GATE
ALL BRANCHES

GENERAL APTITUDE

QUANTITATIVE APTITUDE

Lecture No.- 02

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Recap of Previous Lecture

Topic: Calendar

1.

2.

3.

Topics to be Covered

Topic-1 Understanding Clock

Topic-2 Clock concept through Relative Speed

Topic-3 Questionnaire

CLOCK

Relative Speed

opposite → (+)

Same → (−)

Relative Speed:

Minute Hand (मिनट)

$= \frac{30}{5}$

$= 6°$/minute

$\frac{360}{12} = 30°$

Relative Speed:

1. Hands — M.H | H.H.
2. Movement — Same
3. Relative Speed — (−)

Dial of Clock

360°

$$\frac{360^\circ}{12} = 30^\circ$$

Dial of Clock

Hour Hand (H.H)

$= \frac{30^\circ}{60}$

$= \frac{1}{2}^\circ/\text{min}$

$= 0.5^\circ/\text{min}$

$MH = \frac{30^\circ}{5}$

$= 6^\circ/\text{min}$

To be Noted:

- ✓ Minute Hand Covers 30° in 5 minutes 30°/5 =

  6°/min.

- ✓ Hour Hand Covers 30° in 60 minutes 30°/60

  = ½ ° / min

  or

  0.5°/min

Relative Speed

= (6 - 0.5)

= 5.5°/min

Different Patterns of Questions:

5:50 | mm

1. Time ⇒ Angle ?

2. Angle ⇒ Time

3. Gain or loss

First Pattern:

60°

2:00

210°

7:00

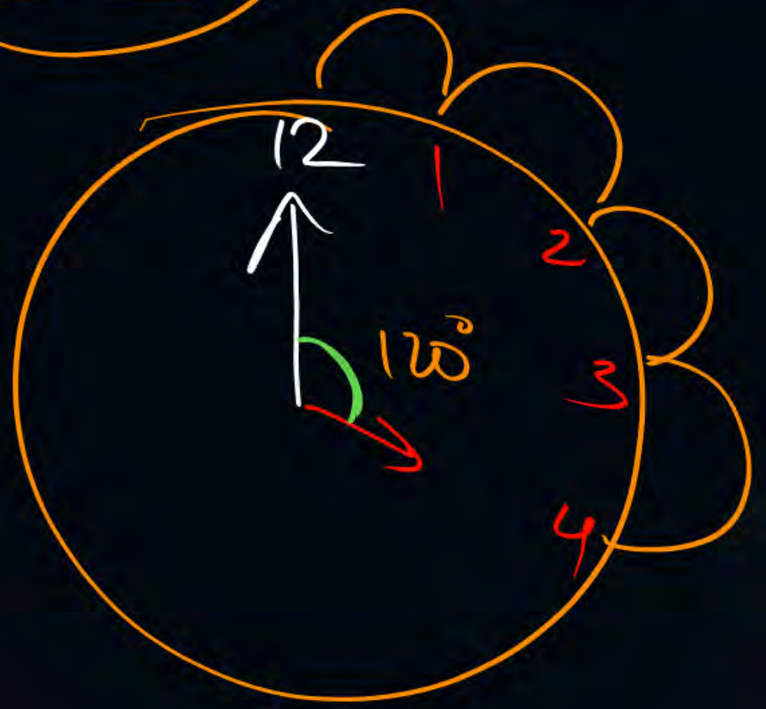
150°

5:00

8:00

$8 \times 30^\circ$

$= 240^\circ$



Random time given:

350° ←

7:40 → 10° ←

$7 \Rightarrow 210^\circ$

$40 \times 5.5 \Rightarrow 220^\circ$

10° (Difference)

Questionnaire:

345°

5:30 → 15°

5 → 150°

30 × 5.5 → 165°

15°

Questionnaire:

352.5°

3:15 → 7.5°

3 ⇒ 90°

15 × 5.5 → 82.5°

7.5°

Questionnaire:

4:40 → 100° ↺

→ 260° ↻

$4 \Rightarrow 120°$

$40 \times 5.5 \Rightarrow 220°$

$120° - 220° = 100°$

$360° - 100° = 260°$

[MCQ]

#Q. At 9:45, the two hands of a clock make an angle of?

360° − 22.5°

A 60°

B 45°

C 33 ⅓°

D 22 ½°

9 ⇒ 270°

45 × 5.5 ⇒ 247.5°

22.5°

Two Answers:

Second Pattern:

0° OR Coincide:

12 hours = 11 times

24 hrs = 22 times

180° OR Opposite:

Except 0° & 180°

12 hrs = 11 times

24 hrs = 22 times

1 hrs → 2 times

90° OR Right angle:

Any degree except 0° & 180°

12 hrs = 22 times

24 hrs = 44 times

Questionnaire:

Angle → Time?

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

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

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

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

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°?

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

$$\frac{220^\circ}{5.5} = \frac{440}{11} = 40$$

Questionnaire:

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

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

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

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

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

Questionnaire:

1:23 7/11

1:52 8/11

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

260°

$\frac{130^\circ}{5.5} = \frac{260}{11} = 23\frac{7}{11}$

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

3:00 ~~2:60~~

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

In between 2 - 3 @ 90°

270°

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

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

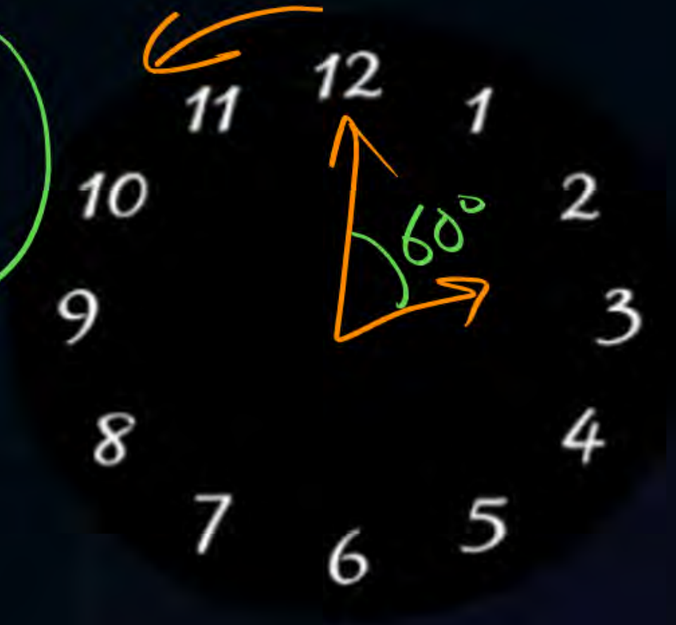
Questionnaire:

1:52 $\frac{8}{11}$

1 - 2 (2) 100

$\frac{40}{55} = \frac{80}{11} = 7\frac{3}{11}$

(-)



Third Pattern:

"Gain or loss"

① Time → Angle?

② Angle → Time?

? 12 hrs = 22 hrs

Questionnaire:

#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?

8 hrs → 1:40

$8 \times 5 = 40 \text{ min}$ (t)

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?

12 hrs

2pm

$12 \times 10 = 120$ minutes

(-)

Pattern

↓

Chain Rule

2 mins Summary

Topic Clock

4

Chain Rule

Relative Speed = $5 \cdot 5$ m/s

1. Time → Angle?
2. Angle → Time?
3. Gain or loss

THANK - YOU