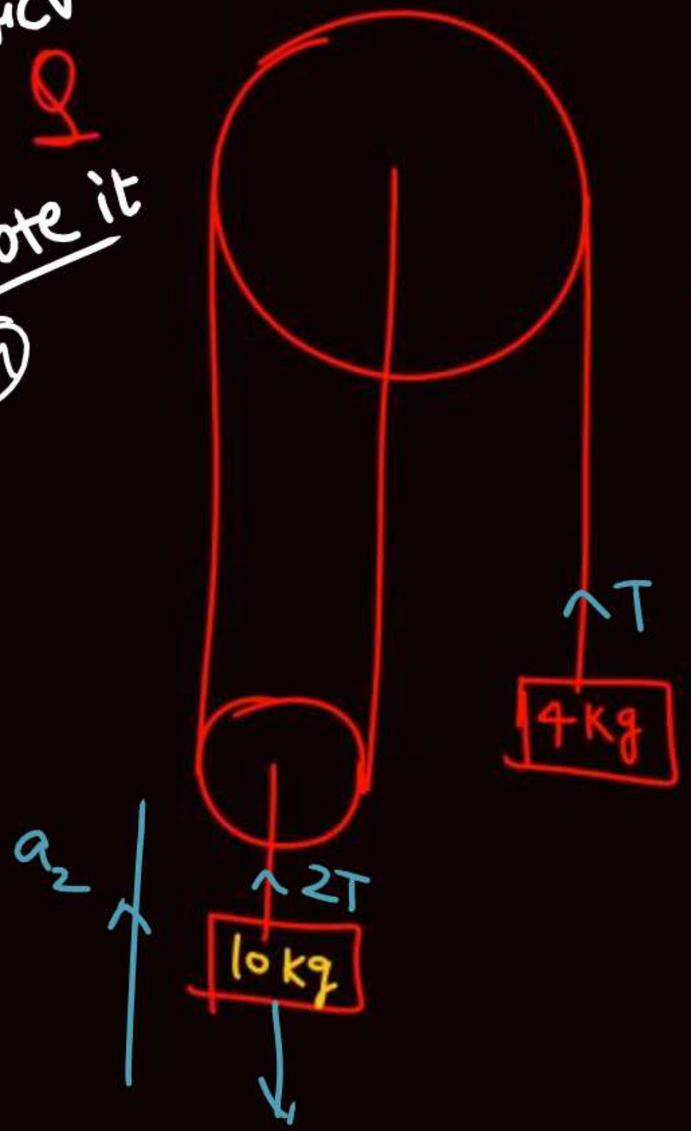
$$a_2 = -\frac{a_1}{2} = \frac{\ominus 50}{3}$$

HCV

Q

note it

(41)



$$\frac{T-40}{4} + \frac{2(2T-100)}{10} = 0$$

$$5T - 200 + 4T - 400 = 0$$

$$9T = 600$$

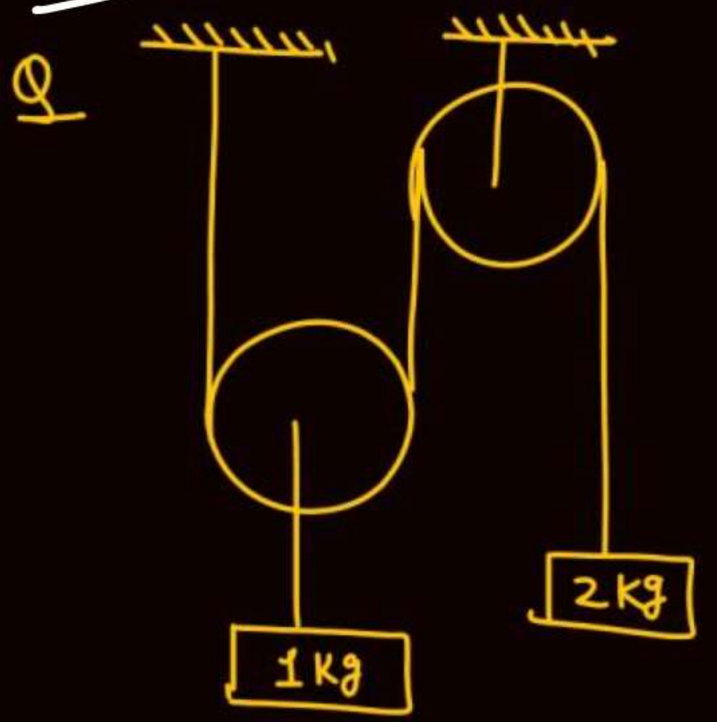
$$T = \frac{600}{9} = \frac{200}{3}$$

$$a_1 = \frac{T-40}{4} = \frac{\frac{200}{3} - 40}{4}$$

$$= 20/3 = 2g/3$$

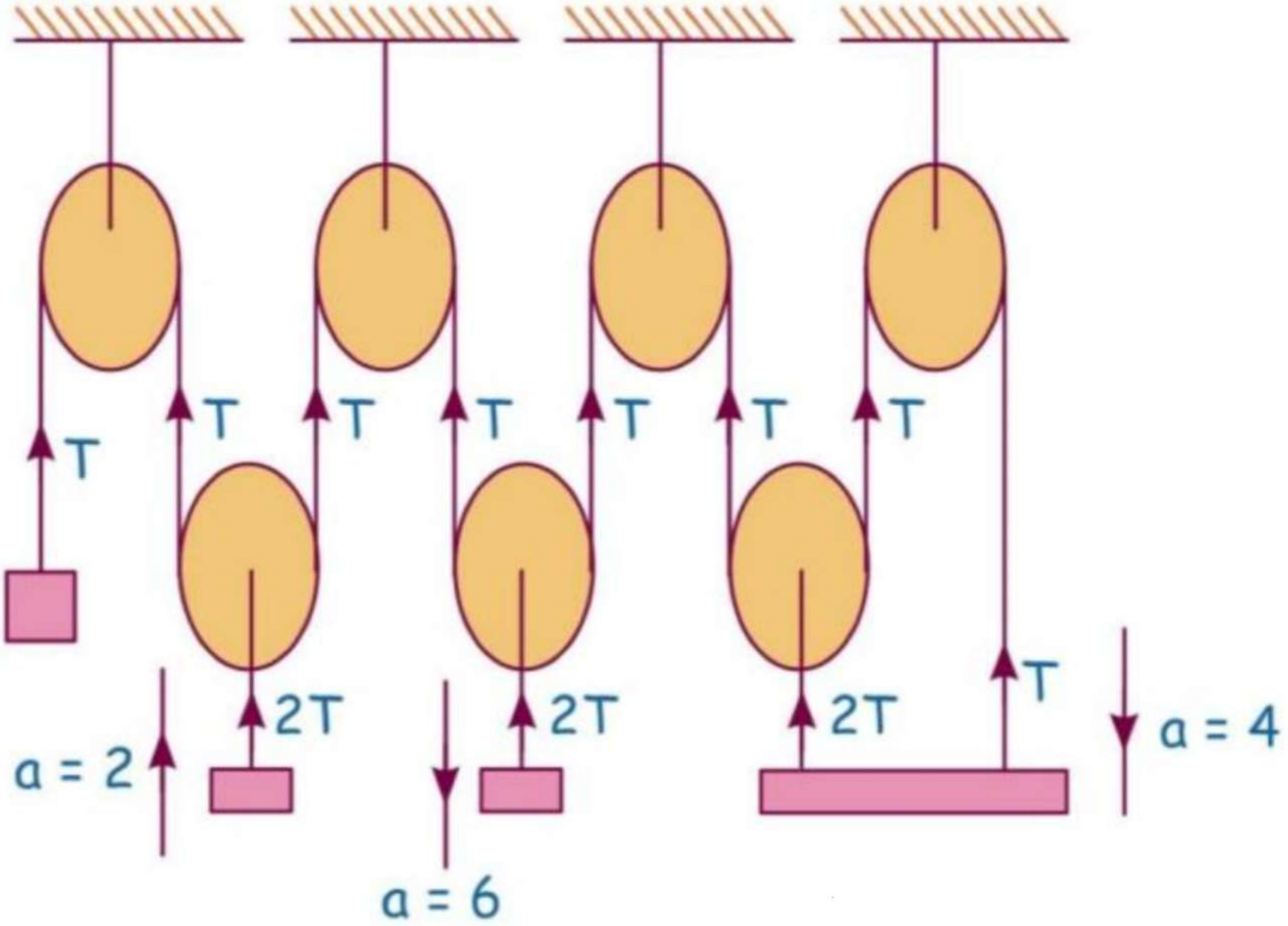
no need

Q



Q. Find a'

Dont write 42

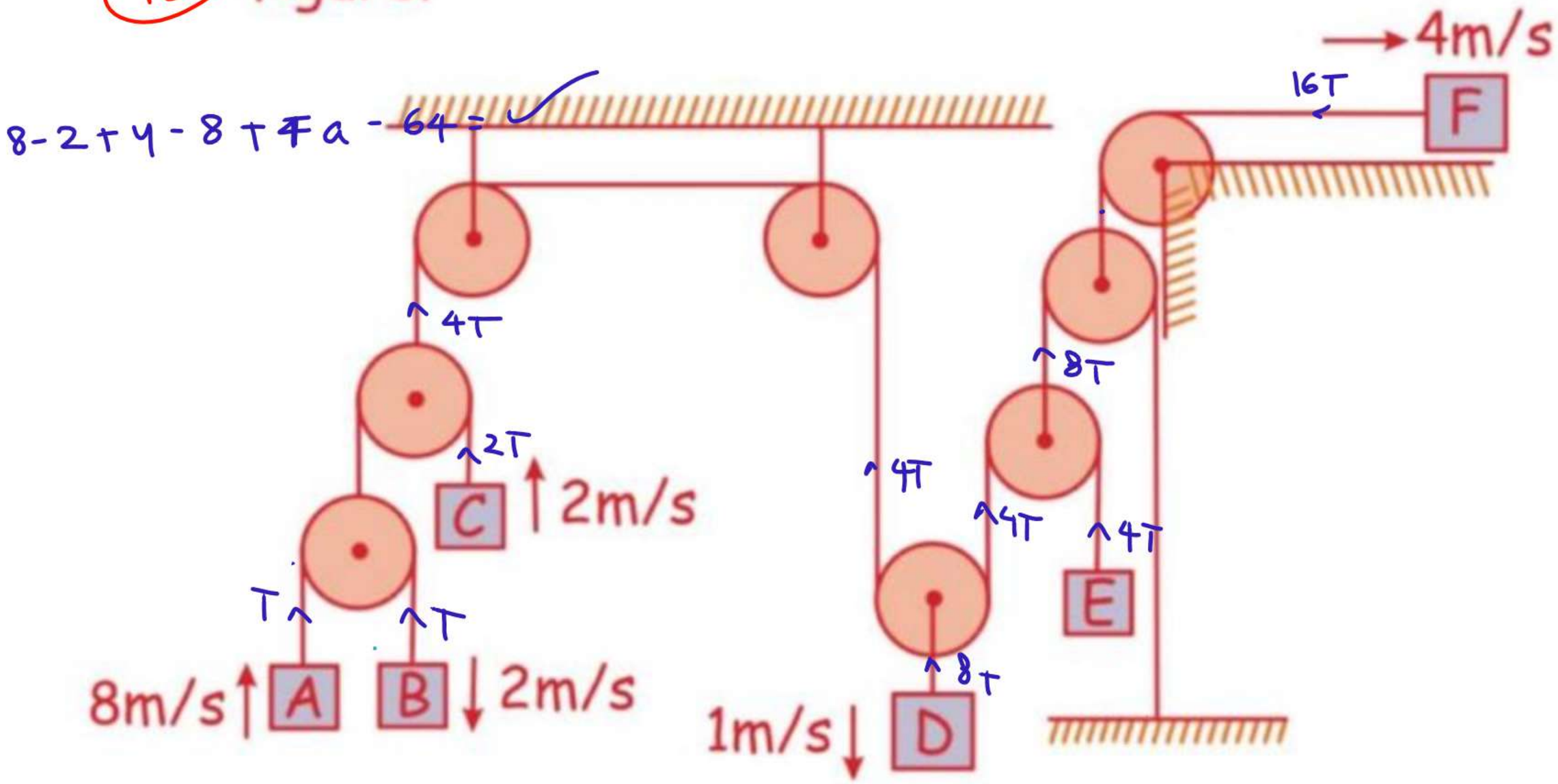


$Ta' + 4Ta - 2T \times 6 - 3T \times 4 = 0$

$a' = 20$

Dont write

Q. (43) Find out the velocity of block E as shown in figure.



differentiate

$$\vec{T_1}\cdot\vec{x_1} + \vec{T_2}\cdot\vec{x_2} + \ldots\ldots = 0$$

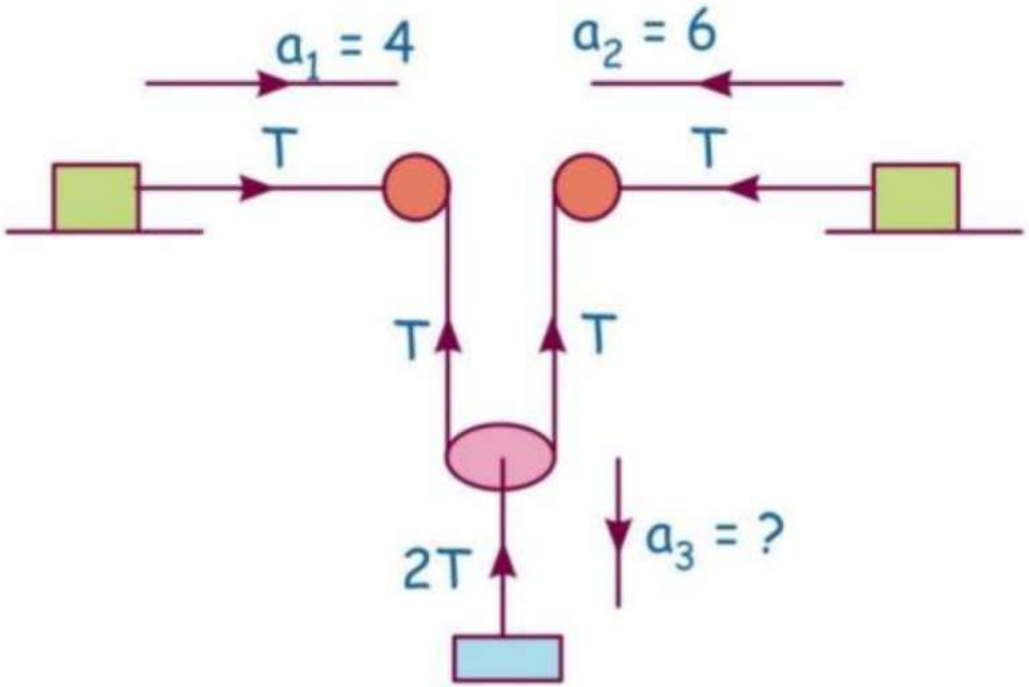
$$\vec{T_1}\cdot\vec{v_1} + \vec{T_2}\cdot\vec{v_2} + \ldots\ldots = 0$$

$$\vec{T_1}\cdot\vec{a_1} + \vec{T_2}\cdot\vec{a_2} + \vec{T_3}\cdot\vec{a_3} + \ldots\ldots = 0$$

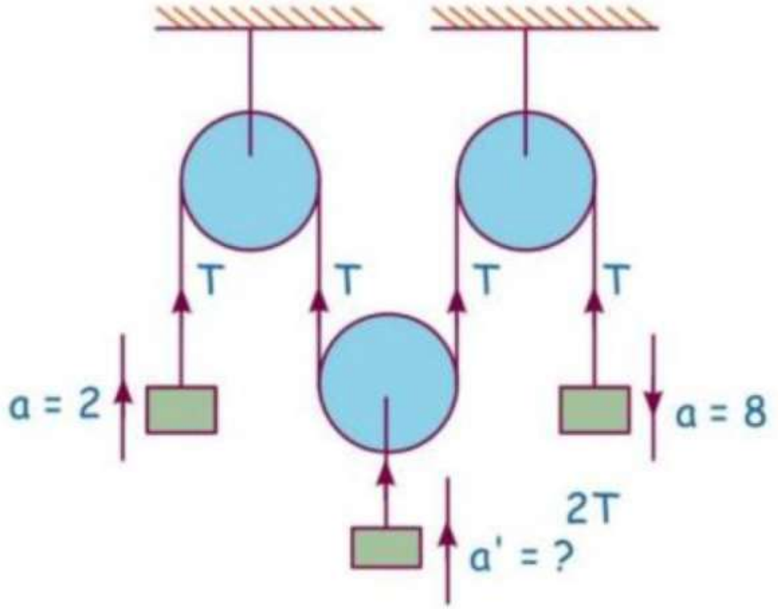
H/W

Q. Find a_3.

42



Q. Find a' in following figure.



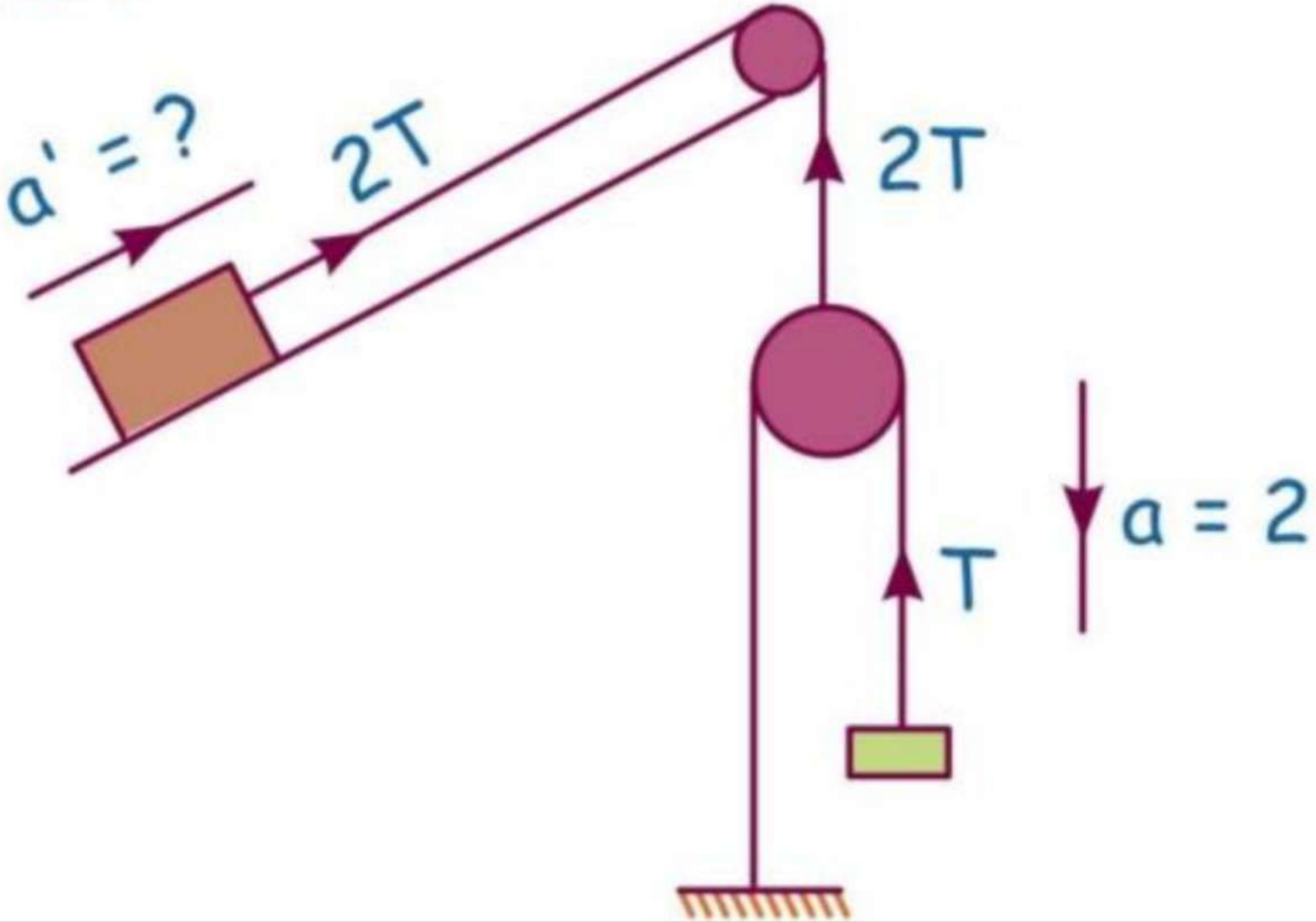
Sol. $T \times 2 + 2Ta' - T \times 8 = 0$

$a' = 3$

कुछ बच्चो के दिमाग मे ये doubt आएगा कि sir यहाँ mass तो given नही है।

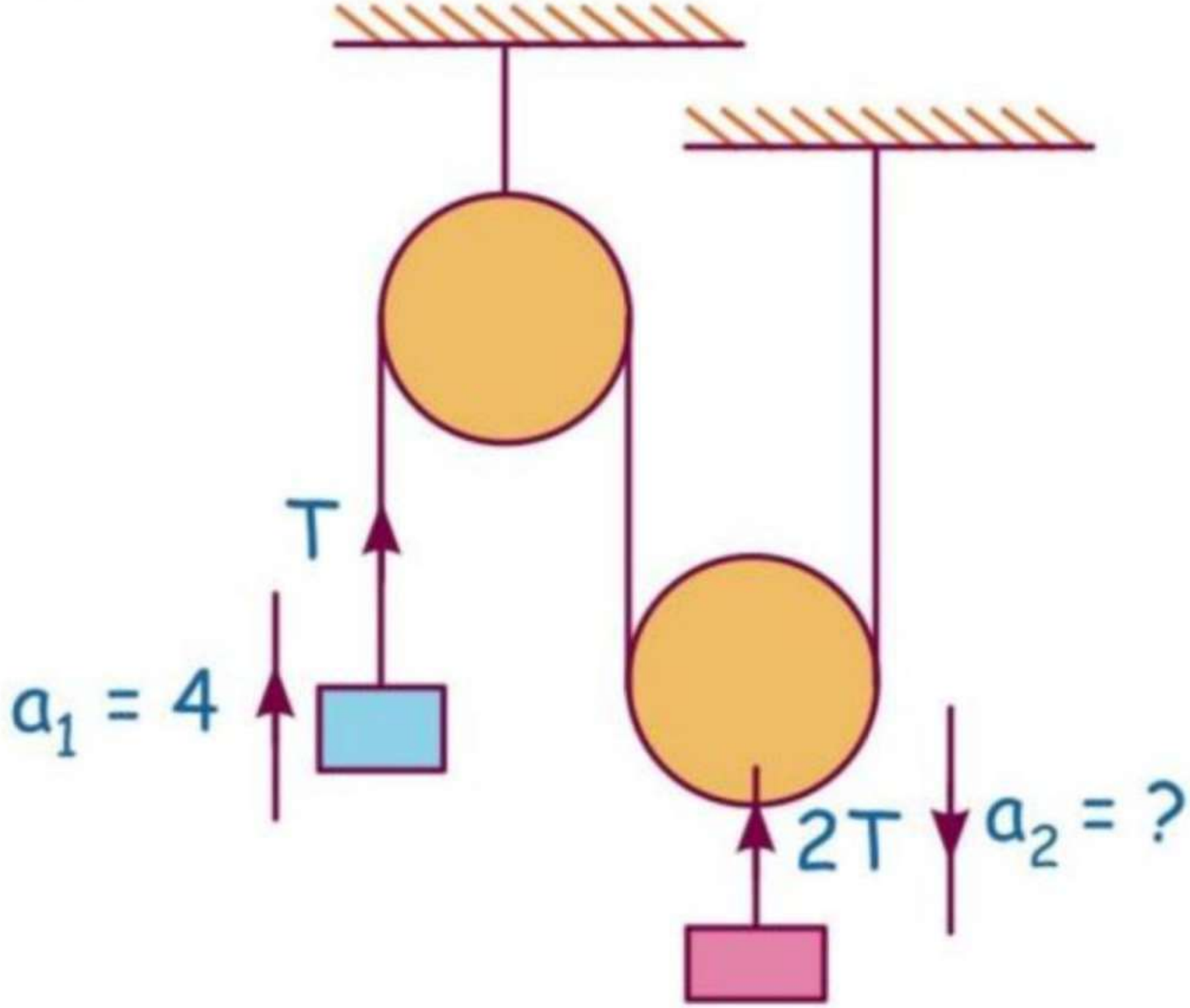
बेटा यहाँ mass की जरूरत नही है यही तो सीखना है, अगर रस्सी मे tension पूछता तो mass की जरूरत होती।

Q. Find a'?



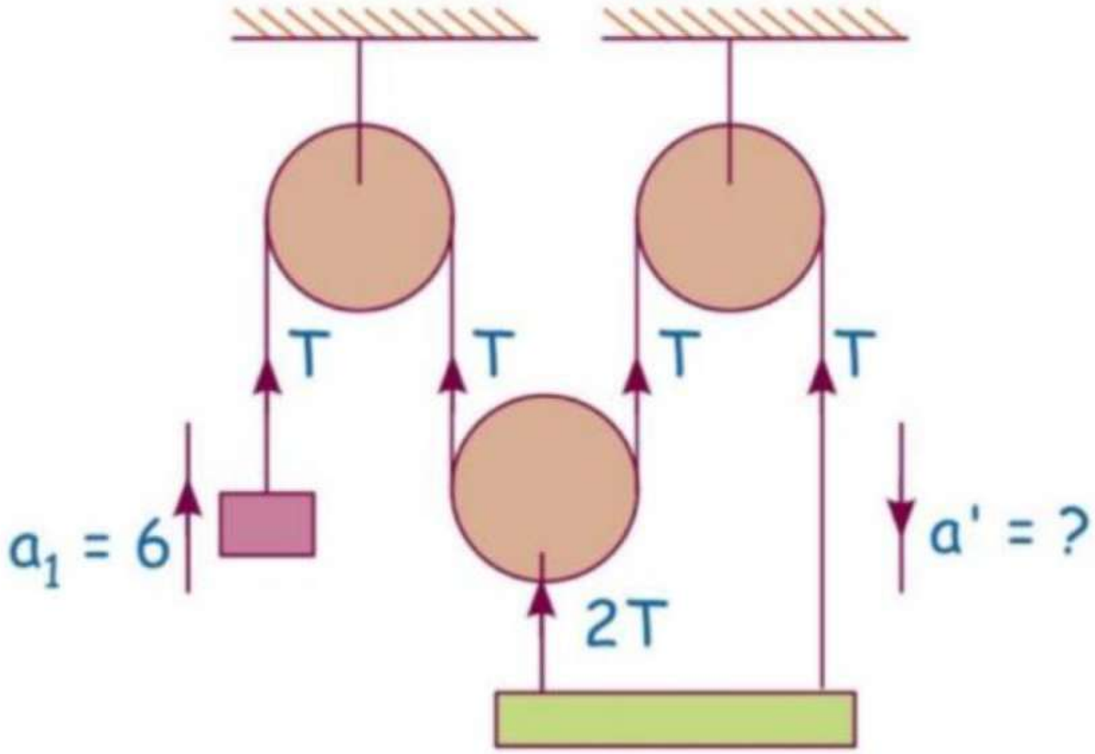
$a = 1$

Q. Find a_2.

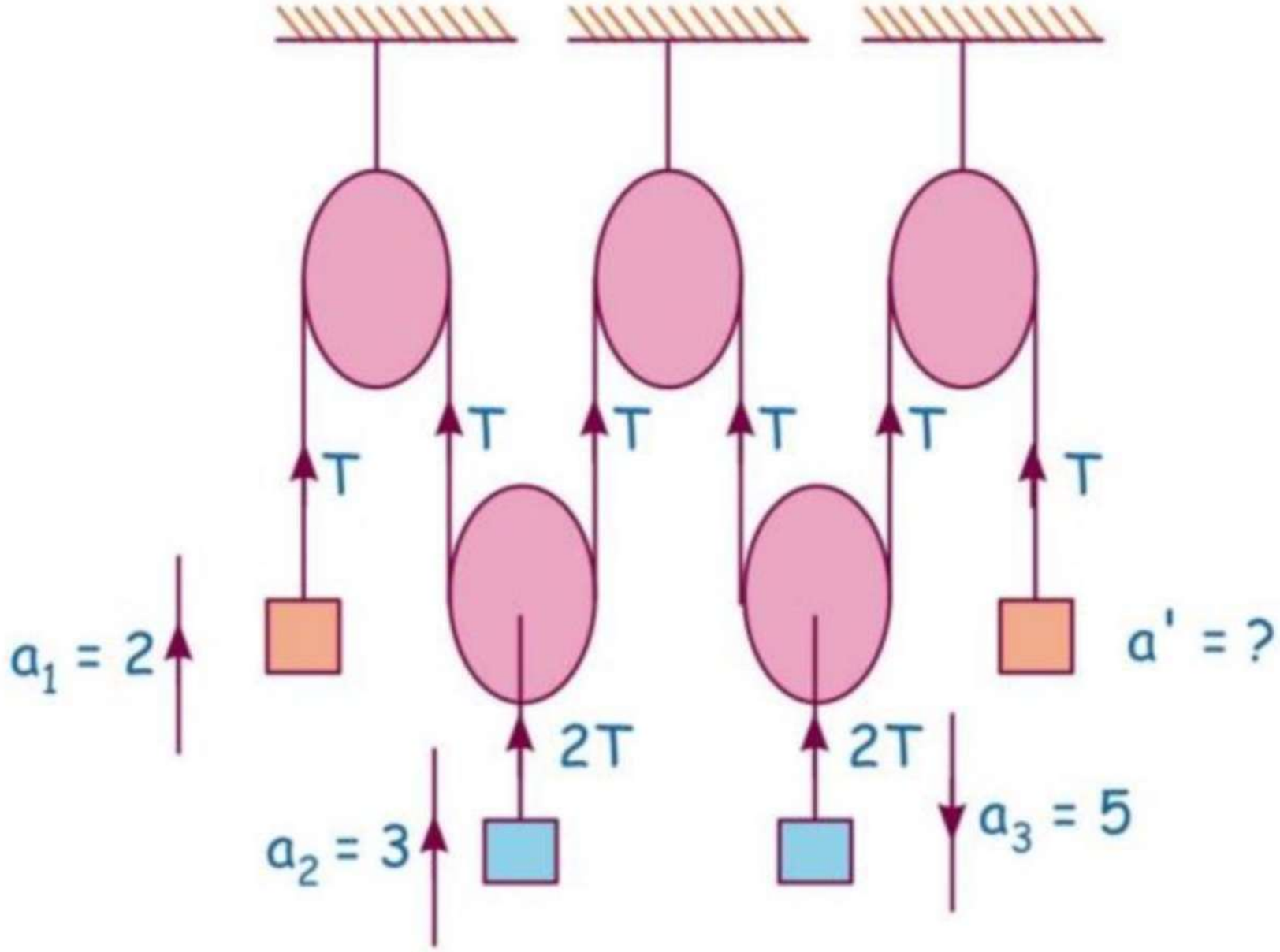


अबे जा कहाँ रहा है
पहले आगे वाले ques
और solve कर

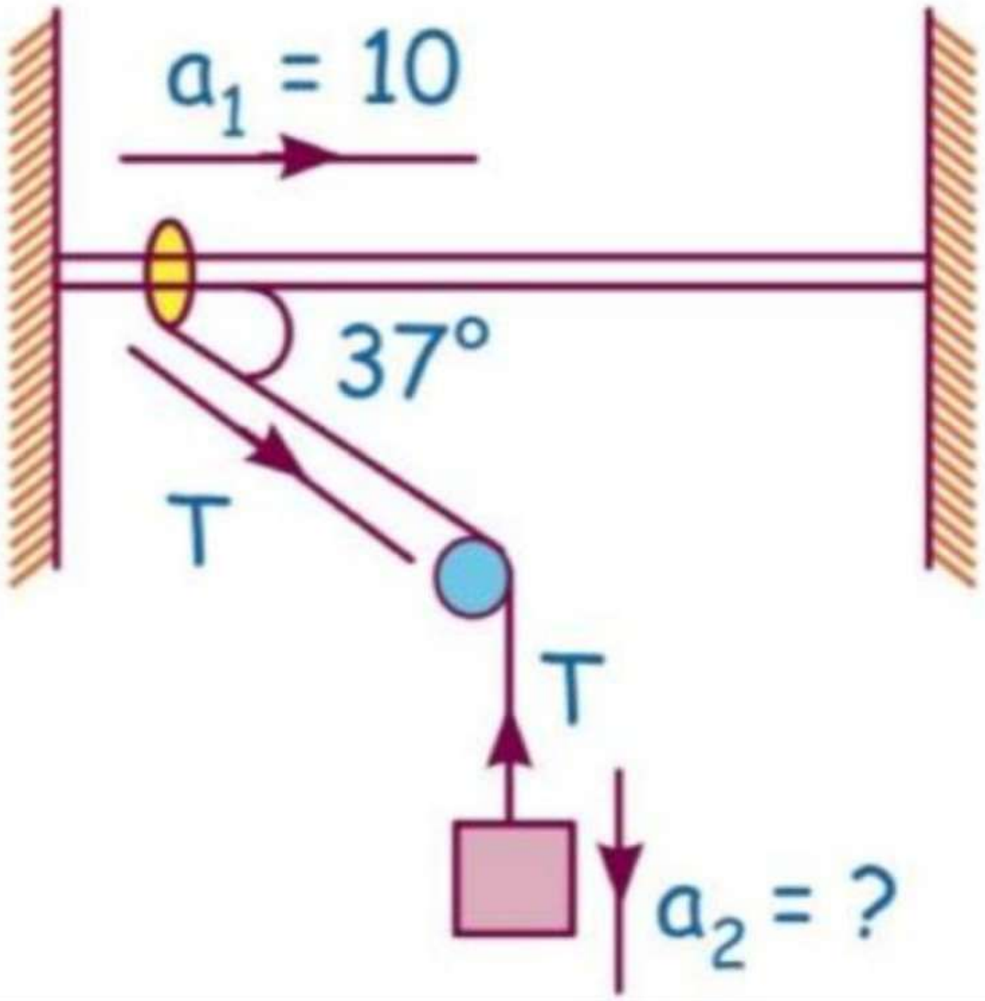
Q. Find a' in following figure.



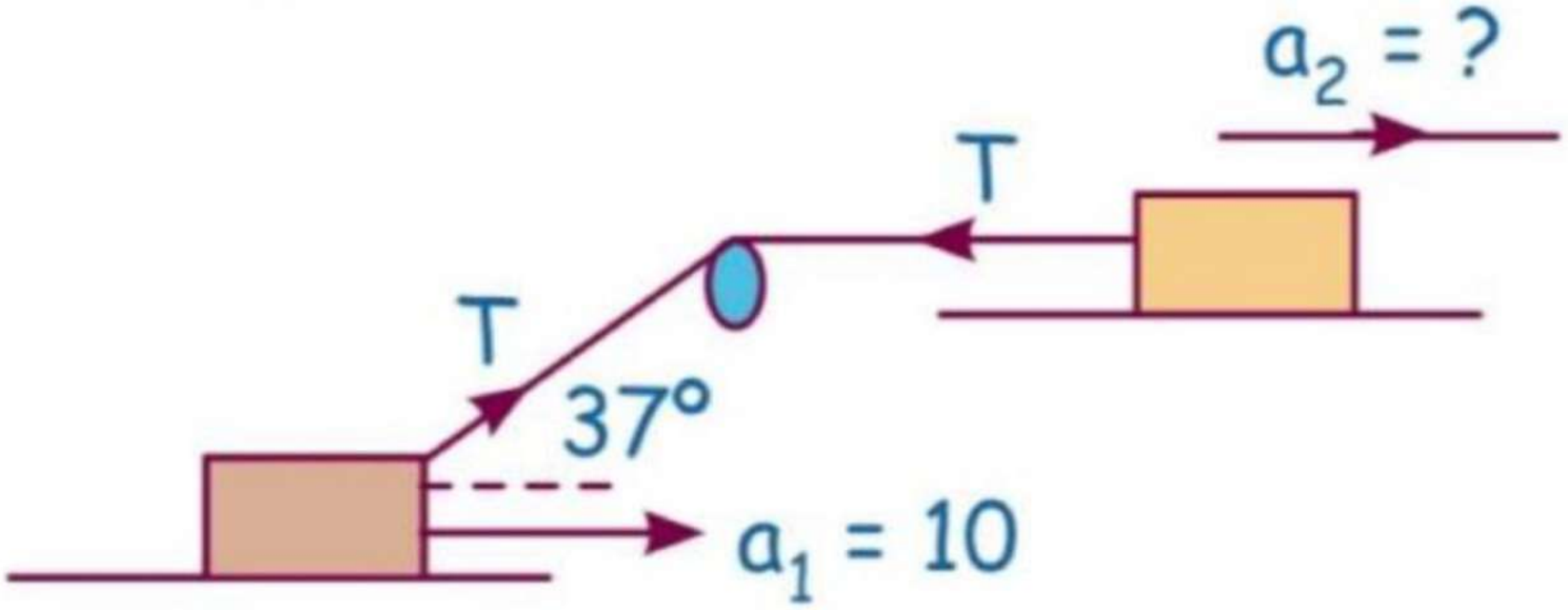
Q. Find a' in following figure.



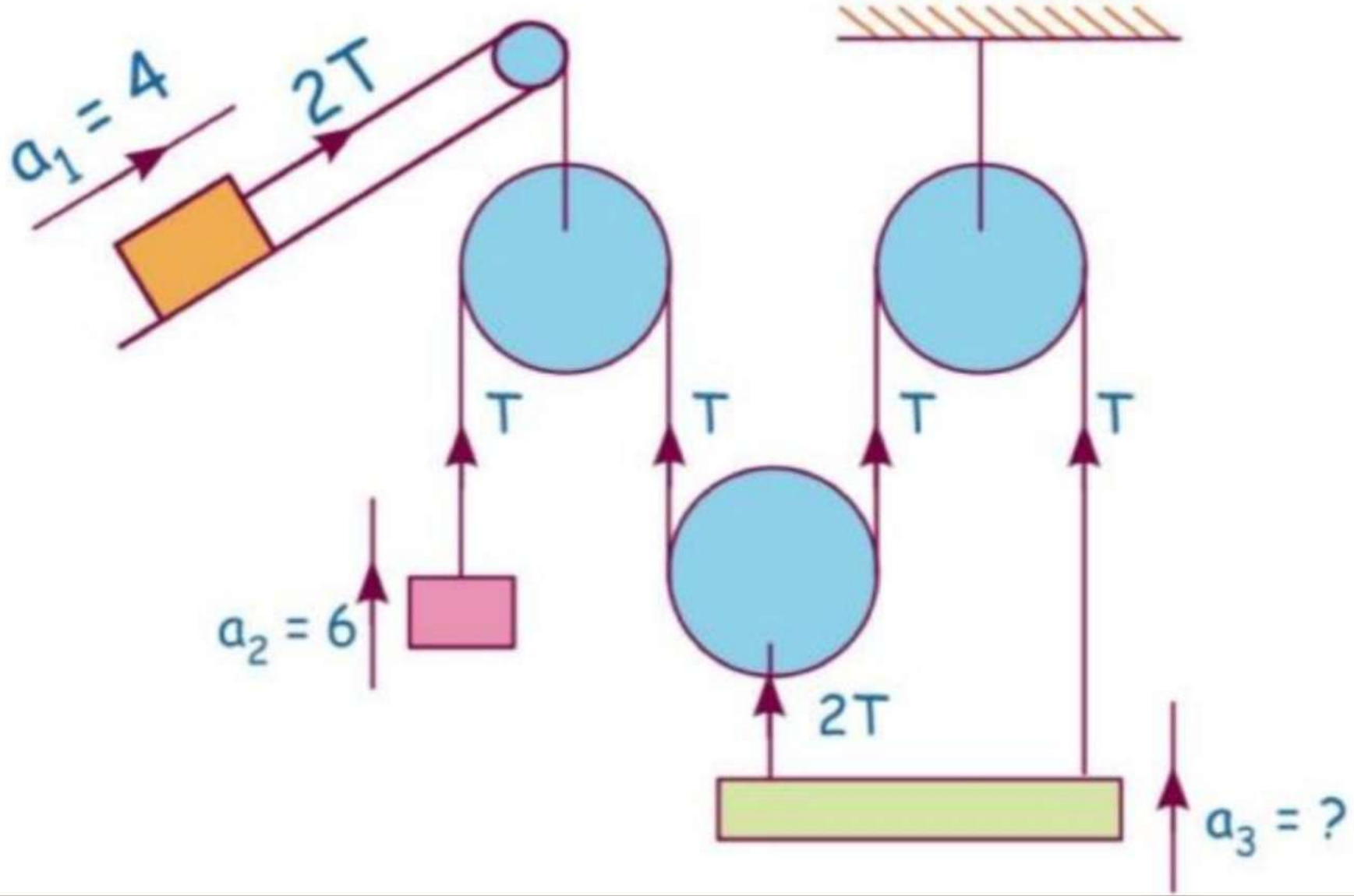
Q. Find a_2 ?



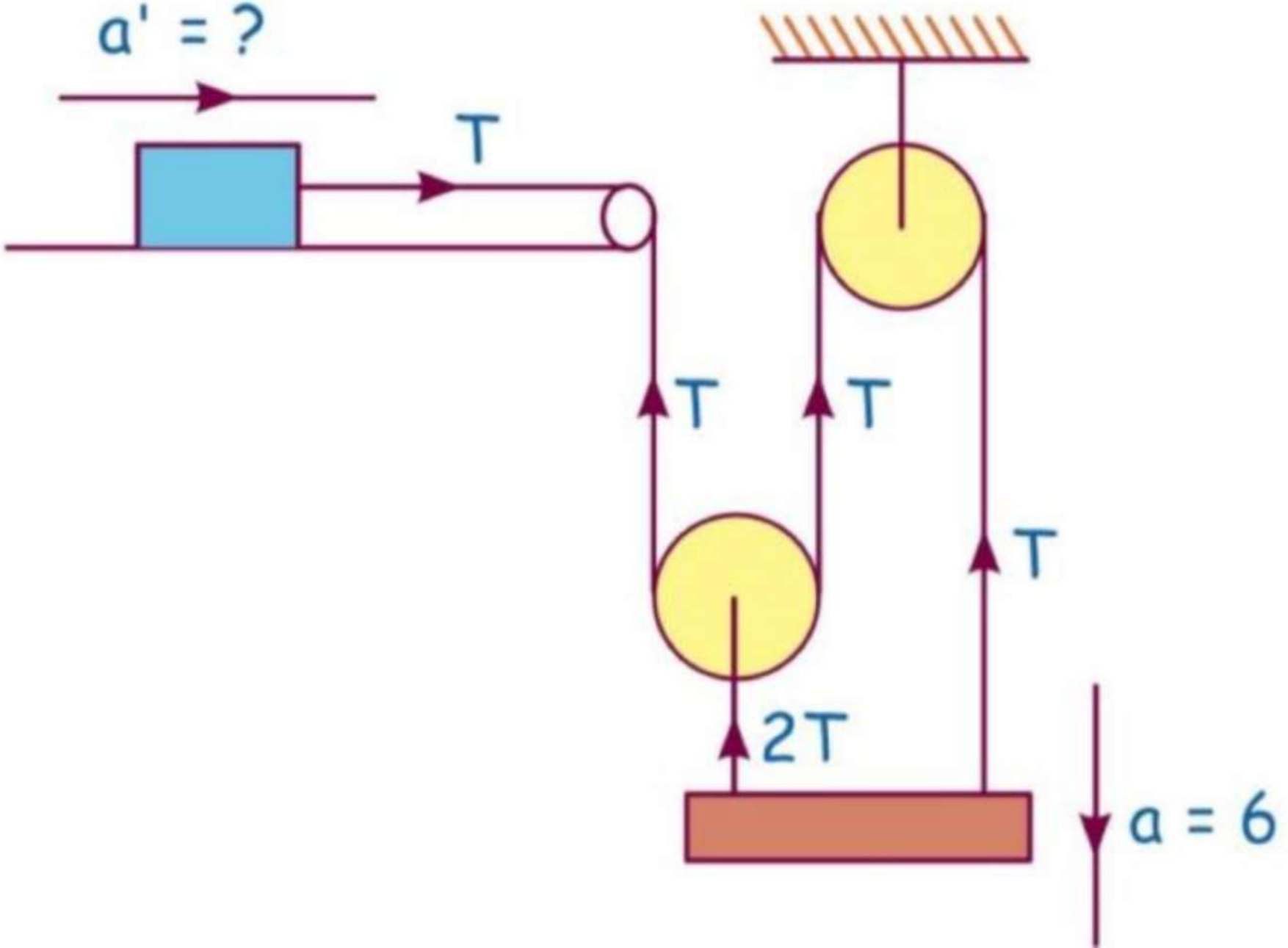
Q. Find a_2 ?



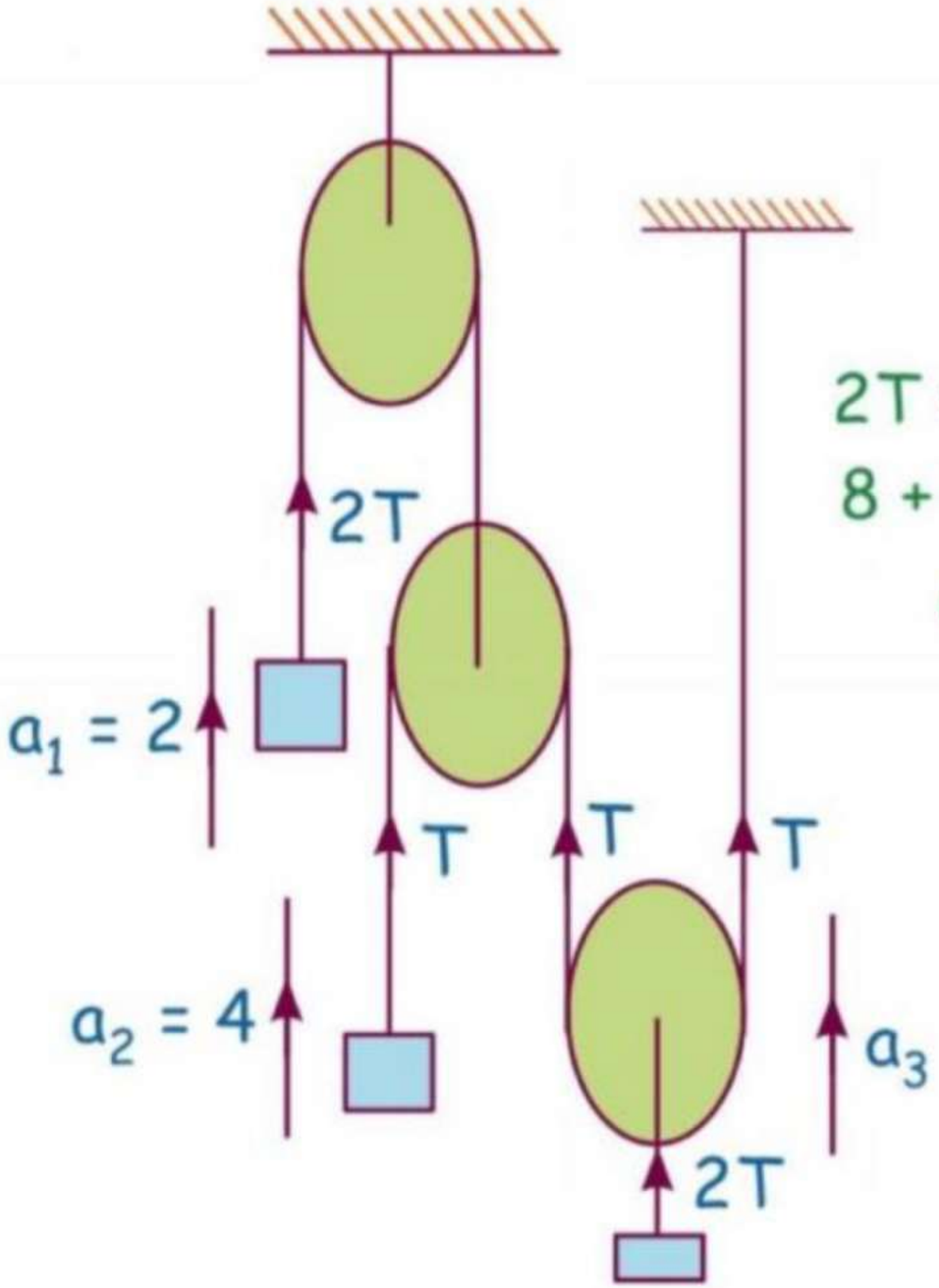
Q. Find a' in following figure.



Q. Find a' and T.



Q. Find a_3.



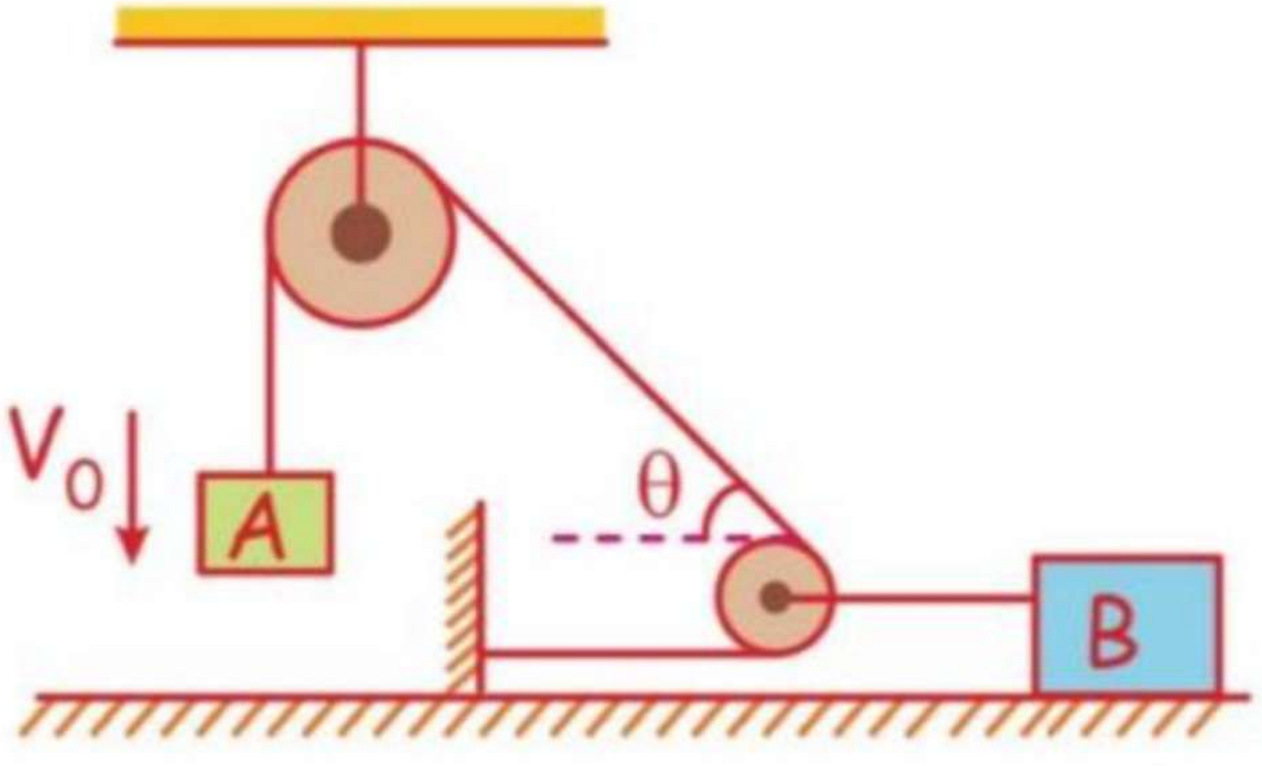
$2T \times 2 + T \times 4 + 2Ta_3 = 0$

$8 + 2a_3 = 0$

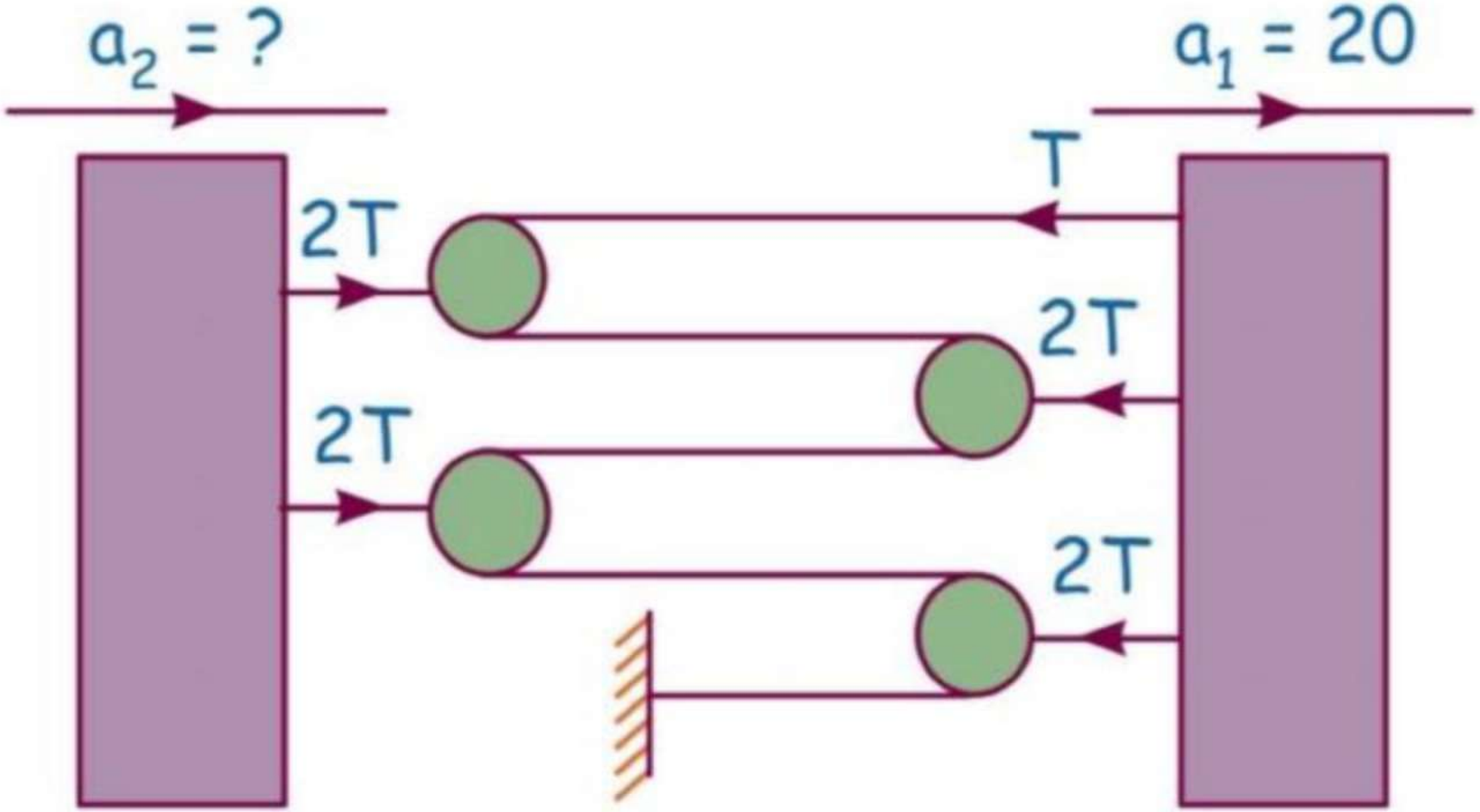
$a_3 = -4$

नीचे

Q. In the figure, find the velocity of block *B*, if velocity of *A* is V_0 in downward direction?



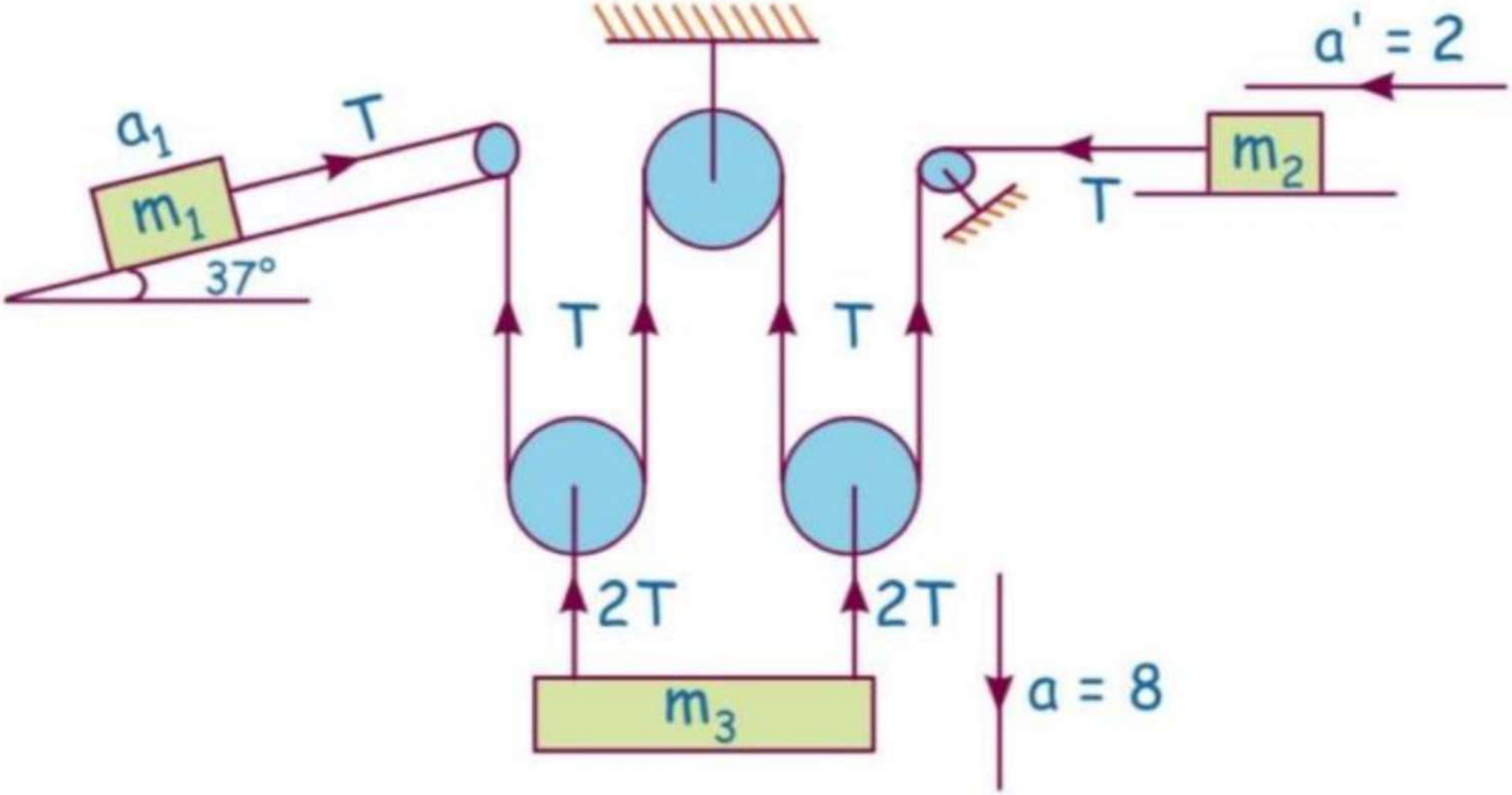
Q. Find a_2

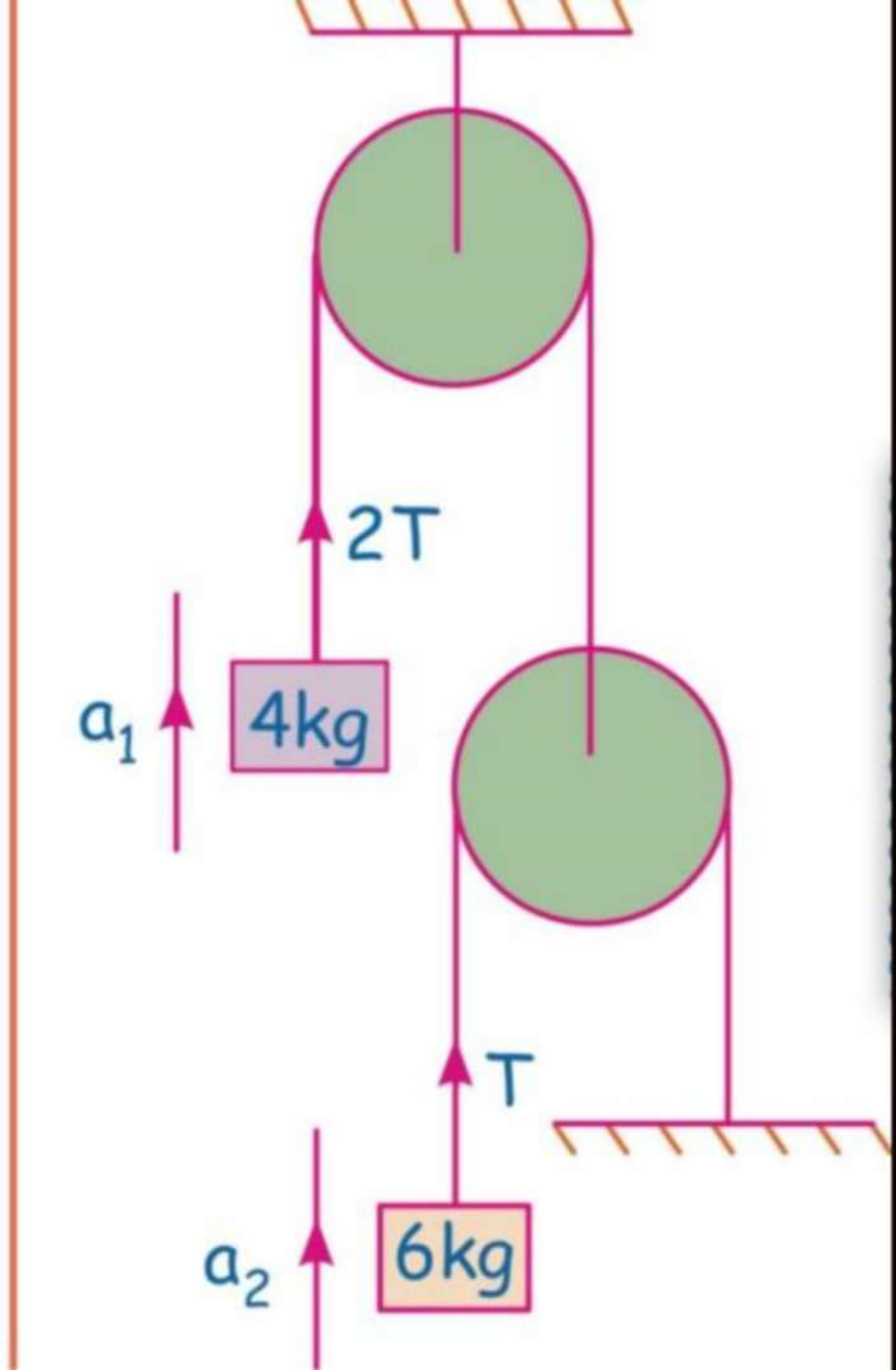


$$4Ta_2 - 5T.\,20 = 0$$

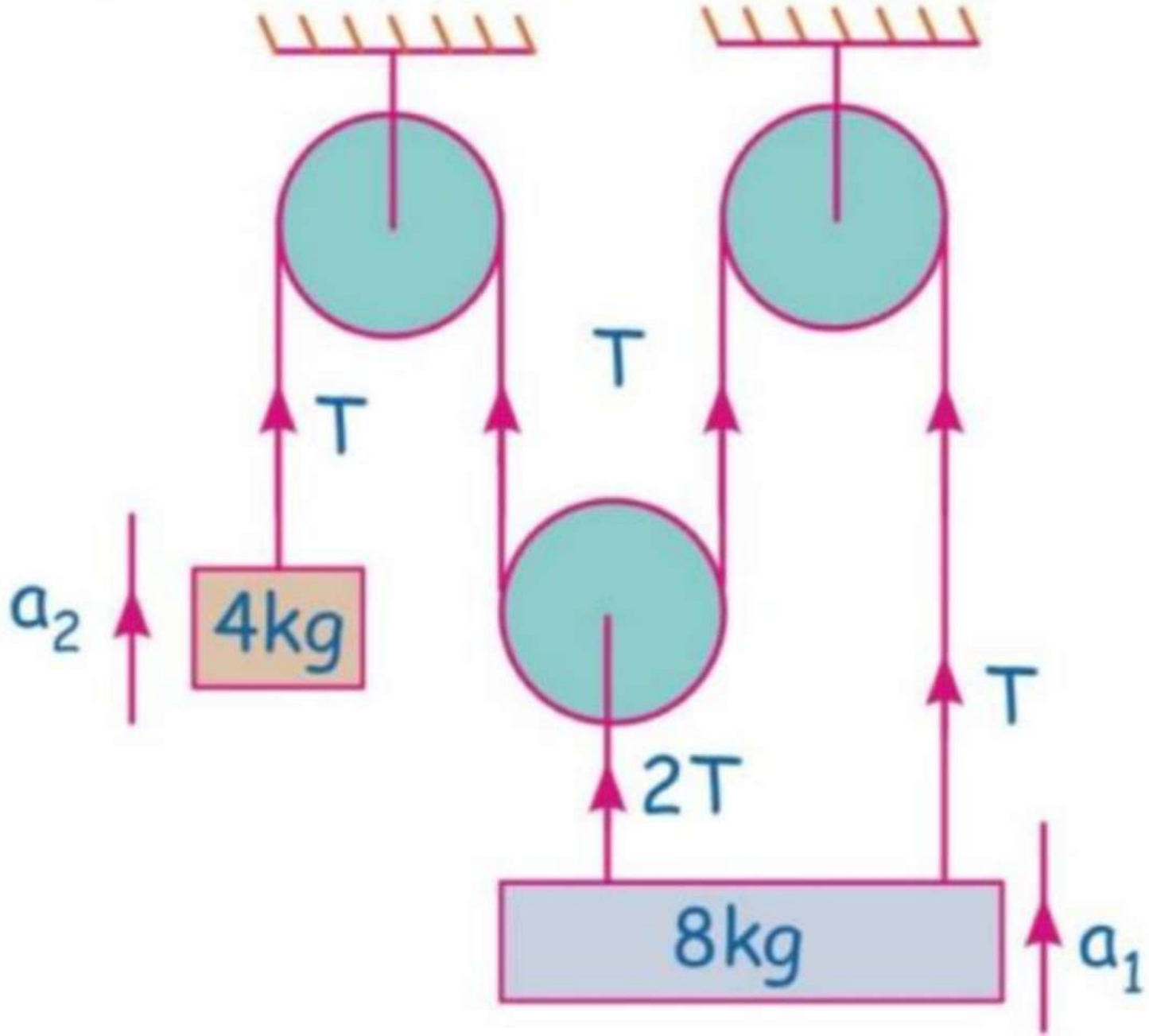
$$a_2 = 25$$

Q. If $m_1 = 10$ kg find m_2 and m_3 in following fig.

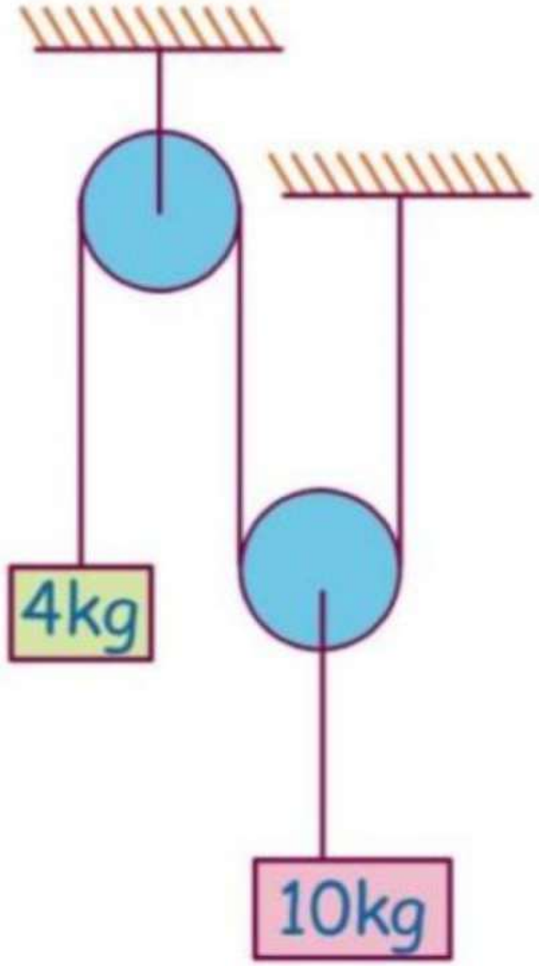



2T
a_1
4kg
T
a_2
6kg

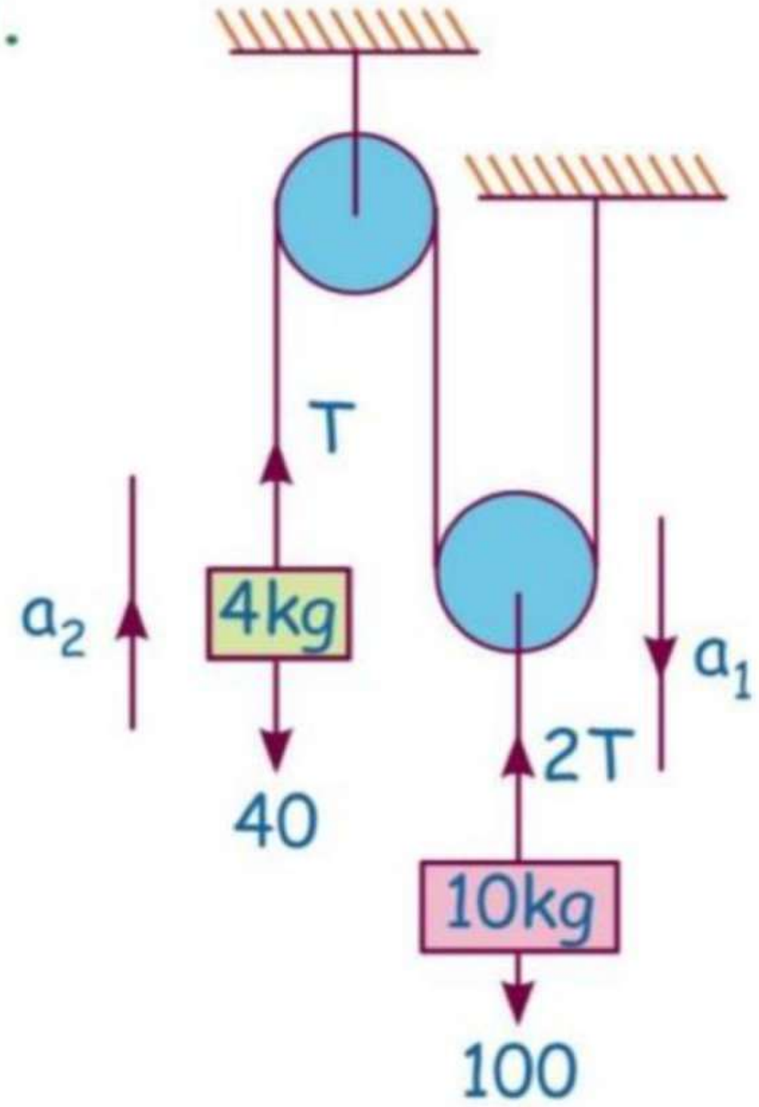
Q. Find acc of each block.



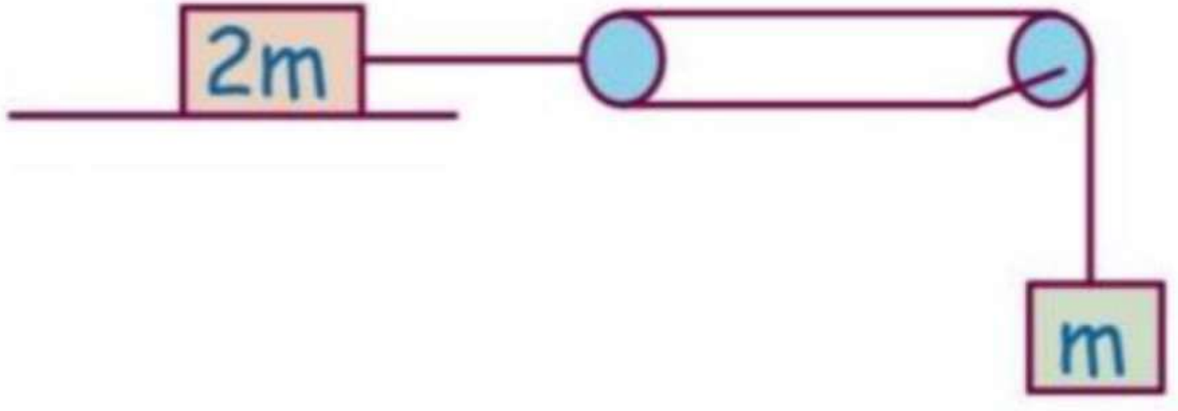
Q. Find acc of each block in following case.



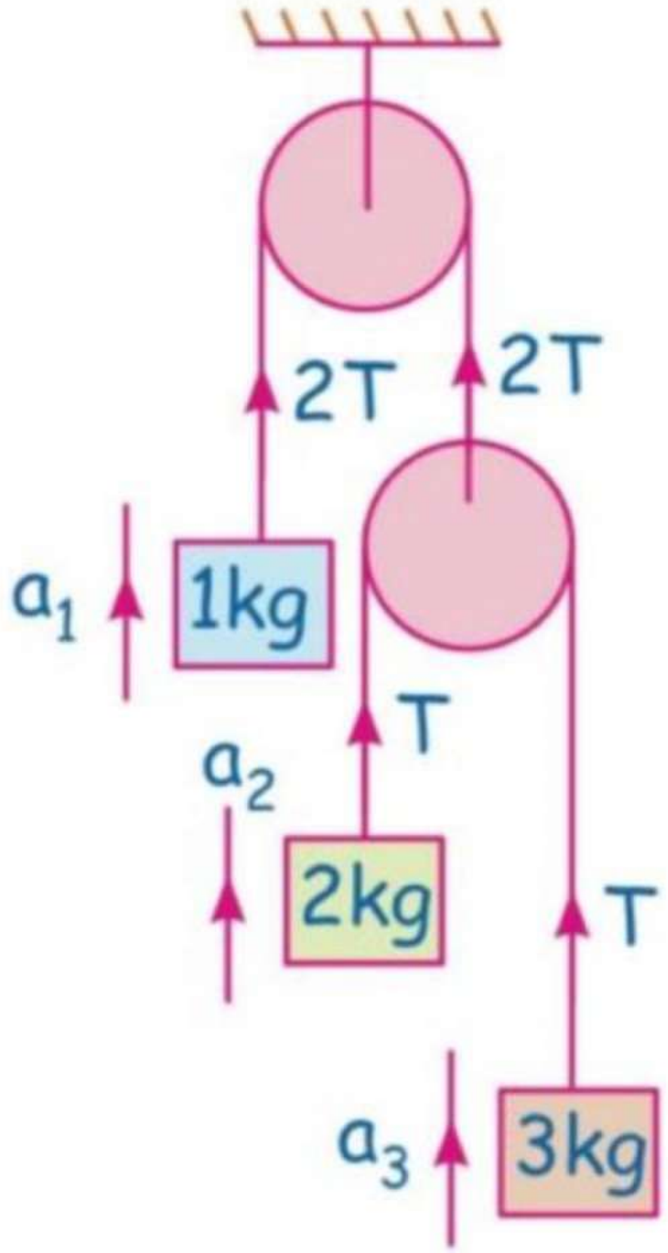
Sol.



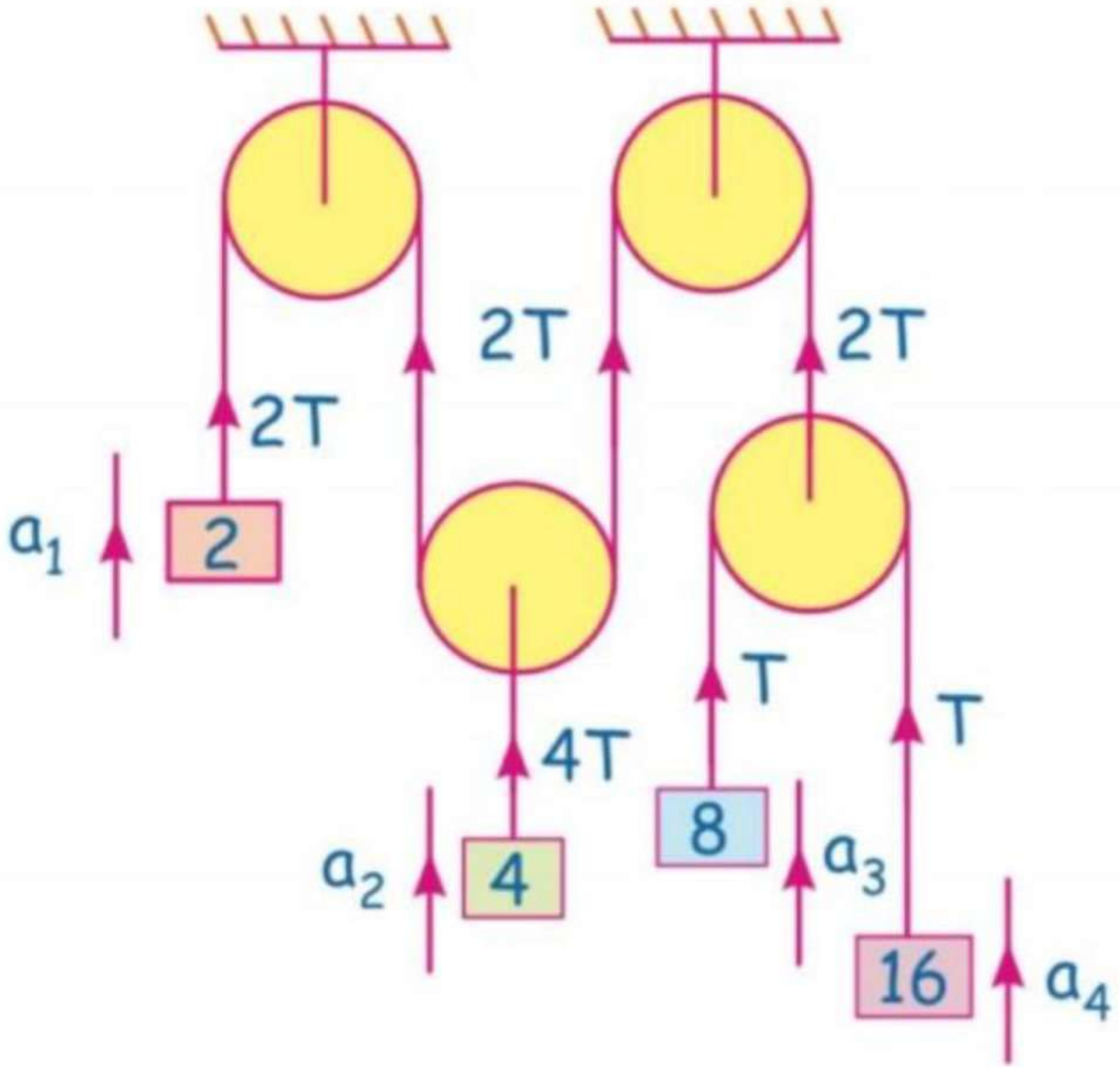
Q. Find acc of both the block.



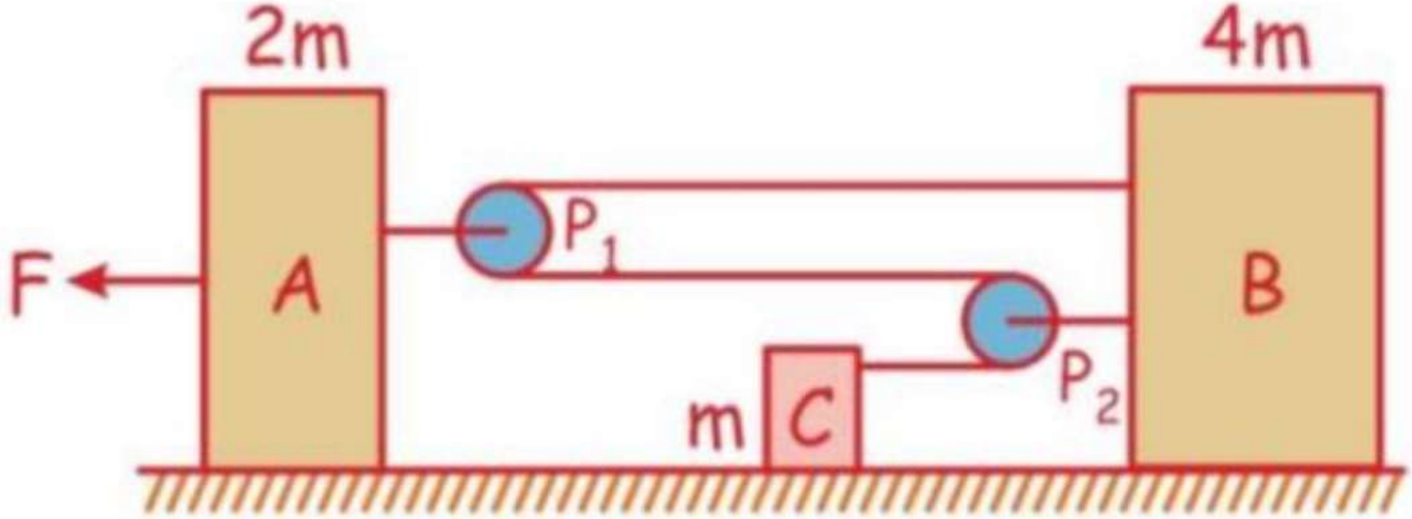
Q. Find acc of each block.

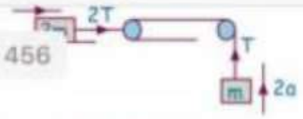


Q. Find acc of each block.

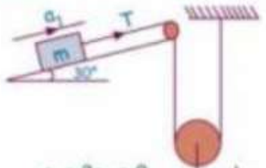


Q. In the shown figure, find the acceleration of block B. All surfaces are frictionless.





Q. Find acc of both the block.

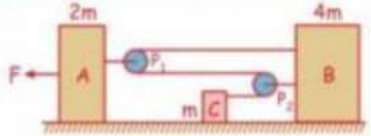


$a_1 + 2a_2 = 0$

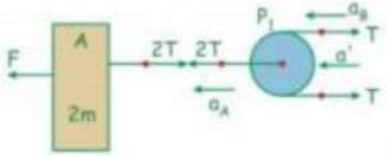
$$\frac{T - mg\sin 30}{m} + 2\left(\frac{2T - 2mg}{2m}\right) = 0$$

Now solve by yourself.

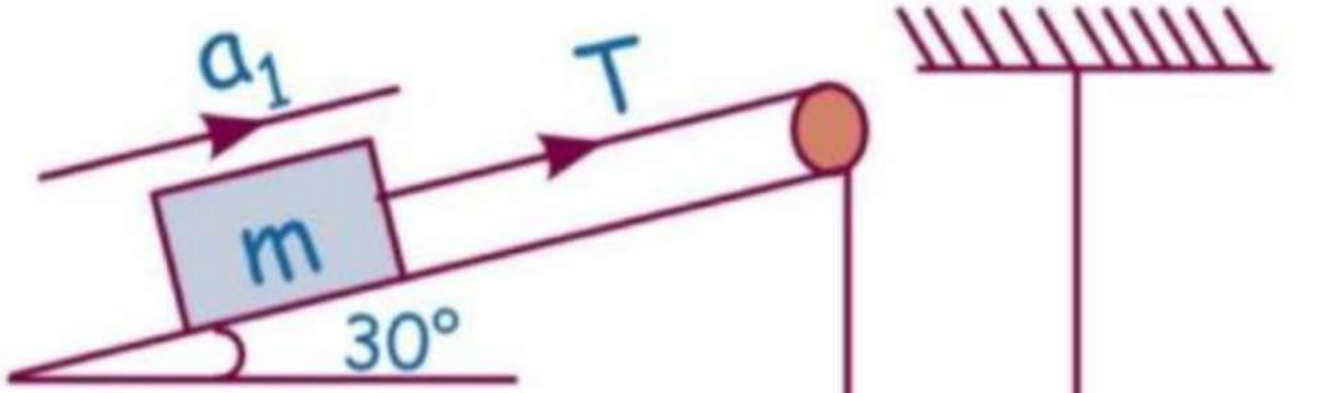
Q. In the shown figure, find the acceleration of block B. All surfaces are frictionless.

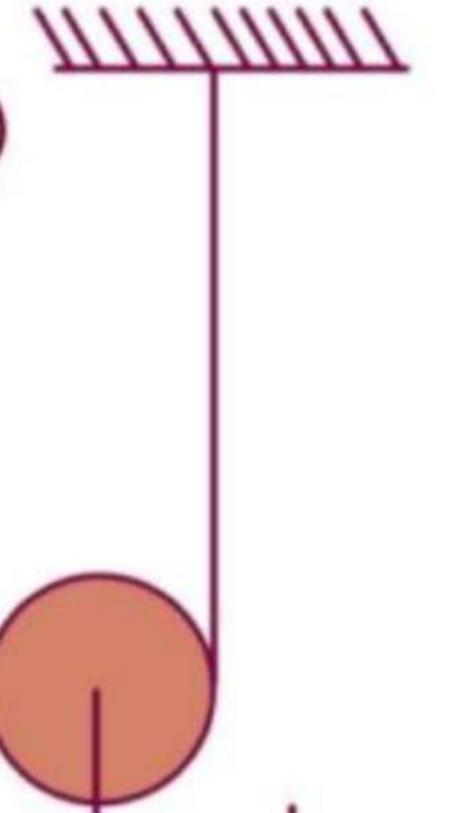


Sol.

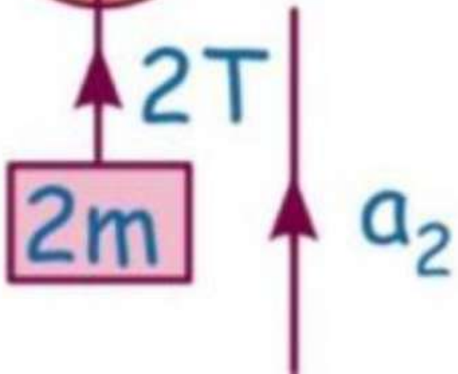


Q. Find acc of both the block.

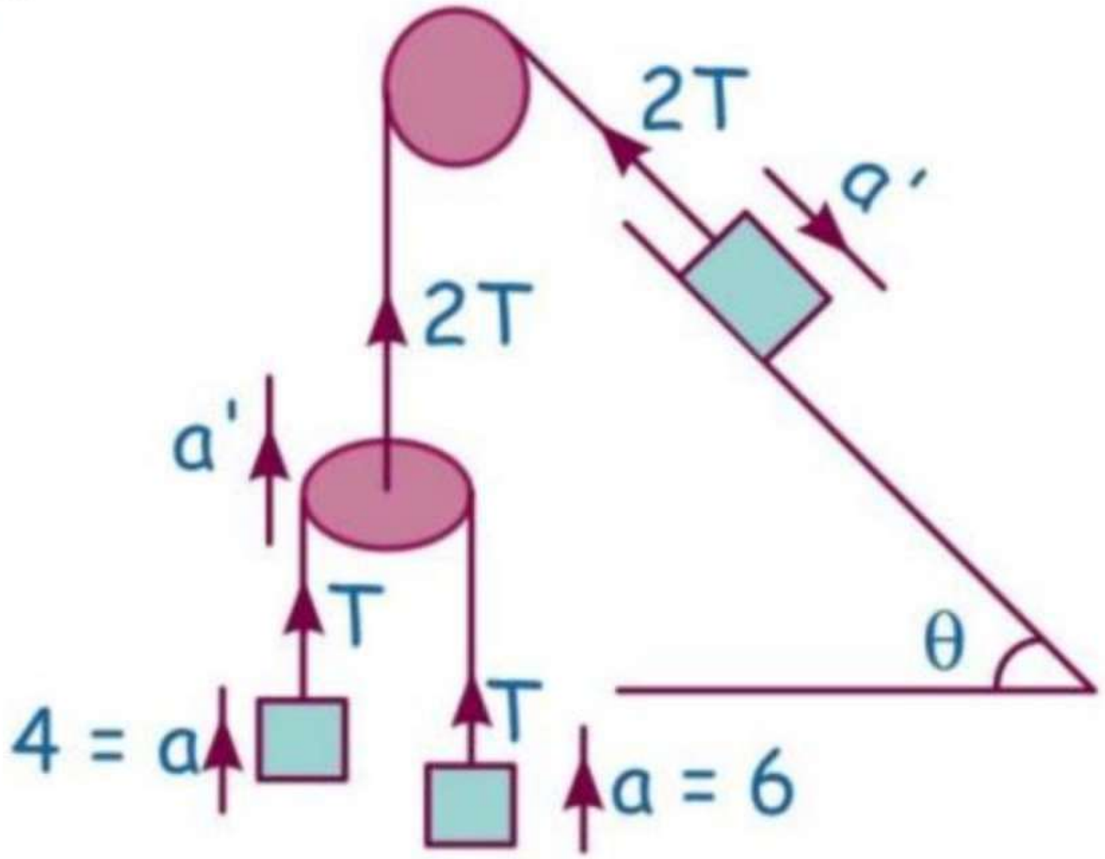




$a_1 + 2a_2 = 0$



Q. Find a'.



Physics PW

Home work

- join telegram for more pdf (imp)
- I know aj apka time notes banane me chala jayega so homework Nahi de raha hu

Aaj ke ques ko dowara Solve karen.

THANK YOU