GATE

ALL BRANCHES

General Aptitude

QUANTITATIVE APTITUDE

Lecture No.- 03

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Recap of Previous Lecture

Topic Clocks

Time Angle?

(Relative Speed)

Topics to be Covered

Topic-1 More on Clocks

Topic-2 Average

Second Pattern:

Angle ↑ ⇒ Time ↑

0° OR Coincide:

12 hours = 12 times

12 hours = 11 times

24 hours = 22 times

180° OR Opposite:

Except 0° & 180°

12 hours = 11 times

24 hours = 22 times

1 hr → 2 times

90° OR Right angle:

Any degree except 0° & 180°

12 hours = 22 times

24 hours = 44 times

Questionnaire:

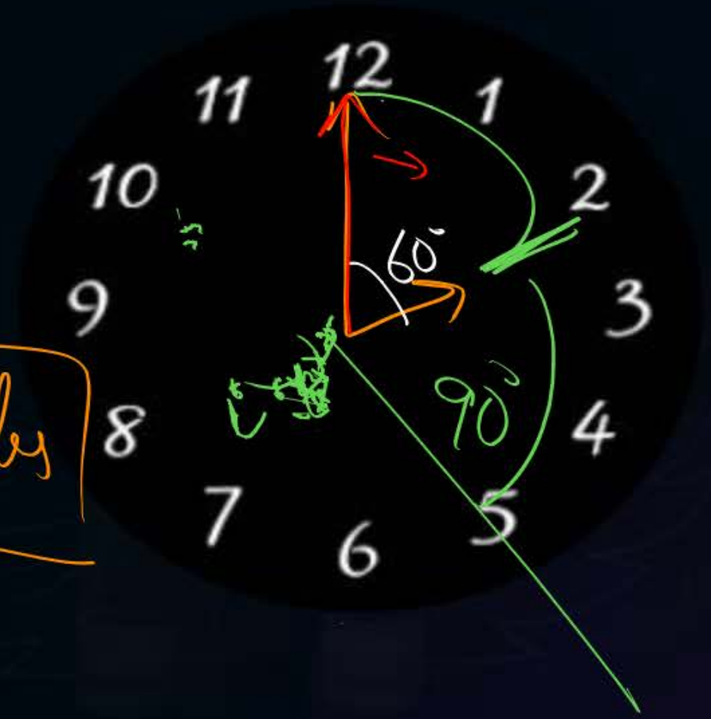
$T = \frac{D}{S}$

#Q. In between 2 0' clock and 3 0' clock at what time the hands of clock form 90°?

$2 : 27\frac{3}{11}$

$\frac{150^\circ}{5.5} \times 2 = \frac{300}{11}$

$= 27\frac{3}{11}$ minutes



Questionnaire:

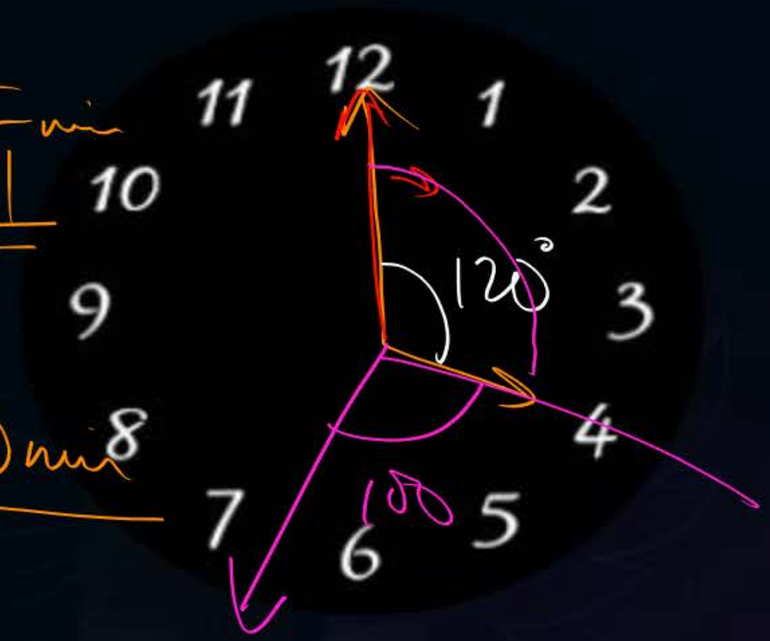
4:03 7/11

4:40

#Q. In between 4 O' clock and 5 O' clock at what time the hands of clock form 100°?

$\frac{20}{5.5} = \frac{40}{11} = 3\frac{7}{11}$ min

$\frac{220}{5.5} = \frac{440}{11} = 40$ min



Questionnaire:

① $6:21\frac{9}{11}$

② $6:43\frac{7}{11}$

#Q. In between 6 0' clock and 7 0' clock at what time the hands of clock form 60°?

$$\frac{120}{5.5} = \frac{240}{11} = 21\frac{9}{11}$$

$$\frac{240}{5.5} = \frac{480}{11} = 43\frac{7}{11}$$

Questionnaire:

① $1:23\frac{7}{11}$

② $1:52\frac{8}{11}$

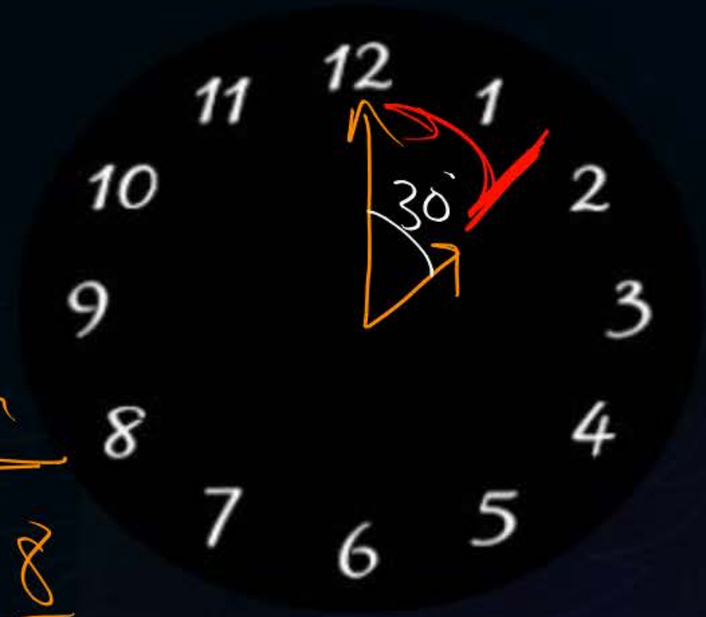
#Q. In between 1 0' clock and 2 0' clock at what time the hands of clock form 100°?

260°

$\frac{130^\circ}{5.5} = \frac{260}{11}$

$= 23\frac{7}{11}$ m

$\frac{290}{5.5} = \frac{580}{11} = 52\frac{8}{11}$



Q. 2 - 3 @ 90°

$\frac{150}{5.5} = \frac{300}{11} = 27\frac{3}{11}$

$\frac{330}{5.5} = \frac{660}{11} = 60$

Questionnaire:

1 – 2 @ 100°

1:52 8/11

40/55 = 80/11

(–) = 7 3/11 min

Third Pattern:

"Gain" OR "Lose"

15°

Questionnaire:

+5

#Q. A Clock which gains 5 minutes in every one hour was set correct at 5am. What would be the time shown by that clock at 1pm the same day?

1:40

Questionnaire:

#Q. A clock which looses 10 minutes in every one hour was set correct at 4am, what would be the time shown by that clock at 4pm the same day?

Chain Rule

$12 \times 10 = 120$

2 PM

#Q. At what time between 6AM and 7AM will the minute hand and hour hand of a clock make an angle closest to 60°?

A. 6:22 AM

B. 6:27 AM

C. 6:38 AM

D. 6: 45 AM

$6:21\frac{9}{11}$

$6:43\frac{7}{11}$

$\frac{120}{5.5} = \frac{240}{11} = 21\frac{9}{11}$

$\frac{240}{5.5} = \frac{480}{11} = 43\frac{7}{11}$

#Q. A worker noticed that the hour hand on the factory clock had moved by 225 degrees during her stay at the factory. For how long did she stay in the factory?

H.H $\Rightarrow$ 0.5°/min

A 3.75 hours

B 4 hours 15 minutes

C 8.5 hours

D 7.5 hours

$\frac{225}{0.5} = 450$ min

$\frac{450}{60}$ hour

$= 7.5$ hours

#Q. It is quarter past three in your watch. The angle between the hour hand and the minute hand is?

A 0°

B 15°

C 7.5°

D 22.5°

3:15

$3 \Rightarrow 90°$

$15 \times 3.5 \Rightarrow 82.5°$

$7.5°$

AVERAGE

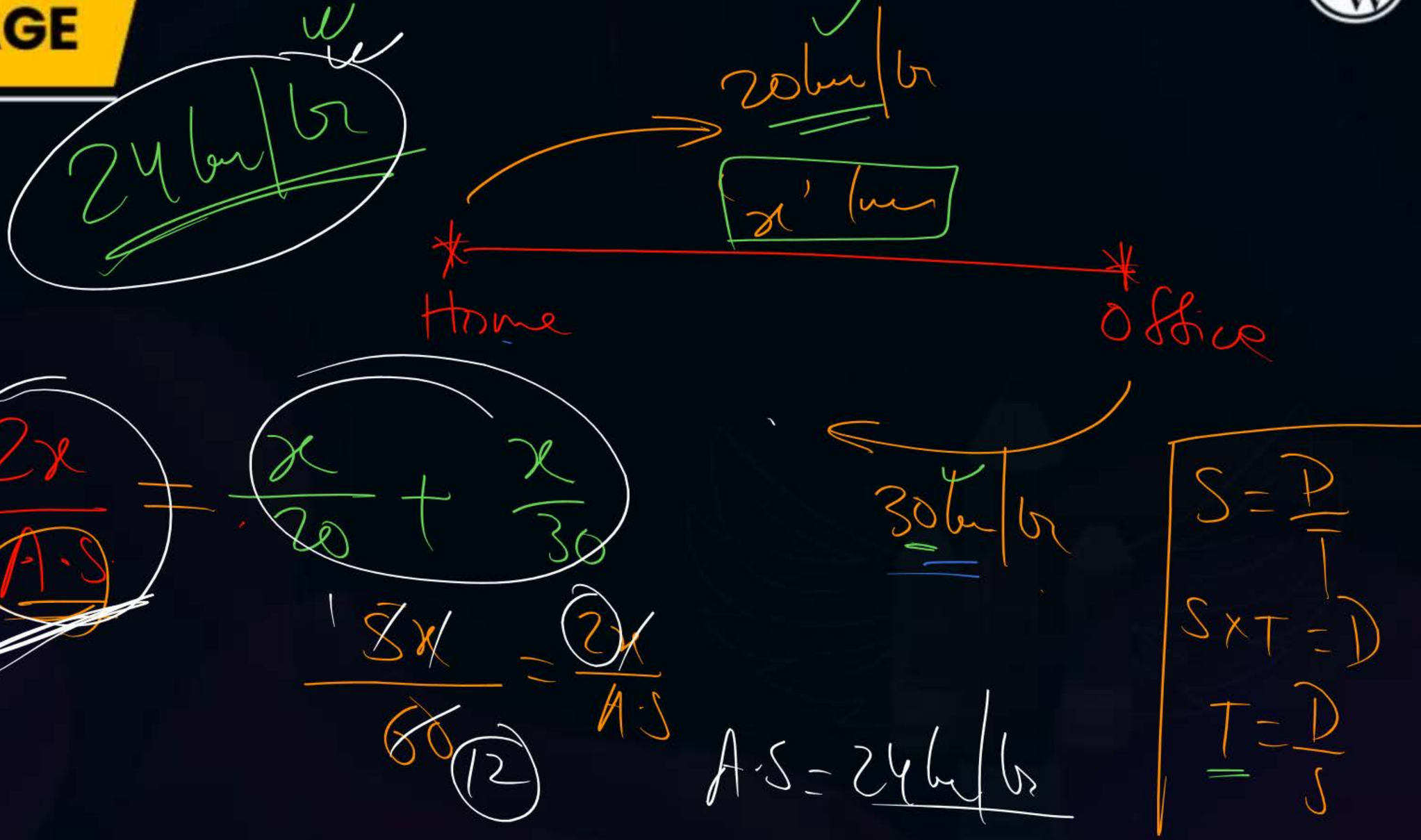
What ?

⇒ Equal Distribution

A. Mean

Mean ∈	Normal Average
Median ∈	Middle Average
Mode ∈	fav. Average

AVERAGE


24 km/hr
20 km/hr
x km
Home
Office
30 km/hr
$\frac{2x}{A.S} = \frac{x}{20} + \frac{x}{30}$
$\frac{3x}{60} = \frac{2x}{A.S}$
12
A.S = 24 km/hr
S = D/T
S × T = D
T = D/S

AVERAGE

$$\Sigma n = \frac{n(n+1)}{2}$$

$$\frac{\text{Sum of obs.}}{\text{No. of obs.}} = \text{Average}$$

$$N \geq \frac{n+1}{2}$$

Q. $1, 2, 3, 4, \ldots\ldots 50$

$$x = \frac{50 \times 51}{2}$$

$$= 1275$$

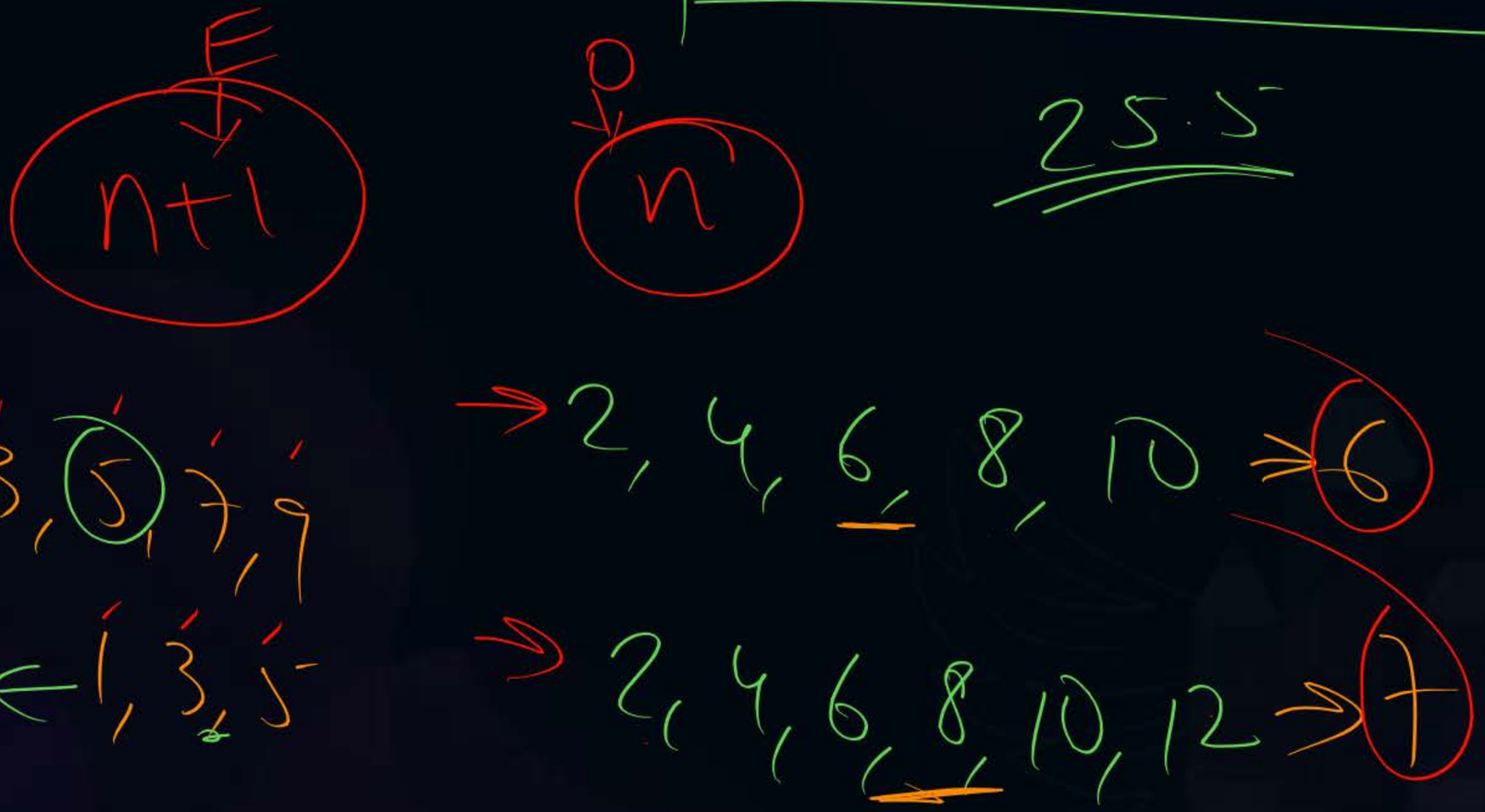
$$x = 1+2+3+4 \ldots\ldots 49+50$$

$$x = 50+49+48 \ldots\ldots 2+1$$

$$2x = 50 \times 51$$

[MCQ]

#Q. What would be the average of: 1, 2, 3, 4, 5, ...49, 50.



Average of Even & Odd

(n+1) (n)

(1) Average = Sum / No.

A × No. = Sum

(n+1) × n = n(n+1)

↓

Sum of even no

n × n = n^2

↓

Sum of odd no

Sum of Even & Odd

$n(n+1)$

n^2

2 mins Summary

Topic Average

THANK - YOU