

GATE 2021

GENERAL APTITUDE

धमाकेदार ट्रिक के साथ 🔥🔥

**TIME, SPEED & DISTANCE, -1,
BASIC CONCEPT**

29



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AVINASH SIR



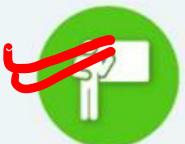
AVINASH SINGH SIR

GATE | EE (CE)

NVC



Secured Score 99.86% in
CAT (Quantitative Section)



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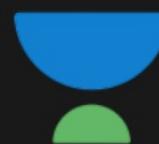


Subjects Taken:

General Aptitude
Engineering Mathematics
Digital Electronics



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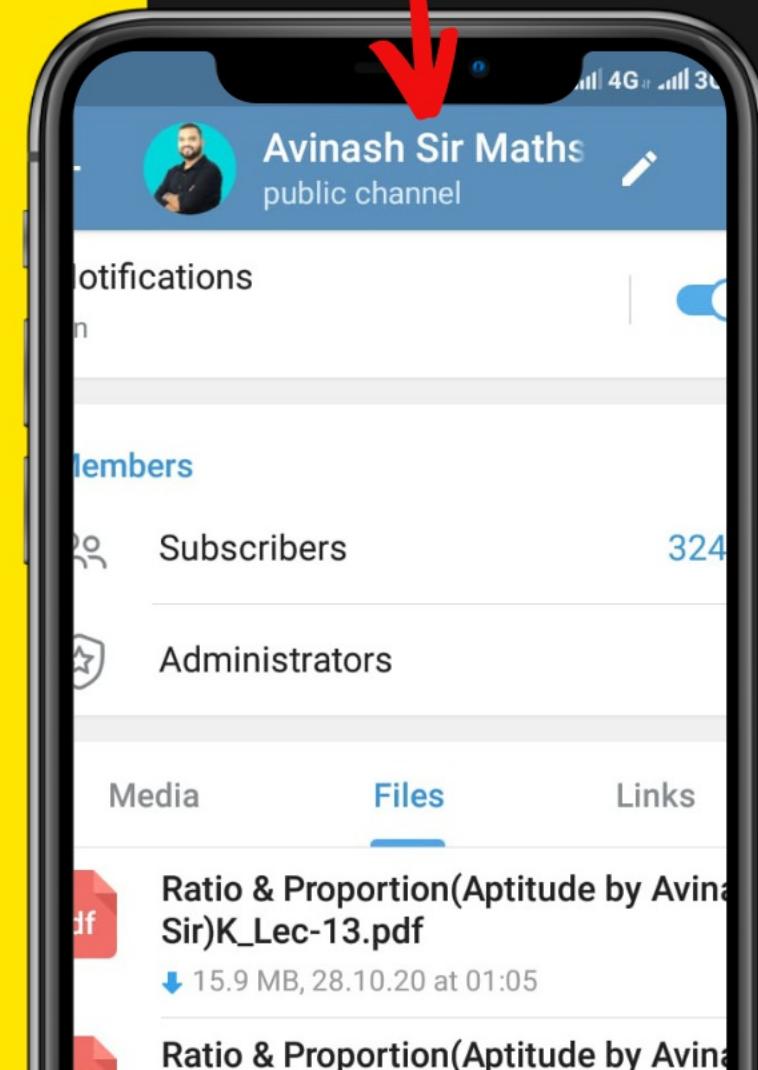


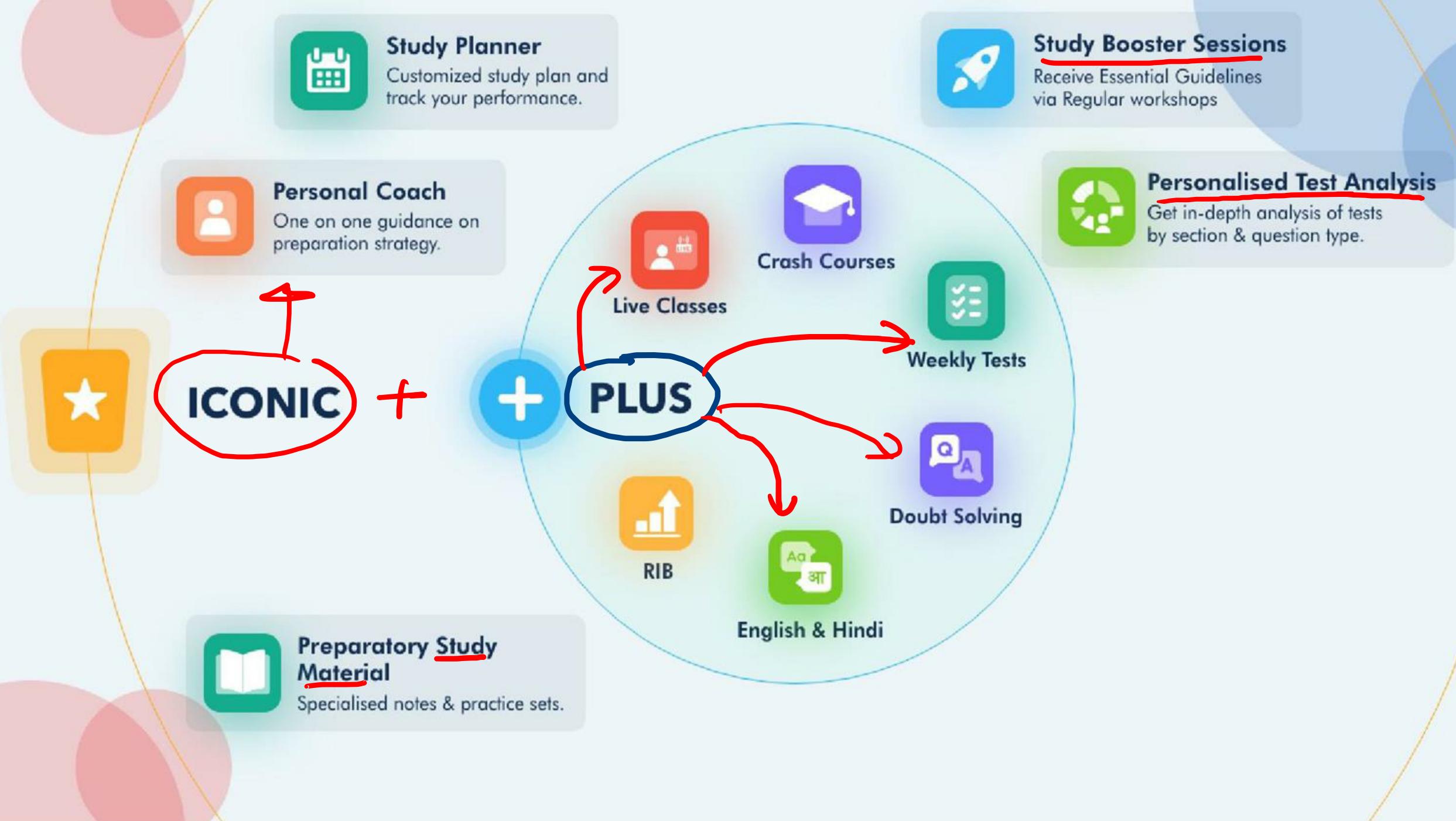
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2021	Analytical Aptitude	Quantitative Aptitude	Spatial Aptitude
	<ul style="list-style-type: none"> • Venn Diagram • Syllogism • Series • Coding & Decoding • Clock & Calendar • Distance & Direction • Blood Relation • Seating Arrangements • Puzzle <p style="margin-left: 100px;">FREE</p> <p style="margin-left: 100px;">5:00PM</p>	<ul style="list-style-type: none"> • 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 <p style="margin-left: 100px;">2022</p> <p style="margin-left: 100px;">***</p>	<ul style="list-style-type: none"> • 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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Today's Class Agenda

- ~~Basic~~ Advance concept of Time, Speed & Distance
- Practice questions based on Basic Concept

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Time, Speed & Distance

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

$$S = \frac{5}{18}$$

Unit \rightarrow $\frac{\text{km}}{\text{hr}}$ or $\frac{\text{m}}{\text{sec}}$

$$1 \frac{\text{km}}{\text{hr}} = \frac{\frac{1000}{3600}}{3} \frac{\text{m}}{\text{sec}} = \frac{5}{18} \frac{\text{m}}{\text{sec}}$$

$$1 \frac{\text{km}}{\text{hr}} = \frac{5}{18} \frac{\text{m}}{\text{sec}}$$

$$36 \frac{\text{km}}{\text{hr}} \rightarrow 36 \times \frac{5}{18} = 10 \frac{\text{m}}{\text{sec}}$$

Time, Speed & Distance

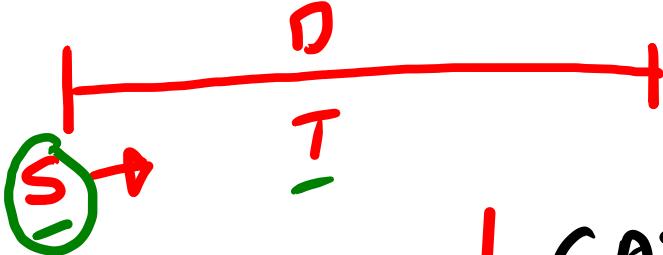
$$S = \frac{D}{T}$$

~~CASE I~~

$D = \text{Constant}$

$$S \propto \frac{1}{T} \Rightarrow S_1 T_1 = S_2 T_2$$

$$\frac{S_1}{S_2} = \frac{T_2}{T_1}$$



CASE II

Speed = Constant

$$D \propto T$$

$$\frac{D_1}{D_2} = \frac{T_1}{T_2}$$

CASE III

Time = Constant

$$S \propto D$$

$$\uparrow \quad \uparrow$$

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



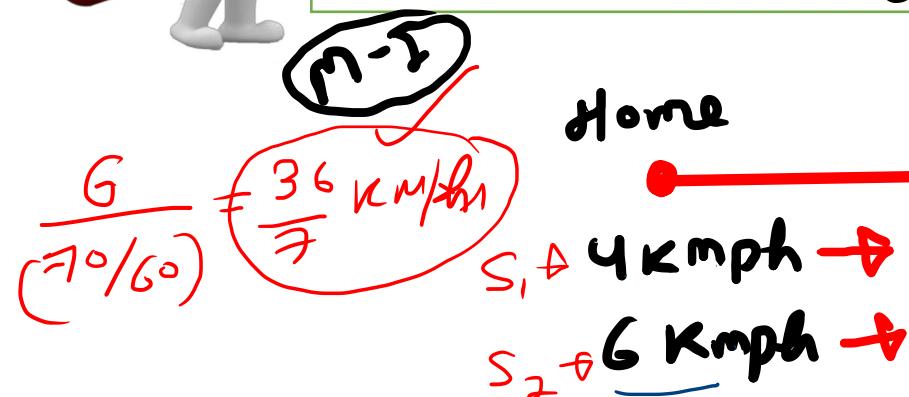
1) A worker travels from his home to Factory at 4 km/h and reaches Factory 20 min late. If the speed had been 6 km/h he would have reached 10 min early. Find the distance from his home to Factory?

A) 4km

B) 6km

C) 8km

D) 9km



$D = \text{Constant}$

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

$T_1 \rightarrow 70 \text{ min}$

$T_2 \rightarrow 60 \text{ min}$

$T + \frac{20}{60} \text{ for } 20 \text{ min late}$

$T - \frac{10}{60} \text{ for } 10 \text{ min Early}$

$T = \text{Correct Time}$
70 min

$$4 \times \left(T + \frac{20}{60}\right) = 6 \times \left(T - \frac{10}{60}\right)$$

$S_1 \times T_1$ $S_2 \times T_2$

$T = \frac{7}{6} \text{ hr} = 70 \text{ min}$

$$D = 4 \times \frac{70}{60} = 6$$

$$D = 6 \times \frac{60}{60} = 6$$

6 km



- 1) A worker travels from his home to Factory at 4 km/h and reaches Factory 20 min late. If the speed had been 6 km/h he would have reached 10 min early. Find the distance from his home to Factory?
- A) 4km B) 6km C) 8km D) 9km

~~P-I~~

D = Constant

Home **Factory**

4 kmph → 20 min late

6 kmph → 10 min Early

$\frac{s_1}{s_2} = \frac{T_2}{T_1} \Rightarrow \frac{T_1}{T_2} = \frac{s_2}{s_1}$

$\frac{T_1}{T_2} = \frac{6}{4} = \frac{3}{2}$

↑ 90 min 1 unit = 30 min
↓ 60 min

g : s 10 AM → 10:20

$D = 6 \times \frac{60}{60} = 6 \text{ km}$

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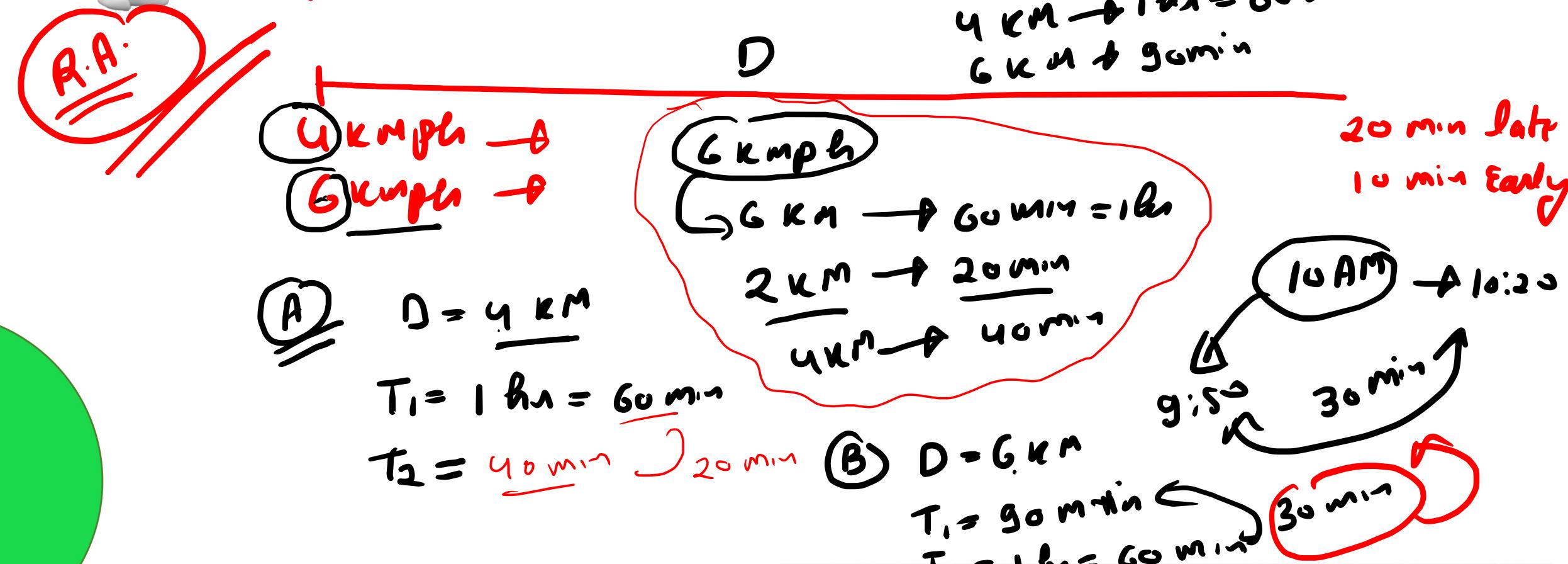
1) A worker travels from his home to Factory at 4 km/h and reaches Factory 20 min late. If the speed had been 6 km/h he would have reached 10 min early. Find the distance from his home to Factory?

A) 4km

B) 6km

C) 8km

D) 9km



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- 2) While traveling from office to home, Ram's car got some problem so he took 25% more than the usual time to reach home. His speed in this case is what part of the usual speed?
- A) $\left(\frac{1}{4}\right)^{th}$ B) $\left(\frac{5}{4}\right)^{th}$ C) $\left(\frac{4}{5}\right)^{th}$ D) NOTA

D = Constant

$$\frac{s_1}{s_2} = \frac{T_2}{T_1} = \frac{100+25}{100} = \frac{125}{100} = \frac{5}{4}$$

$$T_2 = T_1 + 25\% \text{ of } T_1$$

$$\frac{s_1}{s_2} = \frac{5}{4} \Rightarrow \frac{s_2}{s_1} = \frac{4}{5}$$

$$s_2 = \frac{4}{5} s_1$$

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- 3) The ratio of the speeds of A and B is 3:7. If B takes 20 min less than A to cover a certain distance, then what is the time taken (in min) by A to cover the same distance?
- A) 15 min B) 20 min C) 35 min D) 50 min

$$\frac{S_A}{S_B} = \frac{3}{7} = \frac{T_B}{T_A}$$

$$\frac{T_B}{T_A} = \frac{3}{7} \Rightarrow$$

D = Constant

$$\frac{T_A}{T_B} = \left(\frac{7}{3}\right)$$

35 min → 4 unit
1 unit → 20 min
1 unit → 5 min
15 min

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- ~~4) Travelling at $\frac{4}{5}$ th of the original speed a train is 10 min late. Find the usual time taken by the train to complete the journey?~~
- A) 40 minutes B) 50 minutes C) 30 minutes D) NOTA

$D = \text{constant}$

$$S_1 \rightarrow$$

$$S_2 = \frac{4}{5} S_1 \rightarrow$$

↖

T_1
 T_2

$$\frac{S_1}{S_2} = \frac{5}{4} = \frac{T_2}{T_1}$$

$$\frac{T_1}{T_2} = \frac{4}{5} \quad 1 \text{ unit} = 10 \text{ min}$$

40 min
50 min

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5) Two persons cover the same distance at speed of 25 km/h and 30 km/h respectively.

Find the distance travelled if one person takes 25 minute more than the other.

A) 61.5 km

B) 60.5 km

C) 63.5 km

D) 62.5 km

QW Q-2

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HWQ-2

Home Work Question

The ratio between the speed of Hemant and Nitish is 6: 7. If Hemant takes 30 minutes more than Nitish to cover a distance. Find the actual time taken by Hemant and Nitish?

- (A) 120 min & 180 min
- (B) 180 min & 120 min
- (C) 210 min & 180 min
- (D) 180 min & 210 min

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~~3:00~~ → Sequence
8 units

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~~5:00~~ → Seating Arrangement

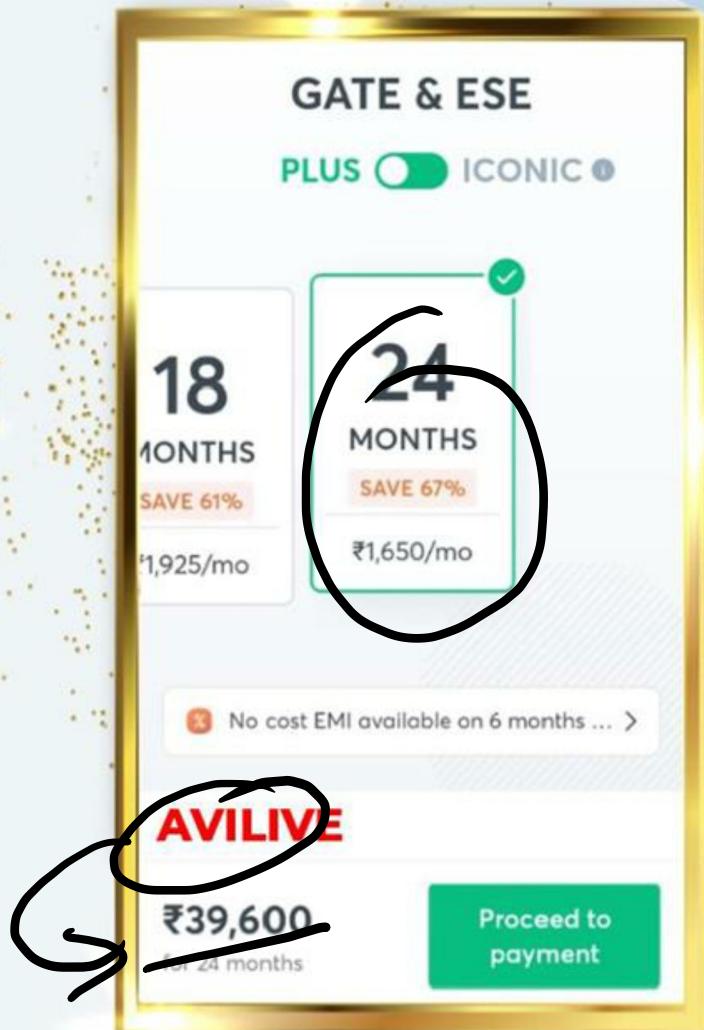
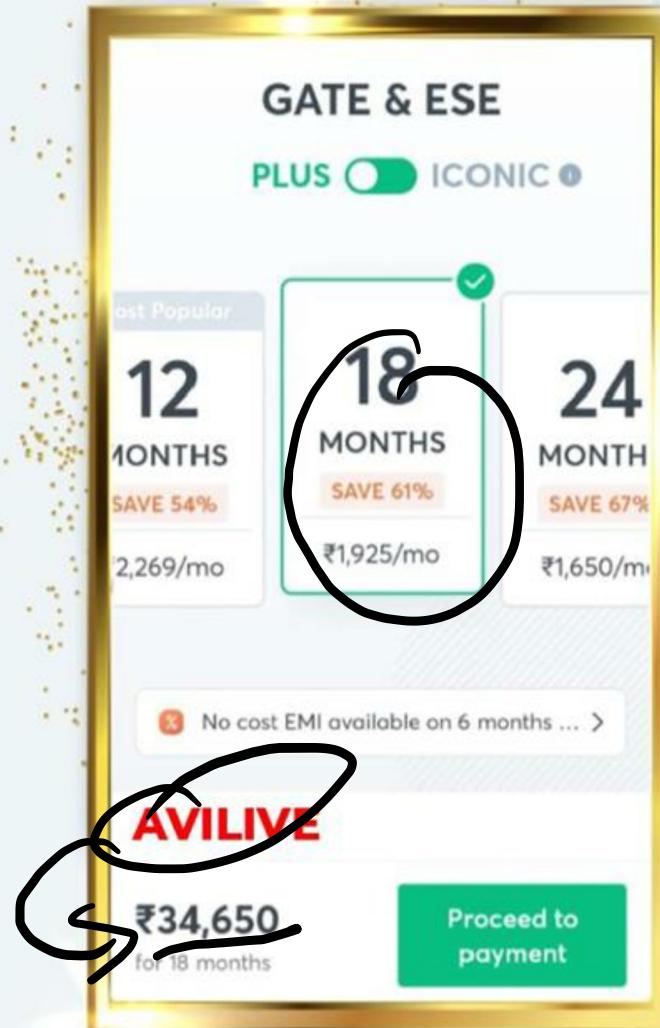
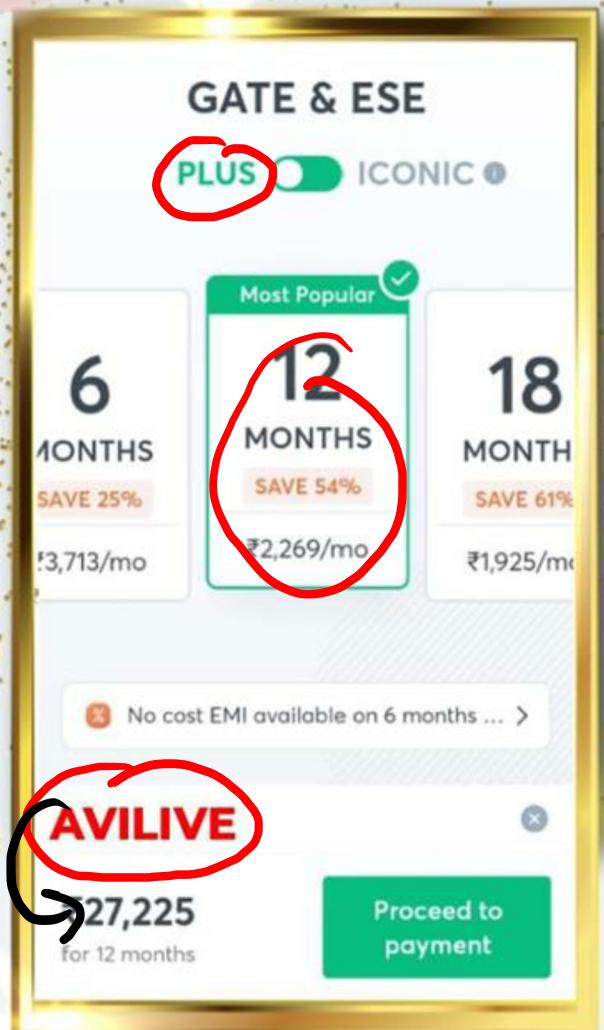
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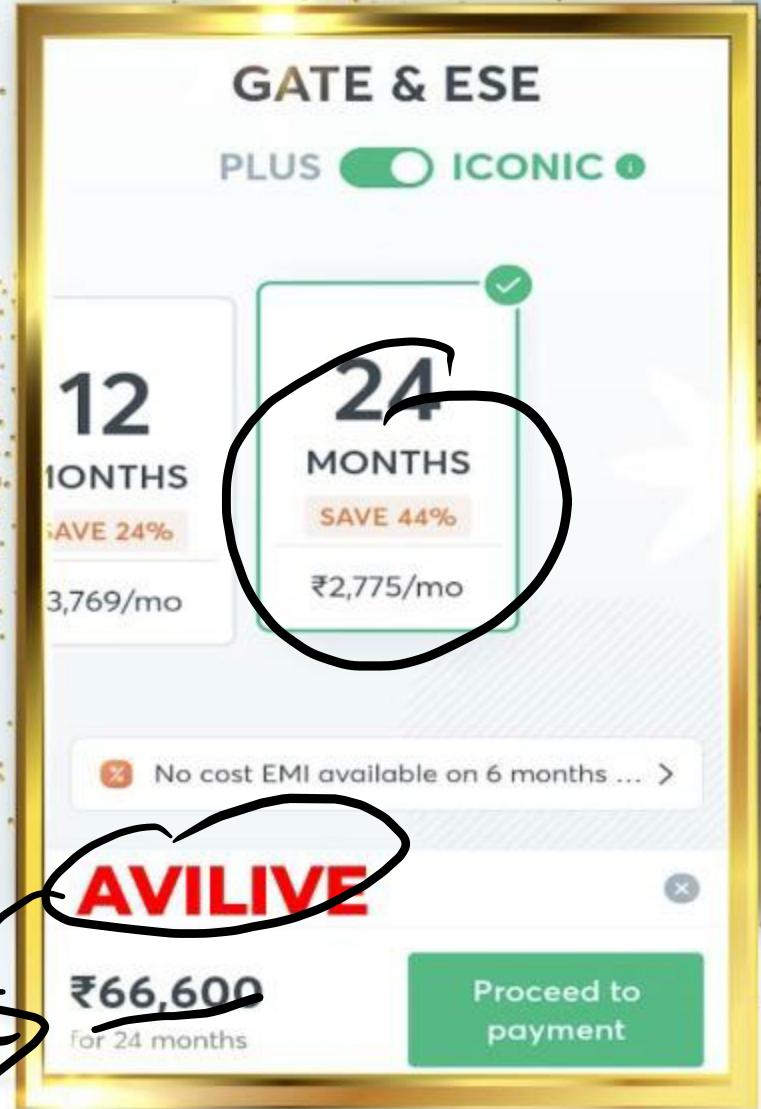
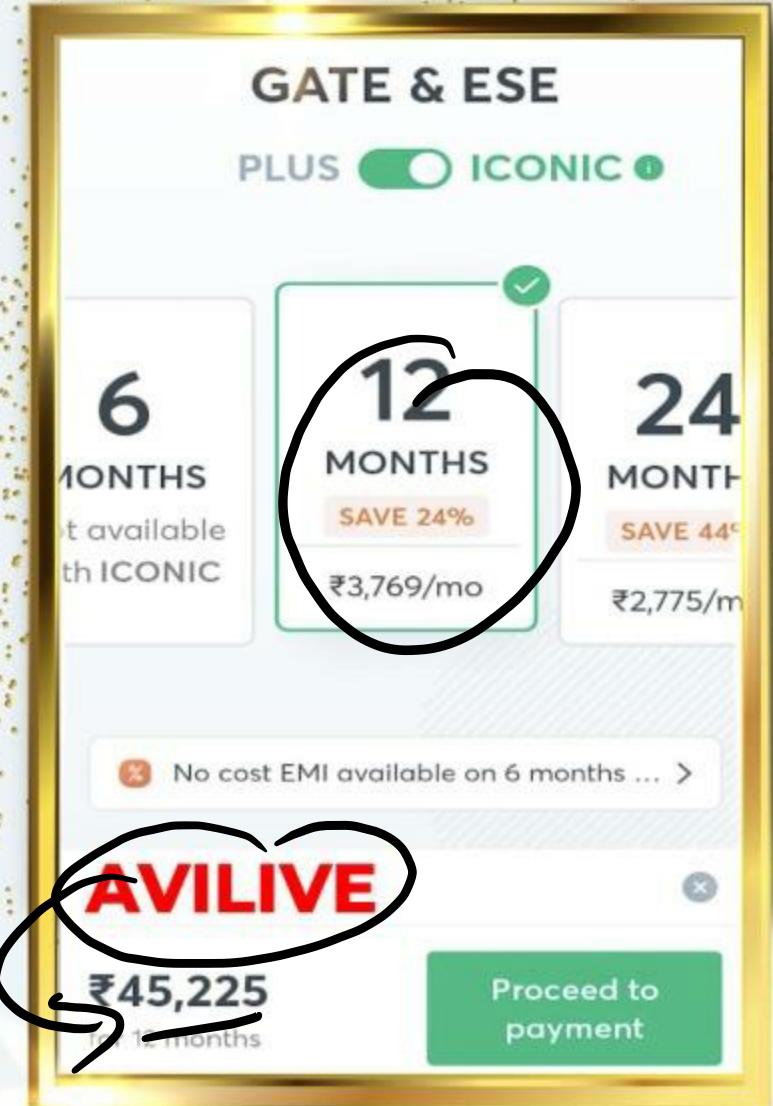
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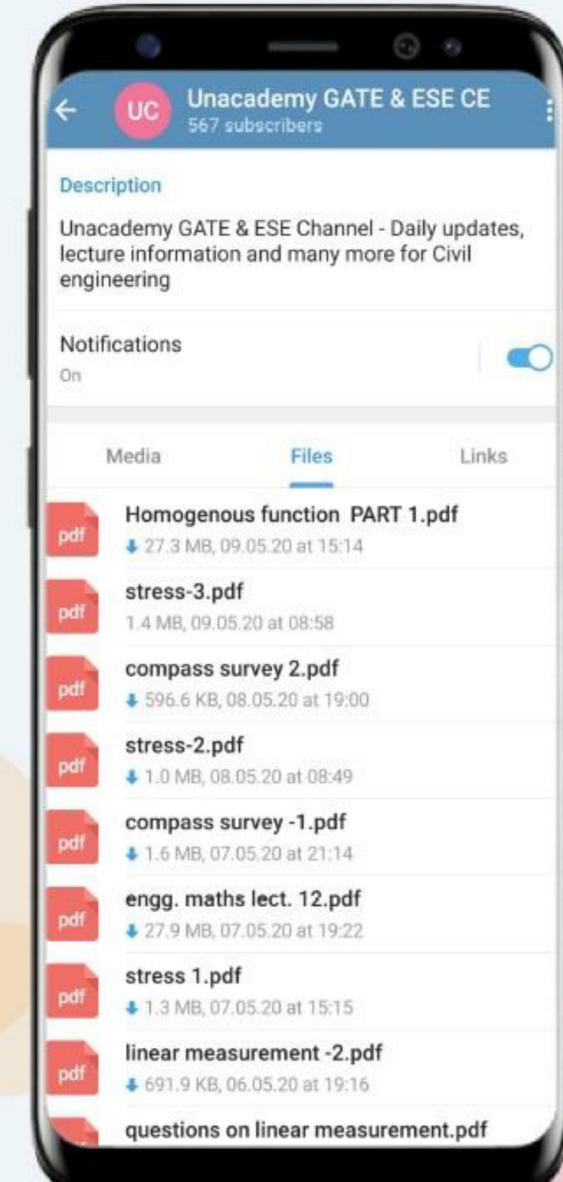
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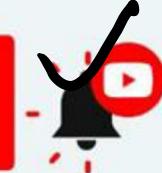
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