

GATE 2021

GENERAL APTITUDE

धमाकेदार ट्रिक के साथ 🔥🔥

**TIME, SPEED &
DISTANCE, -3**

31



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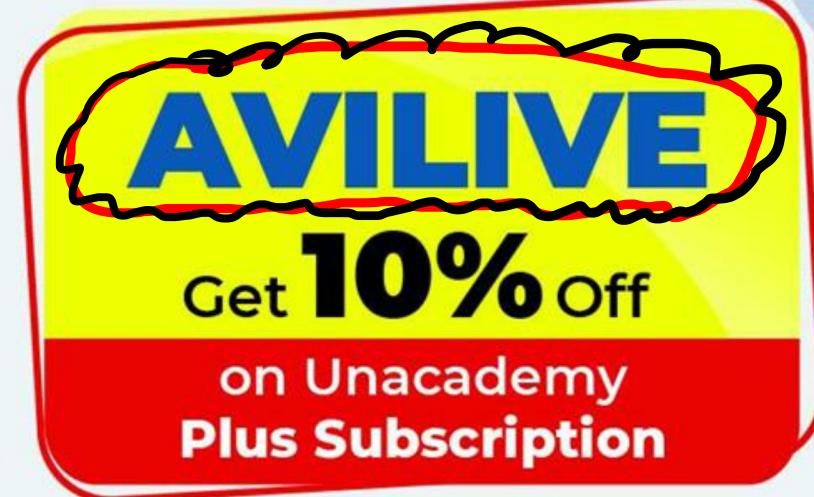
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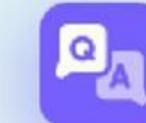
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21 Nov, 2020

7 PM • Test-1

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Analytical Aptitude

- Venn Diagram
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- Distance & Direction
- Blood Relation
- Seating Arrangements
- Puzzle

Quantitative Aptitude

- Time & Work
- Pipes & Cisterns
- Ratio & Proportion
- Number System
- Sequence & Series
- Average
- Time, Speed & Distance
- Percentage
- Profit, Loss & Discount
- Allegation & Mixture
- Powers, exponents and logarithms
- Algebra
- Permutation & Combination
- Probability
- Data Interpretation
- Mensuration and geometry

Spatial Aptitude

- Shape Matching - Two Dimensional
- Visual Comparison – Two Dimensional
- Group Rotation – Two Dimensional
- Combining Two Dimensional Shapes
- Cube Views in Three Dimensions
- Cubes in Two and Three Dimensions
- Other Solids in Two and Three Dimensions
- Block Counting in Three Dimensions
- Two-Dimensional Mirror Reflections
- Paper folding and Cutting

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Home Work Question

Two trains Started at 7 AM from the same point. The first train travelled north at a speed of 80km/h and the second train travelled south at a speed of 100 km/h. The time at which they were 540 km apart is _____ AM.

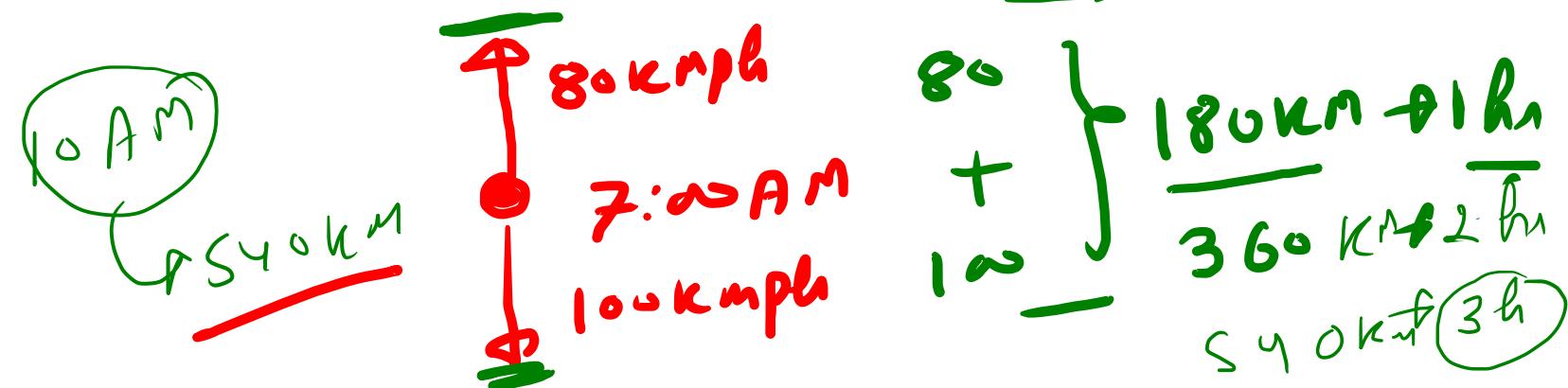
A) 9

B) 10

C) 11

D) 11.30

[GATE 2019]



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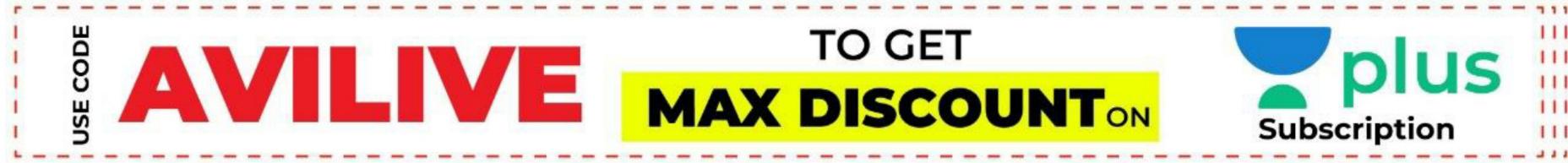
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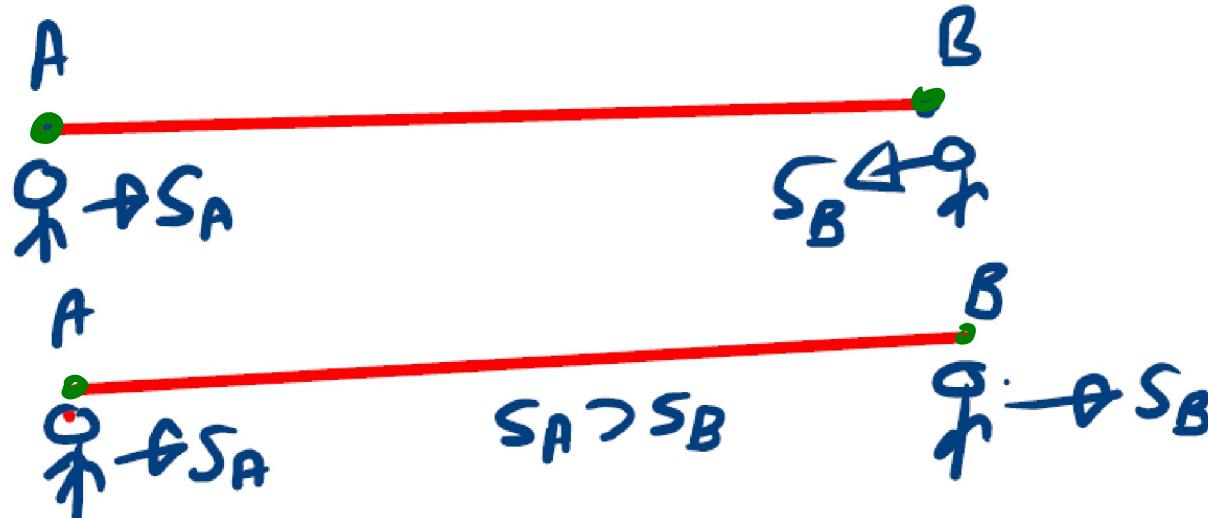
Today's Class Agenda

- Meeting Point Concept
- Practice questions based on Meeting Point



Meeting Point Concept

*** CASE (I)



CASE (II)

Race

A \rightarrow S_A

B \rightarrow S_B

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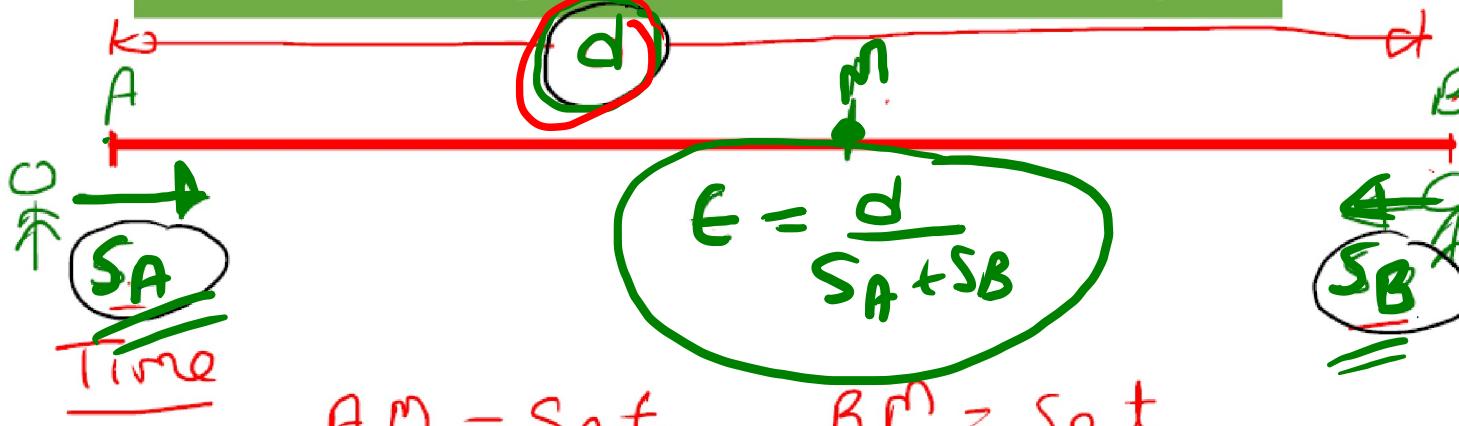
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Meeting Point Concept

CASE I



$$AM = S_A t, BM = S_B t$$

$$\underline{AB} = AM + BM \Rightarrow d = S_A t + S_B t$$

$$t(S_A + S_B) = d$$

$$t = \frac{d}{S_A + S_B}$$

Relative Speed

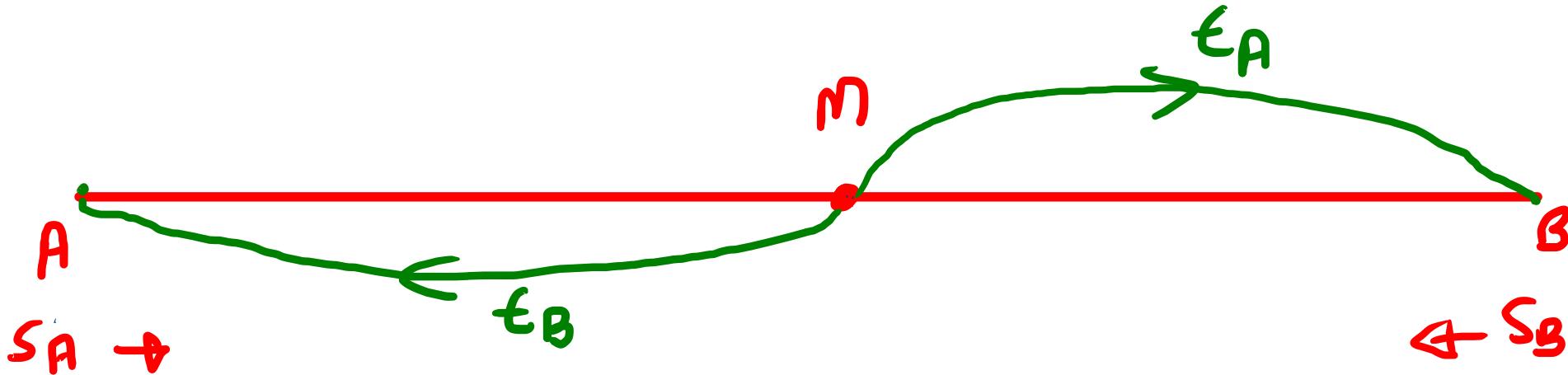
$$S = \frac{D}{T}$$

$$T = \text{Constant}$$

$$S \propto D$$

$$\frac{S_1}{S_2} = \frac{D_1}{D_2}$$

Meeting Point Concept



Time taken by A to reach M to B = t_A
)) B)) M to A = t_B

① Time ② Distance

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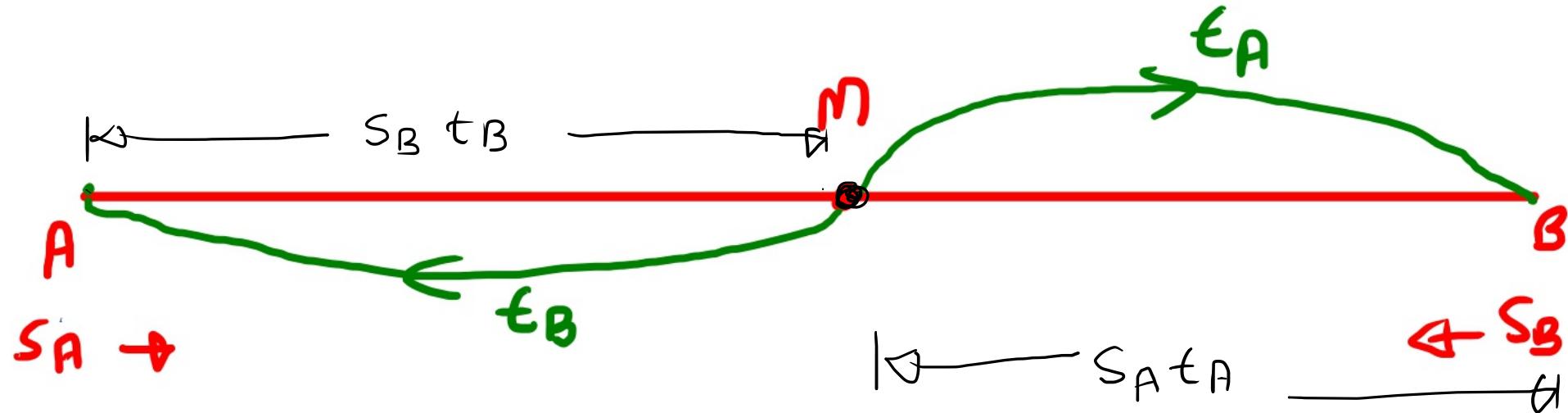
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~~3~~

$T = \text{constant}$ ($S \propto D$)

$$\frac{S_A}{S_B} = \frac{S_B t_B}{S_A t_A} \Rightarrow \frac{S_A^2}{S_B^2} = \frac{t_B}{t_A} \Rightarrow$$

$$\frac{S_A'}{S_B'} = \sqrt{\frac{t_B}{t_A}}$$



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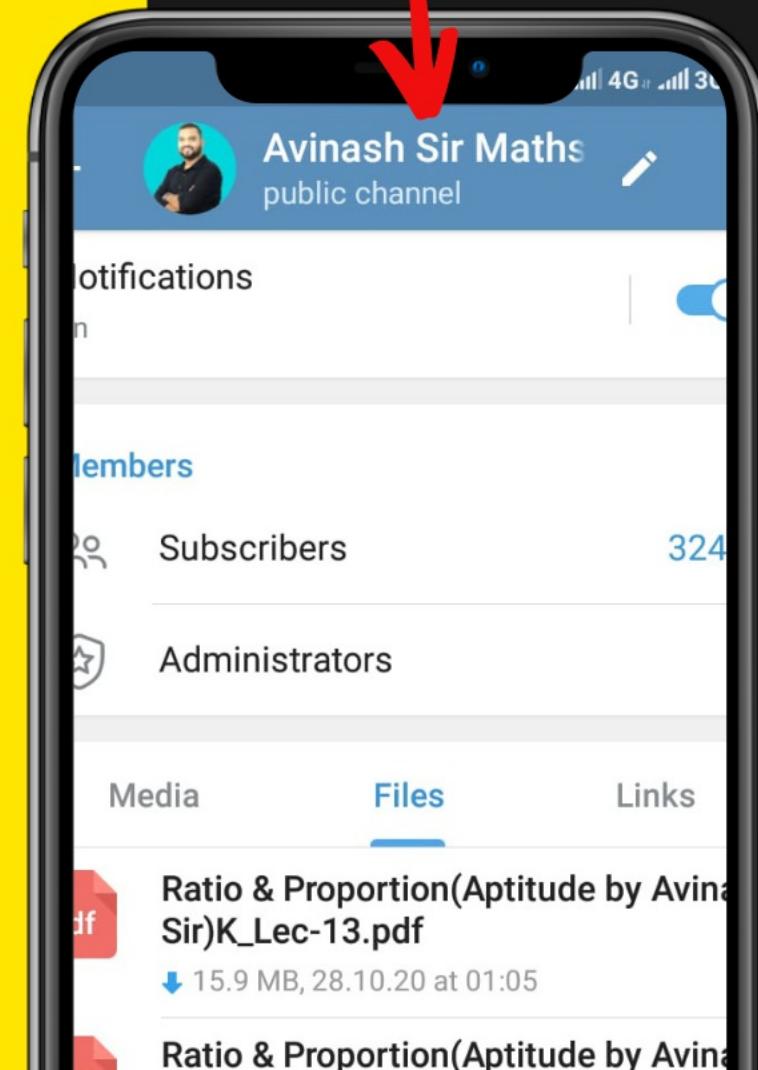


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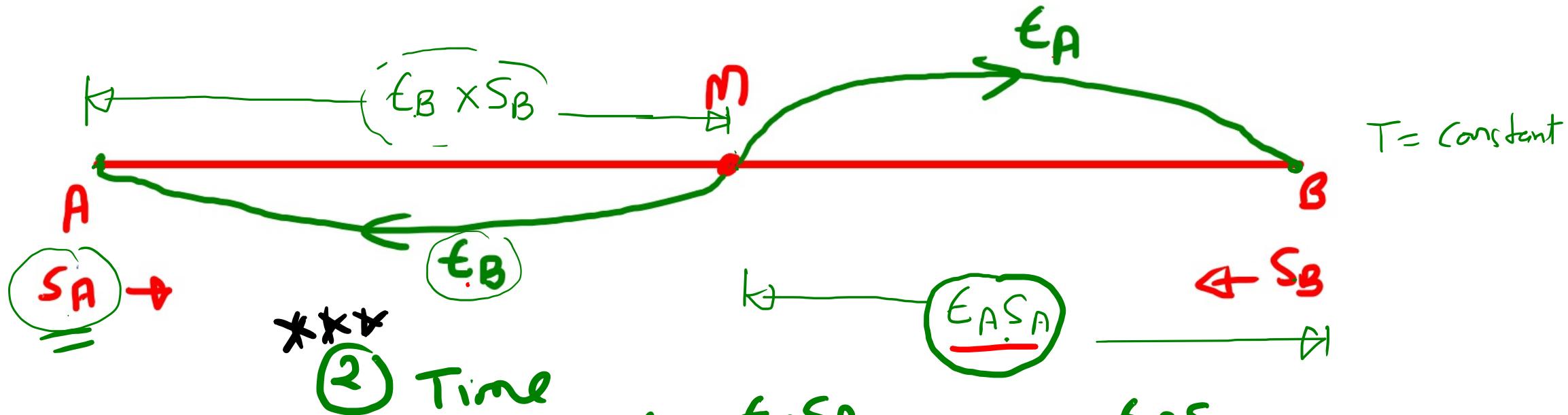
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$T = \text{Constant}$ ($s \propto d$)

① Distance $= AB = AM + MB = \underline{\epsilon_B s_B + \epsilon_A s_A}$



$$t = \frac{\epsilon_A s_A}{s_B}, \quad t = \frac{\epsilon_B s_B}{s_A}$$

$$\epsilon^2 = \epsilon_A \epsilon_B \Rightarrow t = \sqrt{\epsilon_A \times \epsilon_B}$$

Meeting Point Concept

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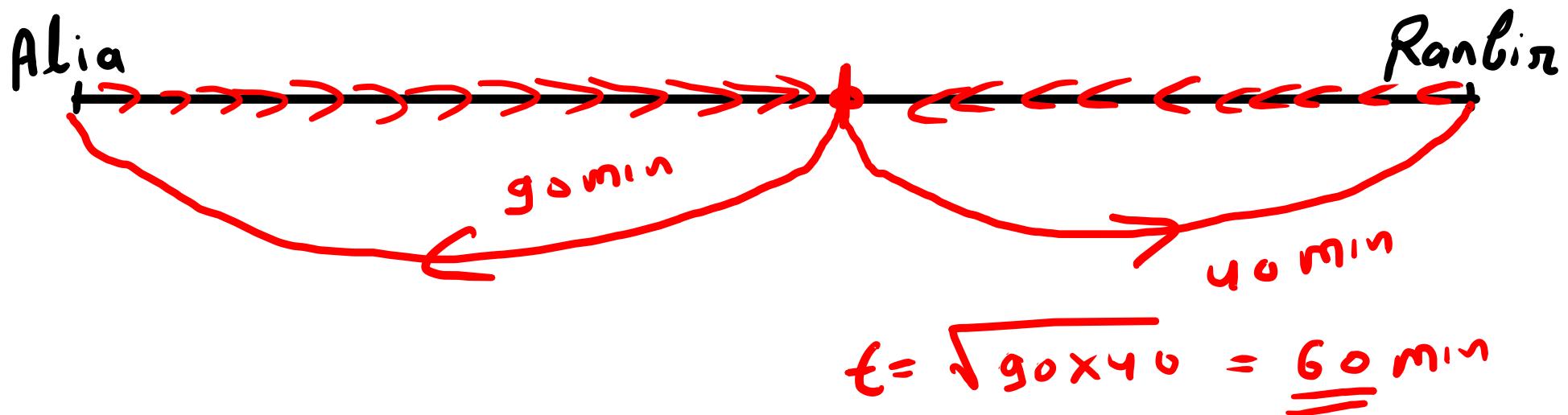
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1) Alia and Ranbir started simultaneously in opposite directions from home P and Q respectively. Each of them run towards starting point of other. After crossing each other, Alia and Ranbir took 40 minutes and 90 minutes respectively to reach their destinations. Find the time taken by them to meet each other.

- A) 65 min B) 90 min C) 135 min D) NOTA



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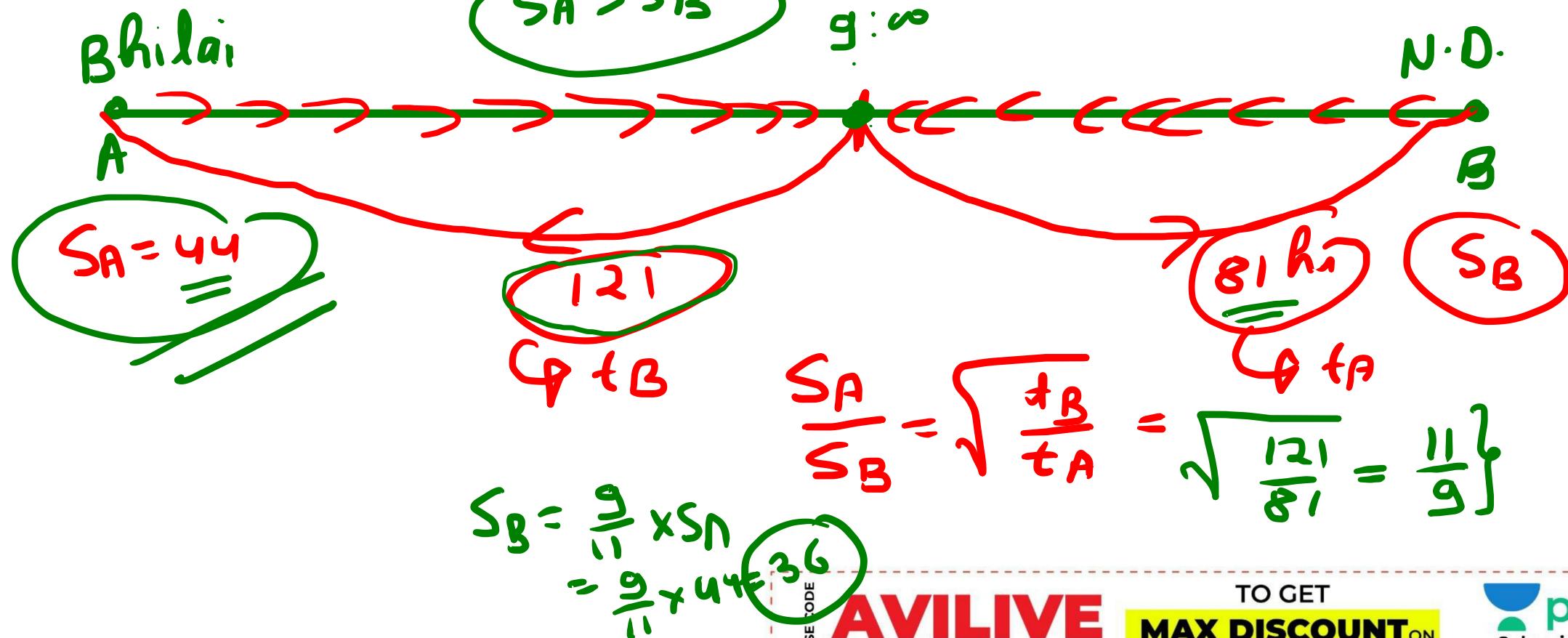
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- 2) Train A starts its journey from Bhilai to New Delhi while train B starts from New Delhi to Bhilai. After crossing each other they finish their journey in 81 hours and 121 hours respectively. Then what will be speed of train B if train A speed is 44 km/h?
- ~~A) 44 km/h~~ ~~B) 55 km/h~~ C) 36 km/h ~~D) 46 km/h~~



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Meeting Point Concept

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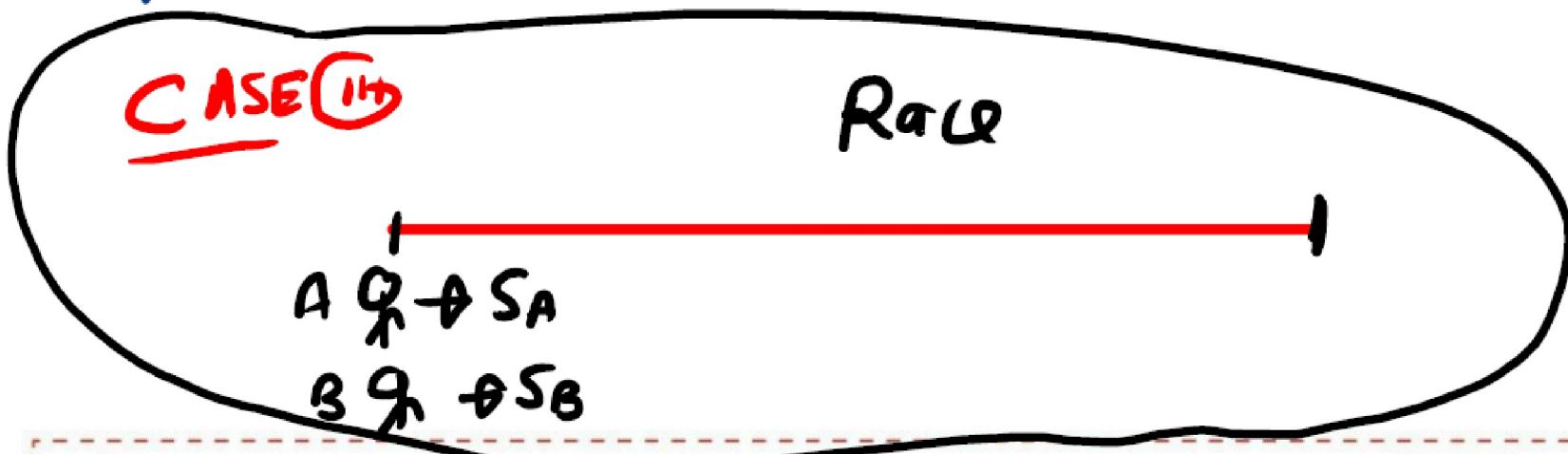
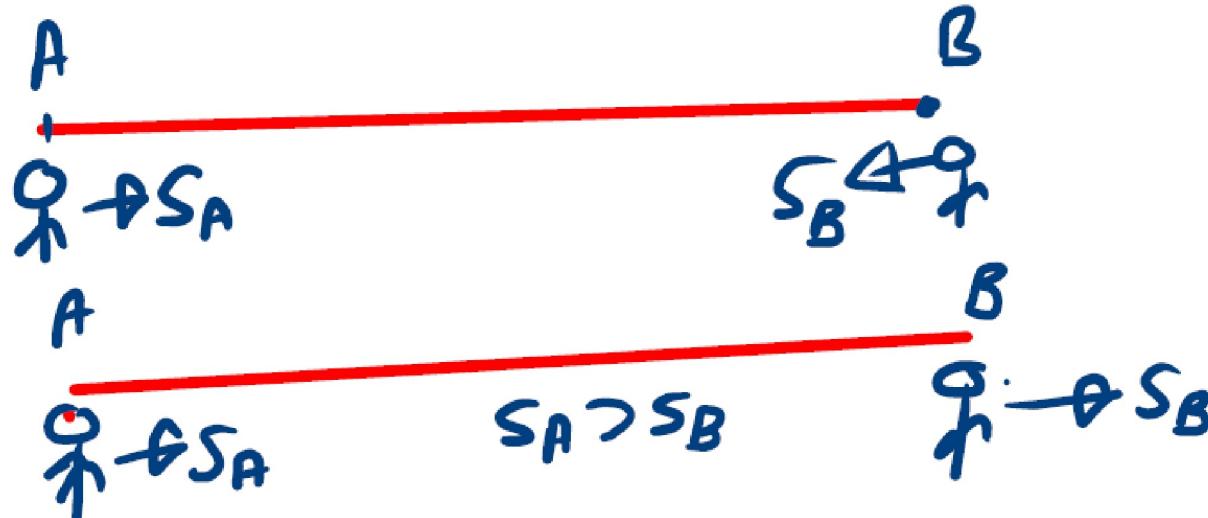
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Meeting Point Concept

**
~~CASE ⑤~~

**
~~CASE ⑥~~



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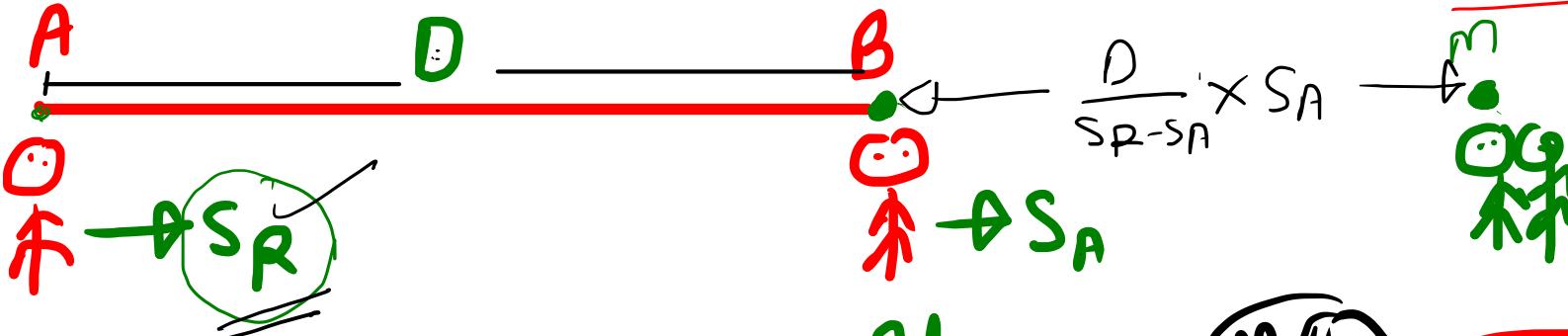
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CASE II

$$S_R > S_A$$

$(S_A \neq D) T = \text{Constant}$



Ranbir

M-F **SR-SA** →

Aliq

Speed = 0

$\frac{D}{S_R - S_A} = t$

$A_m = D + \left(\frac{D}{S_R - S_A} \right) S_A$

$A_m = S_R \left(\frac{D}{S_R - S_A} \right)$

$D = t (S_R - S_A)$

$t = \frac{D}{S_R - S_A}$

$A_B = A_m - B_m$

$D = S_R t - S_A t$

USE CODE

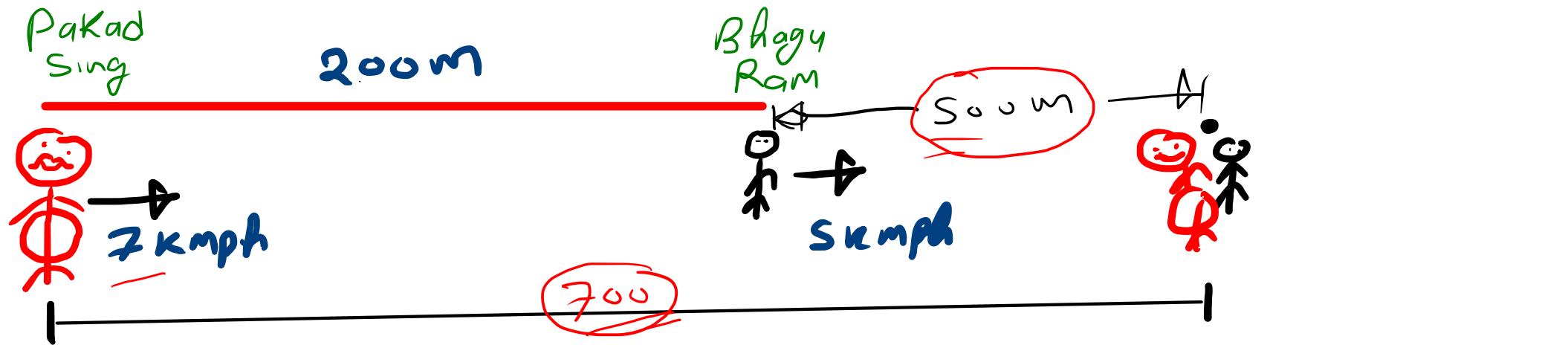
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- 3) The thief Bhagu Ram is spotted by the police man Pakad Singh from a distance of 200 m. Once they see each other start running. What is the distance Bhagu Ram whose running at 5 kmph would have covered before being caught by Pakad Singh running at 7 kmph?
- A) 600 m B) 500 m C) 700 m D) NOTA



$$t = \frac{200}{7-5} = \frac{200}{2} = 100 = \underline{\underline{6 \text{ min}}}$$

7 KM → 1 hr
7000 m → 6 min ⇒ 6 min → 700 m

~~Home Work Question~~

A person travels from A to B with a speed of 60 kmph and returns from B to A at 40 km/hr.
What is the average speed for the whole journey?

- A) 64 kmph
- B) 48 kmph
- C) 50 kmph
- D) 60 kmph

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Wed
Sat
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SQ + 2
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BY AVINASH SIR

21 Nov, 2020

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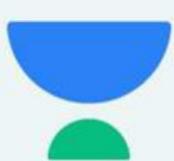
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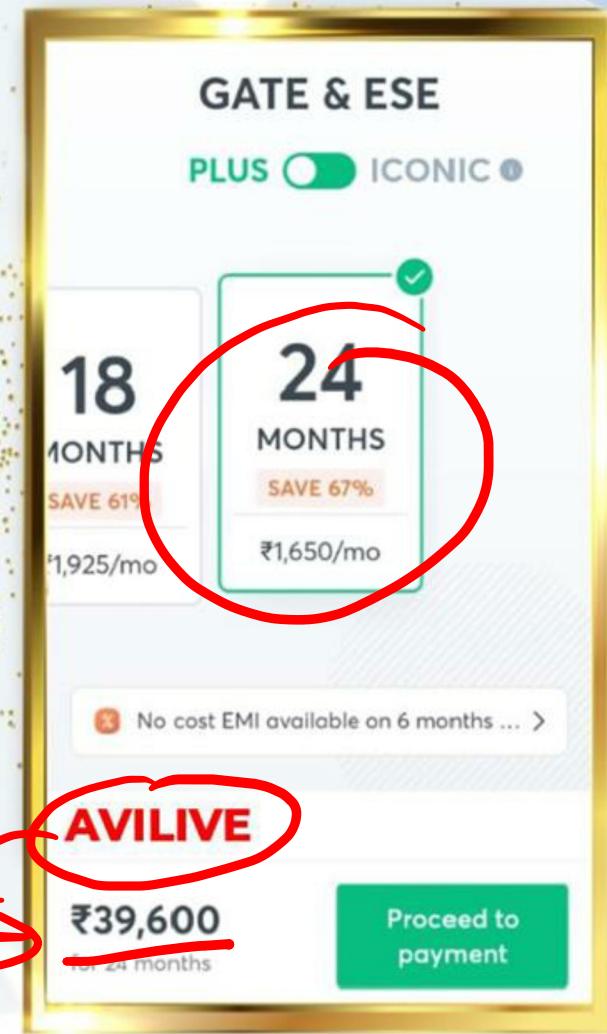
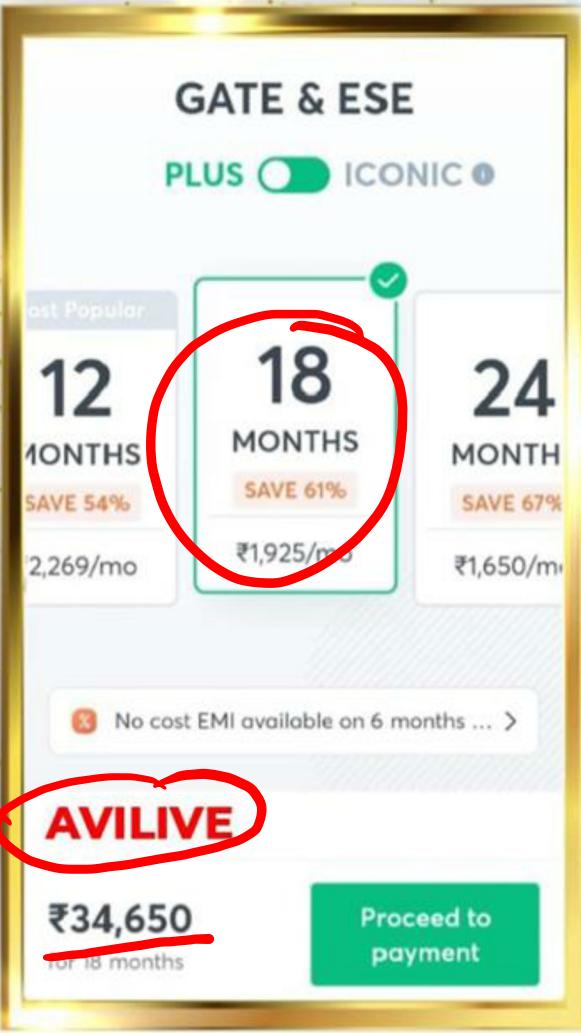
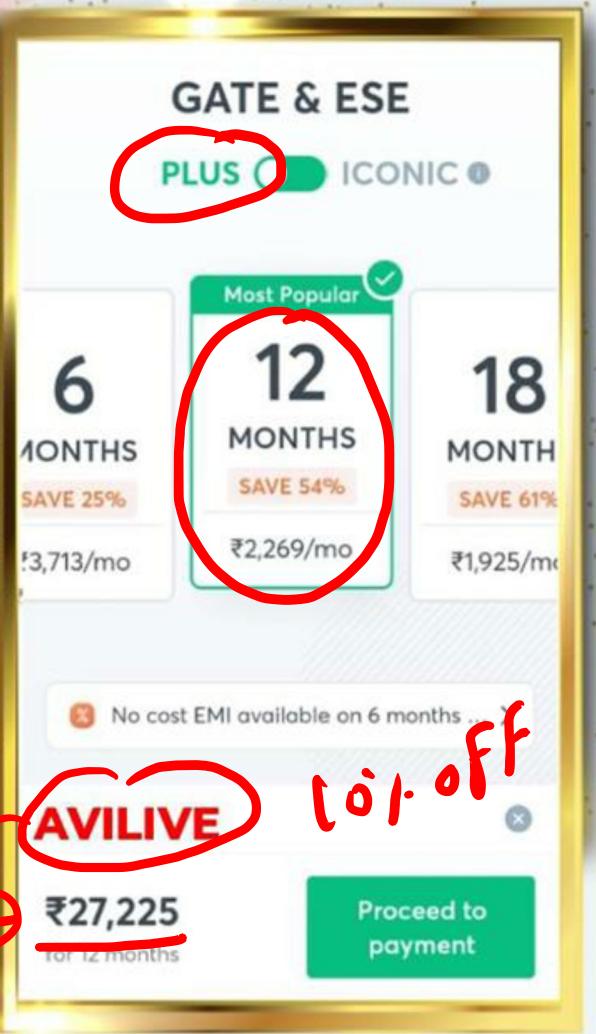
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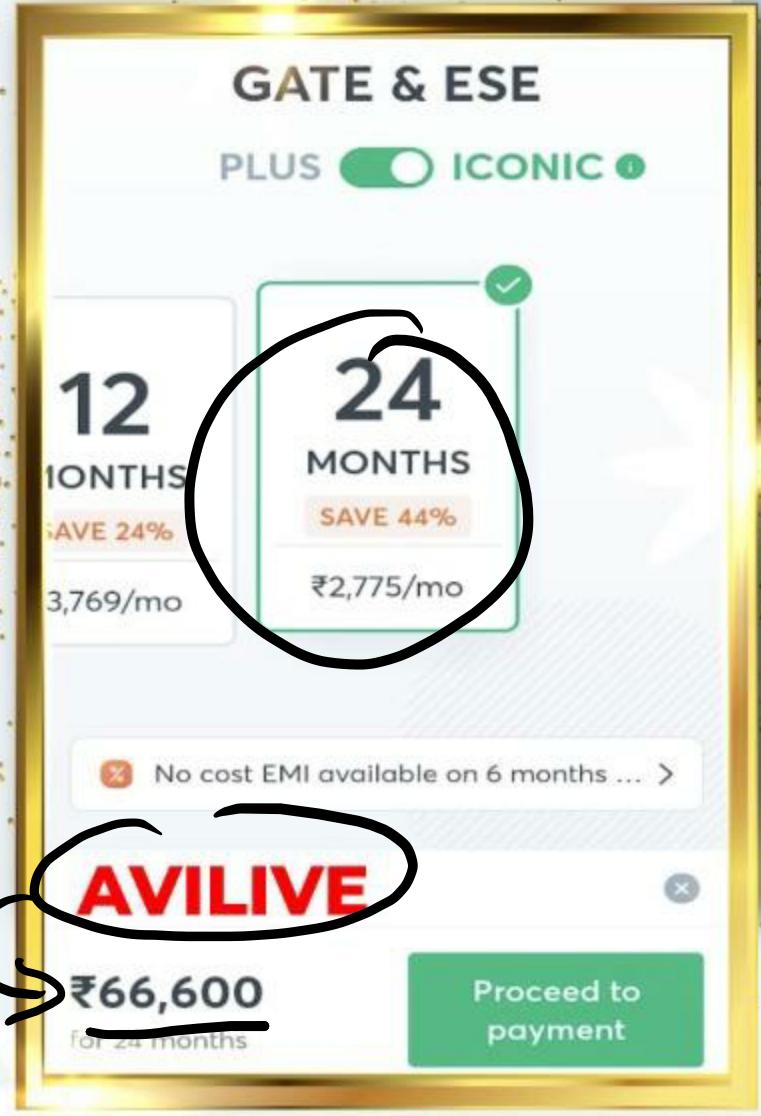
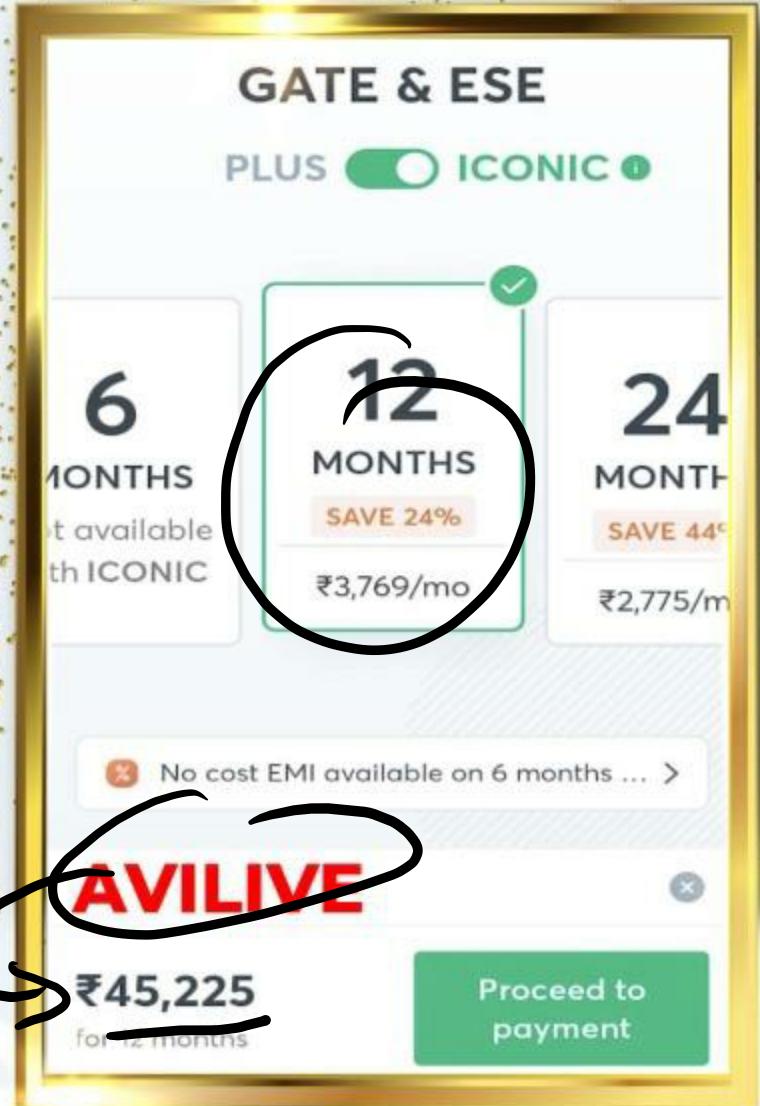
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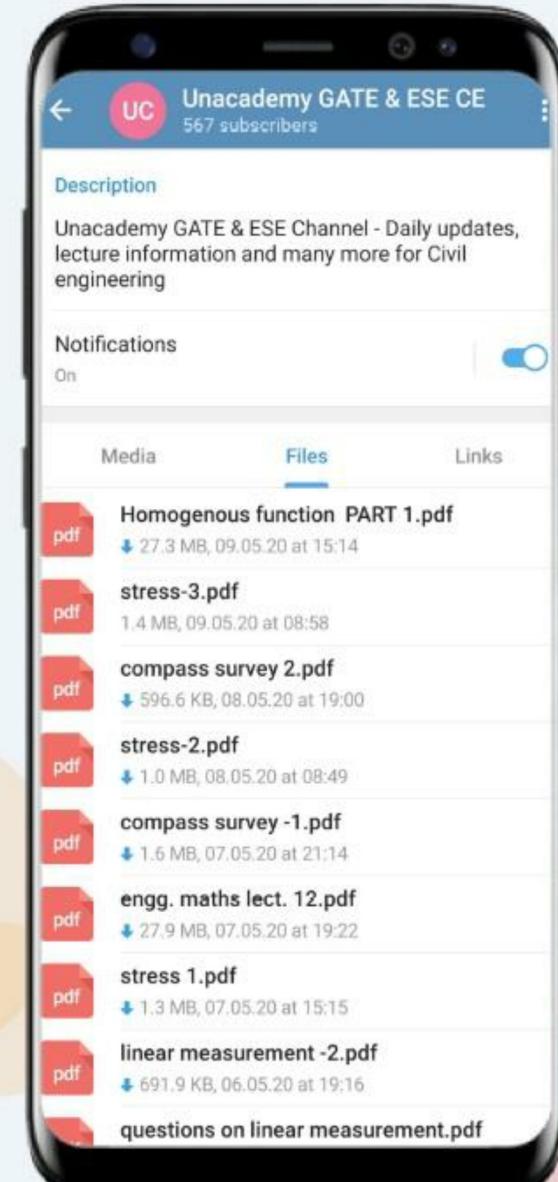
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