

CLOCK

घड़ी - 3



STANDARD ANGLES QUESTIONS

मानक कोण

- + $0^\circ \rightarrow$ अतिव्याप्त
- + $90^\circ \rightarrow$ लम्बवत
- + $180^\circ \rightarrow$ विपरीत



STANDARD ANGLE QUESTIONS

Formulas

एक घंटे में 1 बार
12 Hr में 11 बार

0° अतिव्यापन, सुईया मिलती हैं
एक रेखा में लेकिन समान दिशा

$$\min = \frac{60}{11}(H \pm 0)$$

एक घंटे में 2 बार
12 Hr में 22 बार

90° लम्बवत, समकोण

$$\min = \frac{60}{11}(H \pm 3)$$

एक घंटे में 1 बार
12 Hr में 11 बार

180° विपरीत, एक रेखा में लेकिन विपरीत

$$\min = \frac{60}{11}(H \pm 6)$$

The Alignment Frequency Matrix



Coincide (0°)

Opposite (180°)

Right Angle (90°)

11[✓] times per 12h

11 times per 12h

22[✓] times per 12h

22[✓] times per 24h

22 times per 24h

44[✓] times per 24h (1 दिन)

Exception: Misses
between 12 and 1.

Exception: Misses
between 6 and 7.

Exceptions: Misses
one at 3 and 9.

सीधी रेखा
Total Straight Line alignments
($0^\circ + 180^\circ$) = 44 times in 24 hours.

1) 0°

1 hr $\rightarrow$ 1 बार

12 hrs $\rightarrow$ 11 बार

Formula →

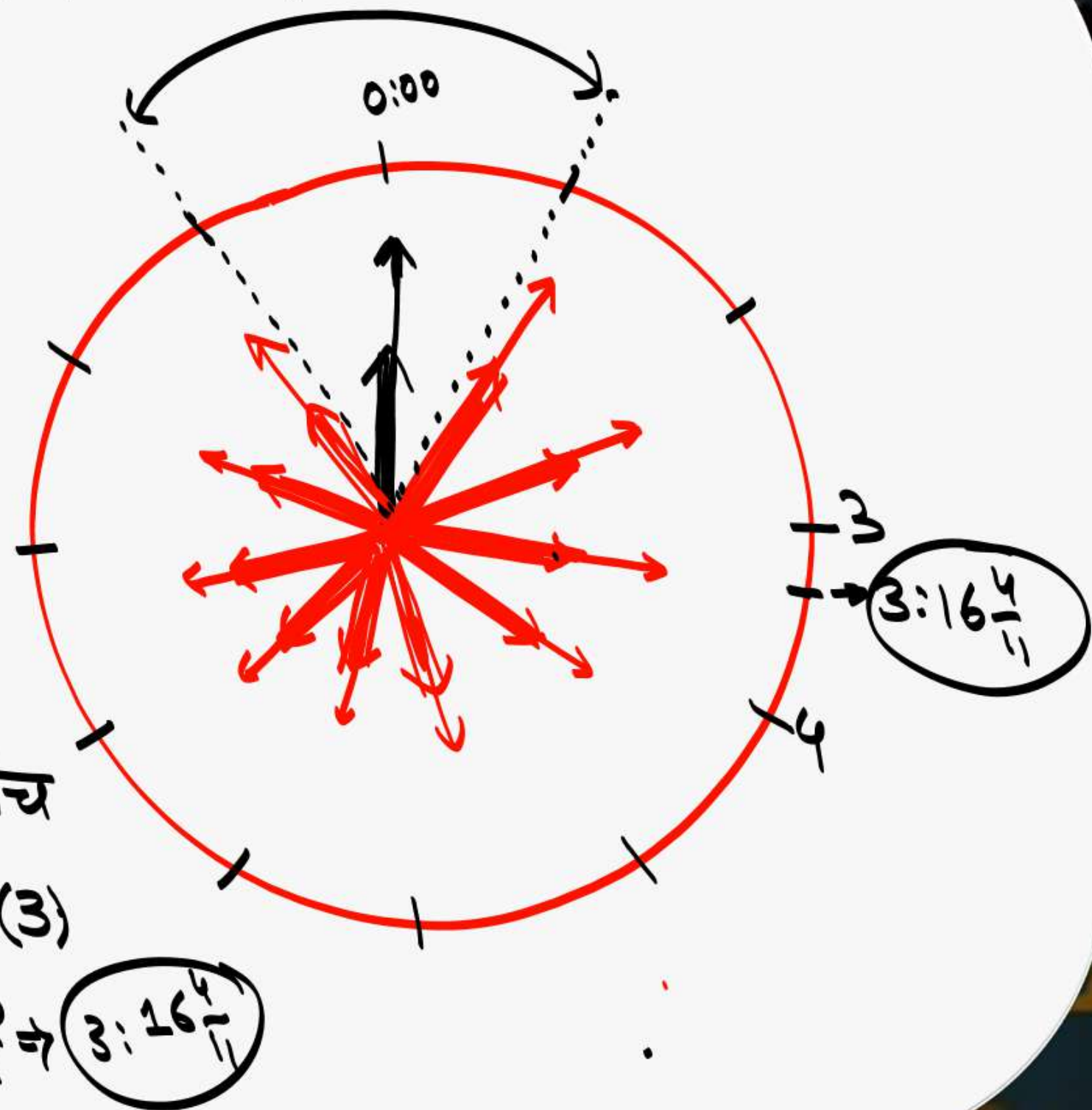
$$H : \frac{60}{11} \quad (H \neq 0)$$

प्रत्येक 1hr के लिए

Exception $\rightarrow$ 12 बजे
(11-1)

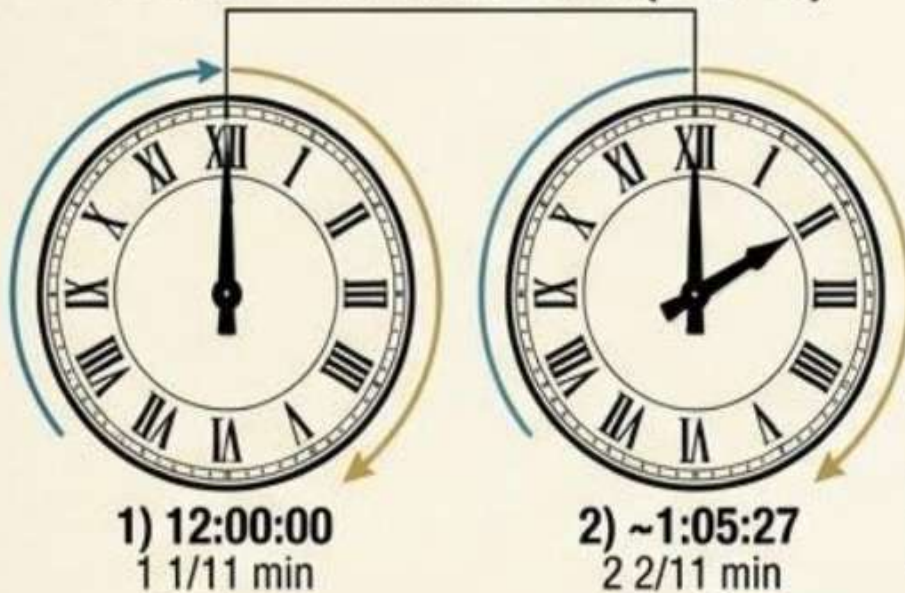
$720 \text{ min} \leftarrow \underline{12 \text{ hr}}$ ——— 11
 $\textcircled{65 \frac{5}{11}} \leftarrow \frac{720}{11}$ ——— 10R

॥-1 → 1 वरि

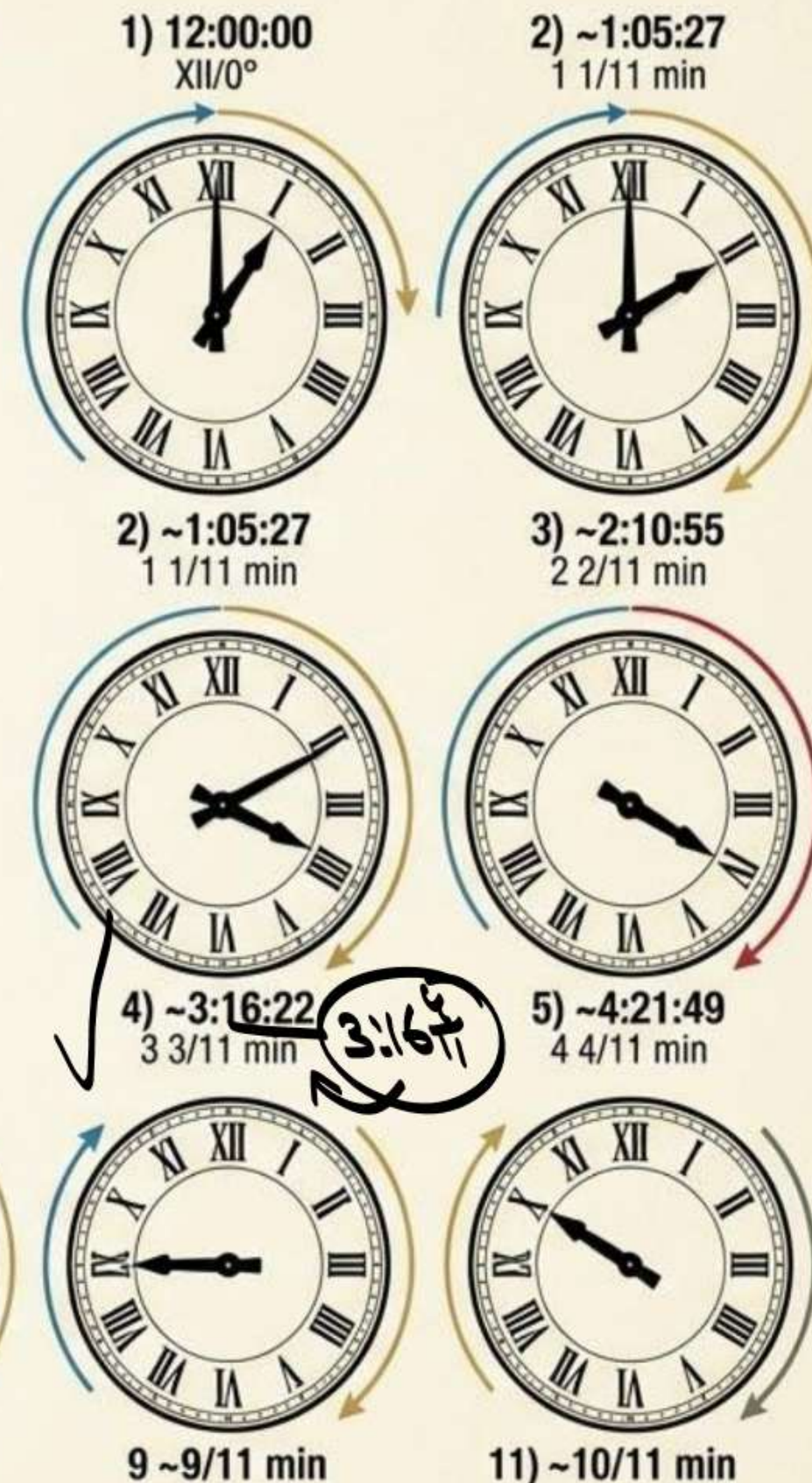
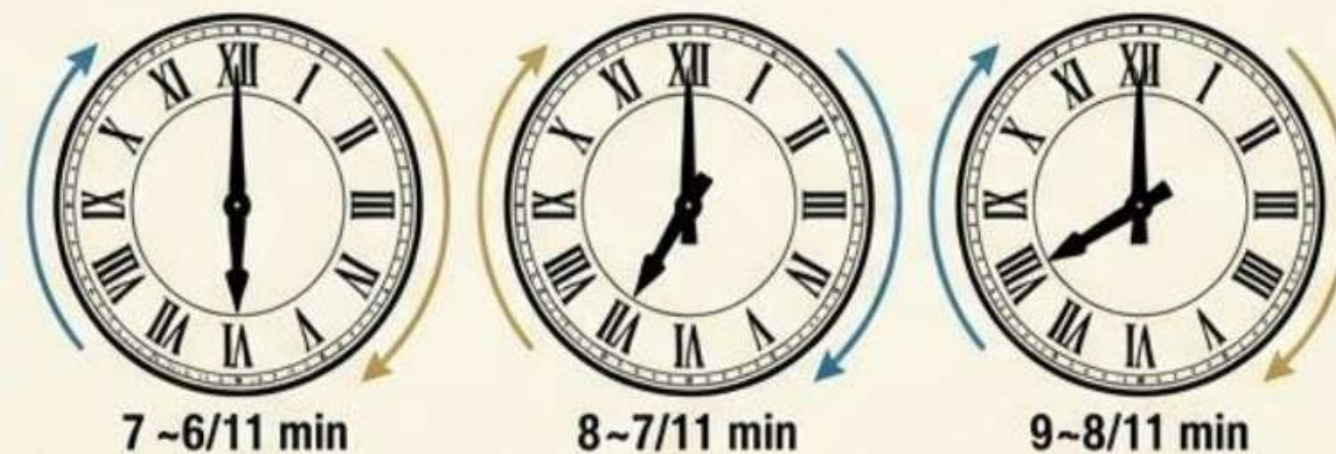
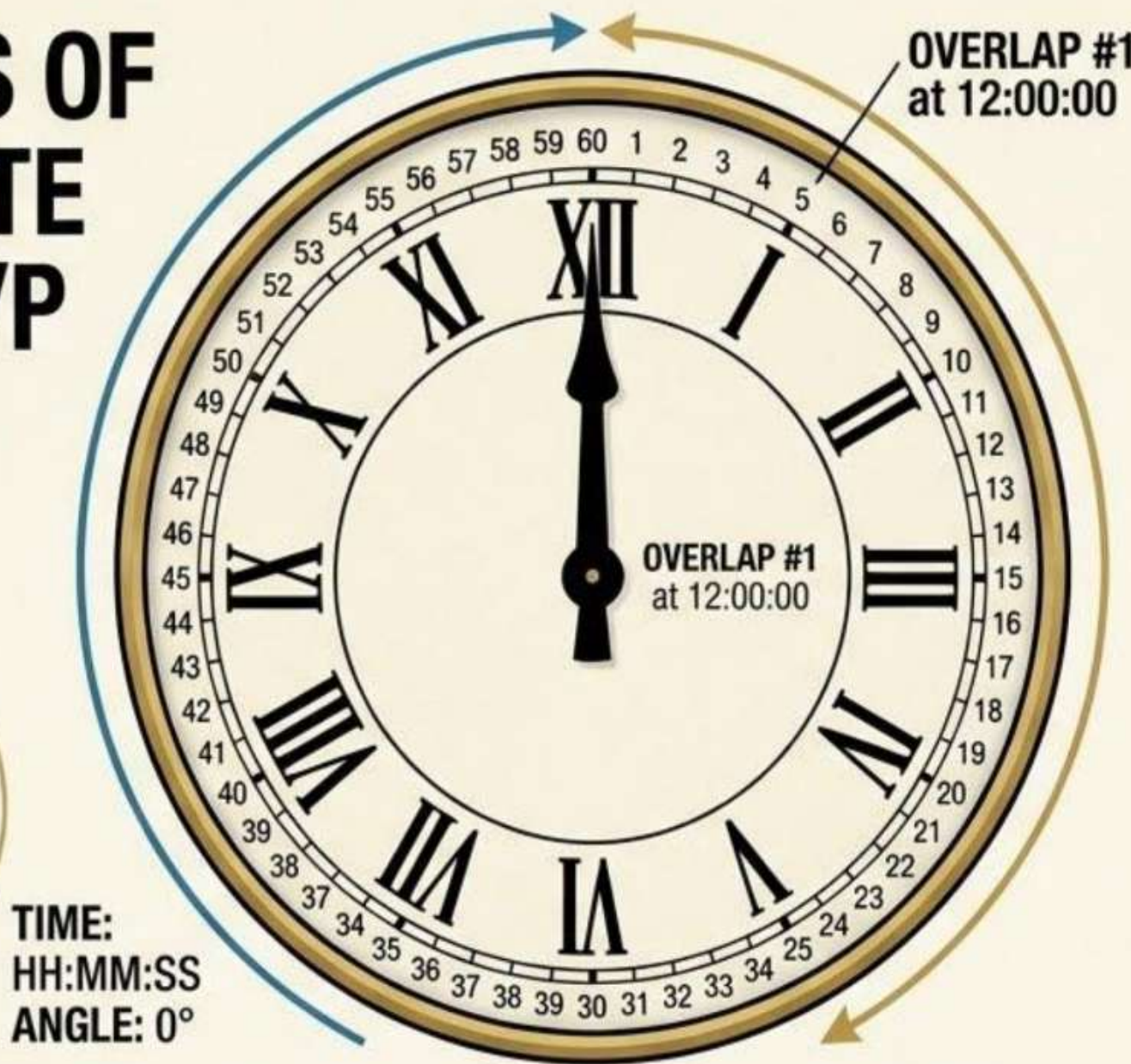
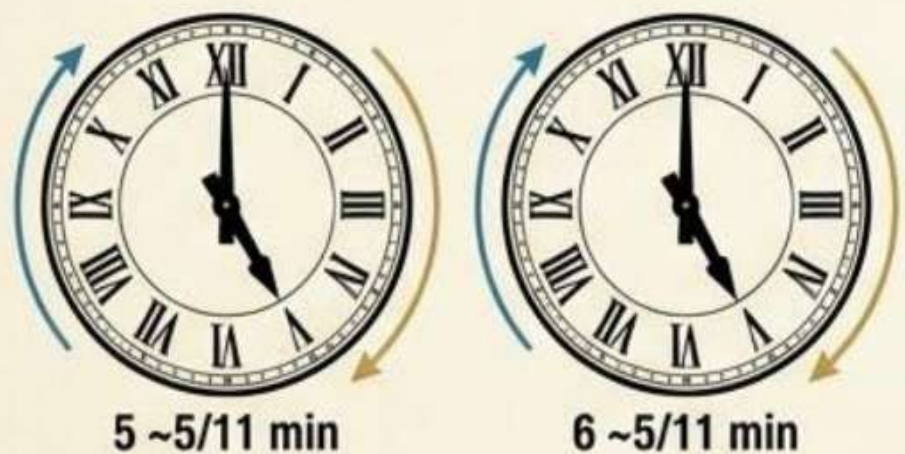


THE 11 OVERLAPS OF HOUR AND MINUTE HANDS (0°) TWGL/P IN 12 HOURS

OVERLAP OCCURRENCE (1 of 11)



TIME:
HH:MM:SS
ANGLE: 0°



The hands overlap 11 times in a 12-hour cycle because the minute hand (6°/min) moves 11 times faster than the hour hand (0.5°/min).

ALL 0° SITUATIONS IN A WALL CLOCK

Where After Each **720/11 Minutes** Clock Hands Coincide

In 12-Hour Clock, Hour and Minute Hands Coincide 11 Times in 12 Hours

1
12:00
AM/PM



$$0 \times \frac{720}{11} = 0 \text{ min}$$

(0°)

2
1:05
 $5 \frac{5}{11}$
AM/PM



$$1 \times \frac{720}{11} = 65 \frac{5}{11} \text{ min}$$

(0°)

3
2:10
 $10 \frac{1}{11}$
AM/PM



$$2 \times \frac{720}{11} = 130 \frac{10}{11} \text{ min}$$

(0°)

4
3:16
 $4 \frac{6}{11}$
AM/PM



$$3 \times \frac{720}{11} = 196 \frac{4}{11} \text{ min}$$

(0°)

5
4:21
 $9 \frac{1}{11}$
AM/PM



$$4 \times \frac{720}{11} = 261 \frac{9}{11} \text{ min}$$

(0°)

6
5:27
 $2 \frac{7}{11}$
AM/PM



$$5 \times \frac{720}{11} = 327 \frac{2}{11} \text{ min}$$

(0°)

7
6:32
 $8 \frac{2}{11}$
AM/PM



$$6 \times \frac{720}{11} = 392 \frac{8}{11} \text{ min}$$

(0°)

8
7:38
 $3 \frac{3}{11}$
AM/PM



$$7 \times \frac{720}{11} = 458 \frac{3}{11} \text{ min}$$

(0°)

9
8:43
 $7 \frac{5}{11}$
AM/PM



$$8 \times \frac{720}{11} = 523 \frac{7}{11} \text{ min}$$

(0°)

10
9:49
 $1 \frac{10}{11}$
AM/PM



$$9 \times \frac{720}{11} = 589 \frac{1}{11} \text{ min}$$

(0°)

11
10:54
 $8 \frac{8}{11}$
AM/PM



$$10 \times \frac{720}{11} = 654 \frac{8}{11} \text{ min}$$

(0°)

Key Points

- In 12 hours, the hands coincide 11 times.
- Time interval between two coincidences = $\frac{720}{11}$ minutes
= $65 \frac{5}{11}$ minutes.
- These are the only 0° situations in a 12-hour clock.

Formula: Time after n coincidences = $n \times \frac{720}{11}$ minutes
Where $n = 0, 1, 2, \dots, 10$

Total coincidences in 12 hours = 11
Next coincidence after 12:00 noon
(completing 12 hours)

$$\frac{720}{11} \text{ min} = 65 \frac{5}{11} \cdot \text{min}$$

$$\approx 1 \text{ hour } 5 \text{ min } 27 \frac{3}{11} \cdot \text{sec}$$

Shortcut I: The Coincidence (0° Overlap)

Step 1: Identify the starting hour (H).

$H = 3$



Step 2: Multiply by the catch-up constant.

$$\text{Exact Minute} = \left(\frac{60}{11} \right) \times H$$

The catch-up constant: $60/11$



Example: At what time between 3 and 4 do hands coincide?

$$\rightarrow (60/11) \times 3 = 180/11$$

$$\rightarrow 16 \frac{4}{11} \text{ minutes past 3}$$

QUESTION:- 32

At what time between 9 and 10 O'clock will the hands of a watch be together?

9 से 10 बजे के बीच किस समय घड़ी की सूइयां एक साथ होंगी?

$$10 - 9$$

$$\text{min} = \frac{60}{11}(H \pm 0)$$

$$\text{min} = \frac{60}{11}(9)$$

$$\frac{540}{11} = 49\frac{1}{11}$$

$$9:49\frac{1}{11}$$

2) 90°

1 hr $\rightarrow$ 2 बार ✓
12 hrs $\rightarrow$ 22 बार

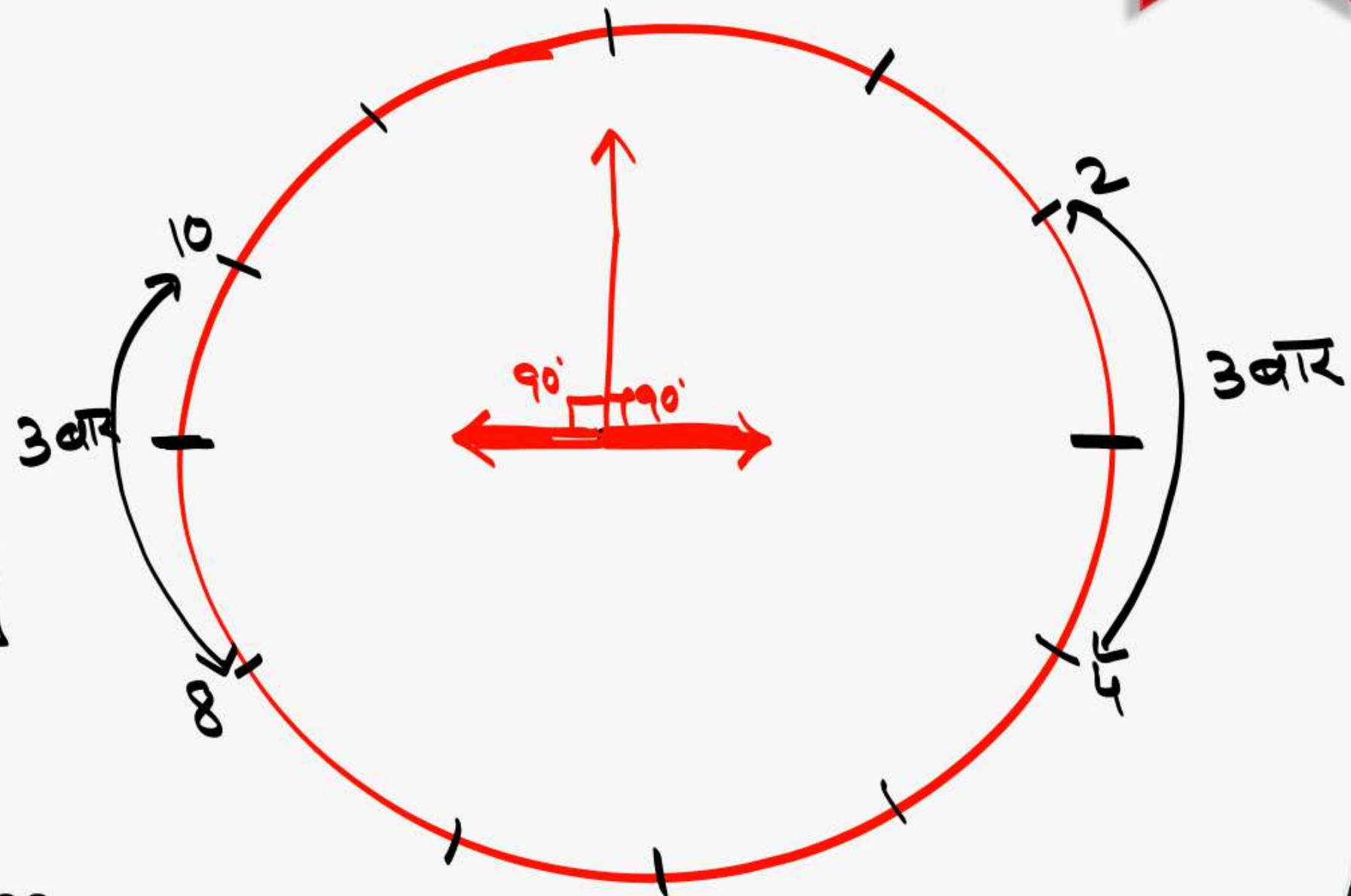
Formula $\rightarrow$

$$H : \frac{60}{11} (H \pm 3)$$

प्रत्येक 1hr के लिए

Exception $\rightarrow$ 3:00 , 9:00

(2-4) (8-10)

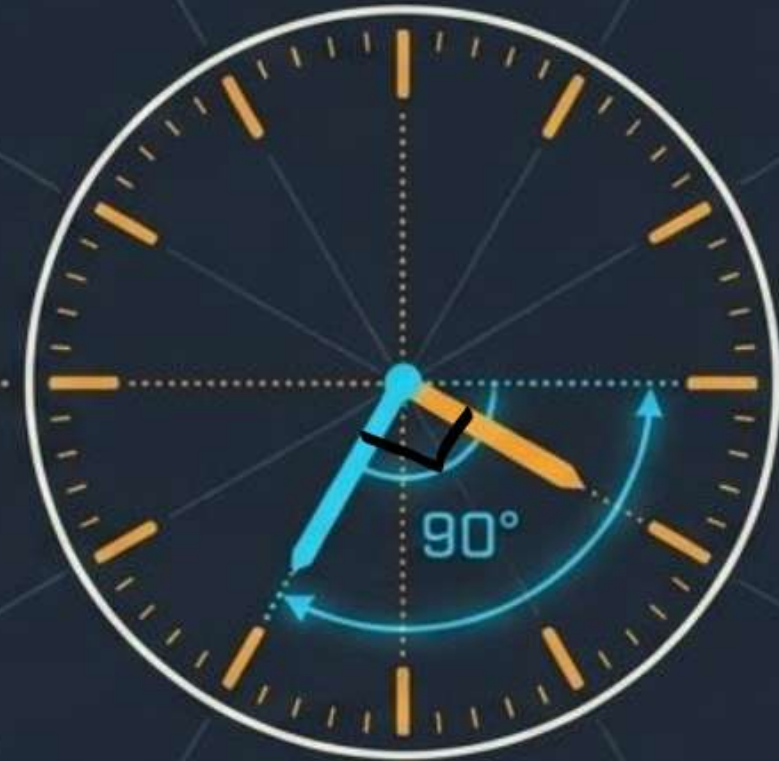


Shortcut III: The Right Angle (90°)

$$\text{Exact Minutes} = (60/11) \times (H \pm 3)$$



Path A [-3]
Minute hand is 15 minutes
behind the hour.



Path B [+3]
Minute hand is 15 minutes
ahead of the hour.

Calculate both paths to find the **two right angles** that occur every hour.

QUESTION:- 33

At what time between 6 and 7 O'clock will the hands of a clock be at right angle?

6 से 7 बजे के बीच कस समय घड़ी की सूइयां समकोण पर होंगी?

$$\begin{array}{l} \frac{60}{11}(6 \pm 3) \\ \swarrow \oplus \quad \searrow \ominus \\ \frac{60}{11}(6+3) \qquad \frac{60}{11}(6-3) \\ \frac{60}{11}(9) = \frac{540}{11} \\ = 49\frac{1}{11} \\ \boxed{6:49\frac{1}{11}} \end{array}$$

$$\begin{array}{l} \frac{60}{11}(6-3) \\ \frac{60}{11}(3) = \frac{180}{11} \\ = 16\frac{4}{11} \\ \boxed{6:16\frac{4}{11}} \end{array}$$

$$\begin{array}{l} \text{H} \text{---} 7 \\ \text{H} \\ \text{Min} \\ \text{H} : \frac{60}{11}(\text{H} \pm 3) \\ \boxed{6-6:30} \quad \boxed{6-7} \end{array}$$

QUESTION:- 34

At what time between 9 and 10 O'clock will the hands of a clock be at right angle?

9 से 10 बजे के बीच कस समय घड़ी की सूइयां समकोण पर होंगी?

$$\frac{60}{11}(H \pm 3)$$

$0 \leq \text{समय} \leq 12$

$$\begin{aligned} \text{समय} &\leq 0 \rightarrow +12 \\ \text{समय} &\geq 12 \rightarrow -12 \end{aligned}$$

$$12 \leftrightarrow 0$$

$$\begin{aligned} &\frac{60}{11}(H \pm 3) \\ &\quad \swarrow \quad \searrow \\ &\frac{60}{11}(9 \pm 3) \\ &\quad \swarrow \quad \searrow \\ &\frac{60}{11}(9+3) \qquad \frac{60}{11}(9-3) \\ &\frac{60}{11}(12) = \frac{60}{11}(0) \qquad \frac{60}{11}(6) = \frac{360}{11} = 32\frac{8}{11} \\ &\boxed{9:00} \qquad \boxed{9:32\frac{8}{11}} \end{aligned}$$

3) 180°

1 hr $\rightarrow$ 1 बार

12 hrs $\rightarrow$ 11 बार

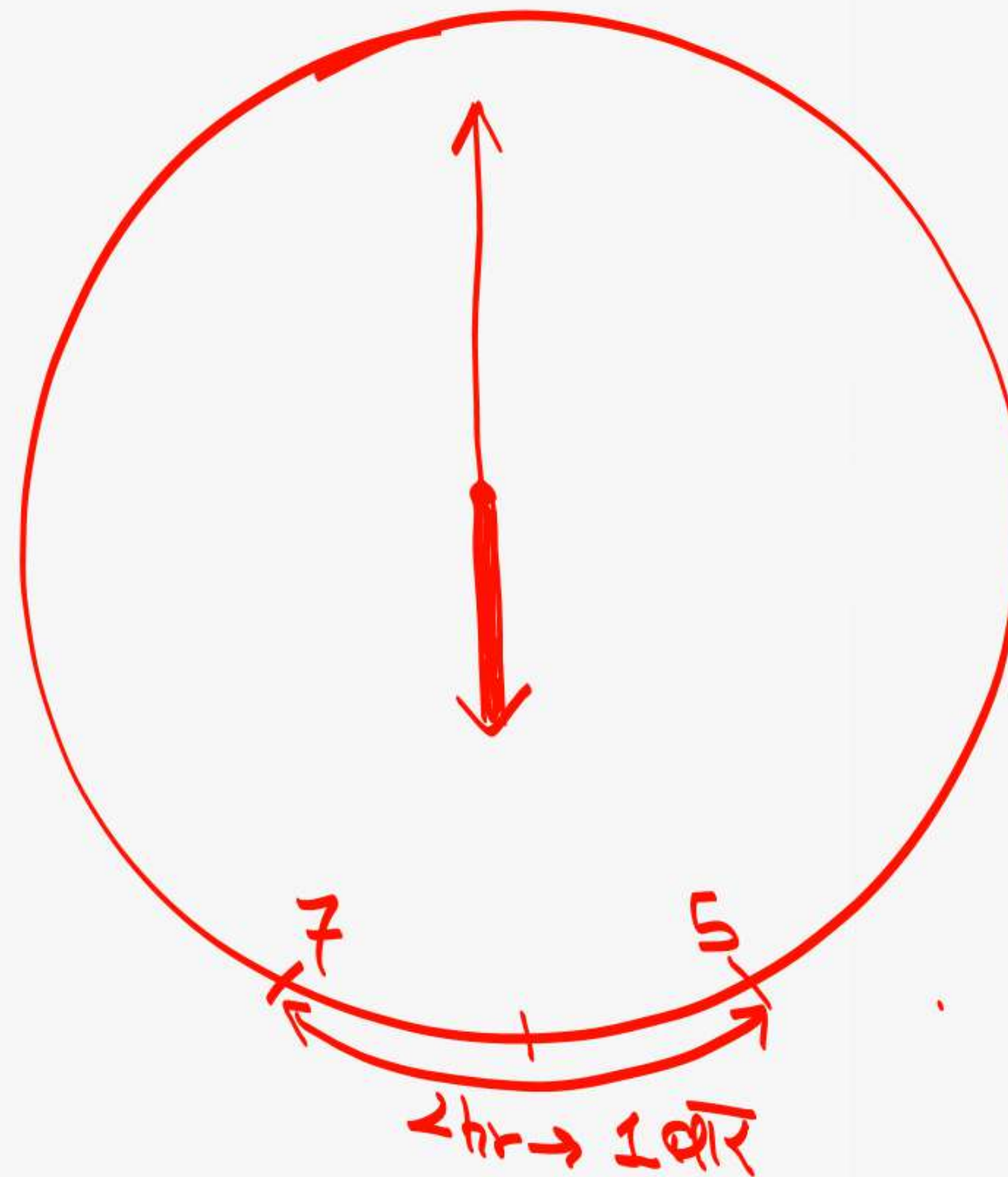
Formula $\rightarrow$

$$H : \frac{60}{11} (H \pm 6)$$

प्रत्येक 1hr के लिए

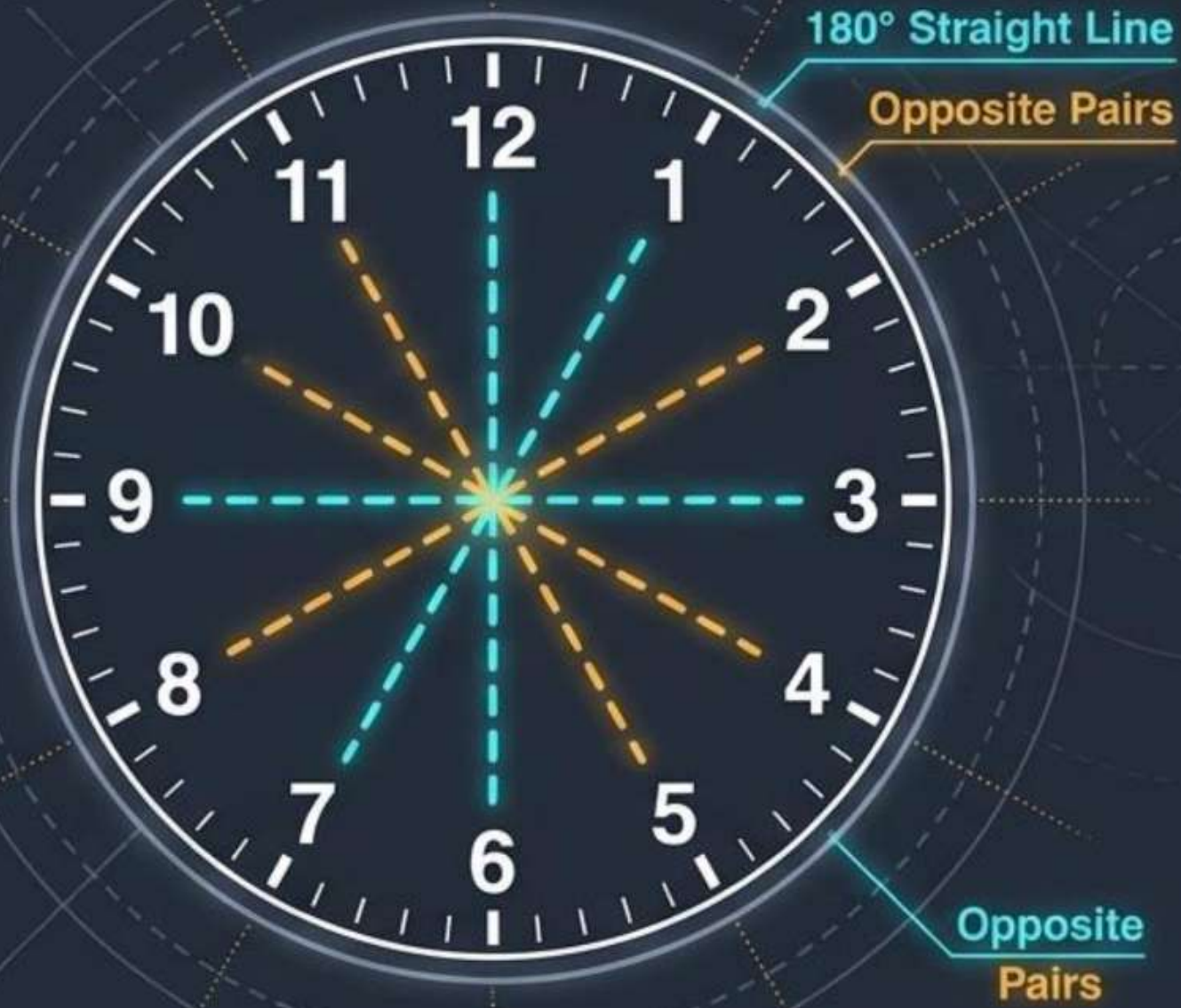
Exception $\rightarrow$ 6:00

(5-7)



Shortcut II: The Opposite (180° Straight Line)

The Reverse Hour Rule



$$\text{Base Formula} = (60/11) \times (H \pm 6)$$

If $H < 6$



Add 6

If $H > 6$



Subtract 6

Example: Between 7 and 8? ($H = 7$)

$7 > 6$, so subtract 6.

$$\rightarrow (60/11) \times (7 - 6) = 60/11$$

$\rightarrow 5 \frac{5}{11}$ minutes past 7

QUESTION:-35

(H) 3 — 4

$$m = \frac{60}{11}(H \pm 6)$$

$$\frac{60}{11}(3+6) \quad \frac{60}{11}(3-6)$$

$$\frac{60}{11}(9) = \frac{540}{11}$$

$$= 49\frac{1}{11}$$

$$3:49\frac{1}{11}$$

$$\frac{60}{11}(-3+12)$$

$$\frac{60}{11}(9) = \frac{540}{11}$$

At what time (approximately) (in PM) between 3 PM and 4 PM will the hour and minute hands of the clock be opposite to each other?

3 अपराह्न और 4 अपराह्न के बीच (लगभग) किस समय (अपराह्न में) घड़ी की घंटे और मिनट की सुइयां एक-दूसरे के विपरीत होंगी?

¹⁸⁰
(a) 3:45

(b) 3:47

✓ (c) 3:49

(d) 3:51

SSC GD 2026, 06.05.2026, Shift-3

QUESTION:-36

$$\textcircled{H} 2 - 3$$

$$\text{Min} = \frac{60}{11}(H \pm 3)$$

$$\frac{60}{11}(2+3)$$

$$\frac{60}{11}(5) = \frac{300}{11}$$

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

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

$$\frac{60}{11}(2-3)$$

$$\frac{60}{11}(-1+12)$$

$$\frac{60}{11}(\cancel{11}) = 60$$

$$2:60$$

$$\downarrow$$
$$3:00 \checkmark$$

How much time (in minutes) (approximately) after 2:00 PM will it take for the minute and hour hands of the clock to be at an angle of 90 degrees?

2:00 अपराह्न के बाद घड़ी की मिनट और घंटे वाली सुइयों को 90 डिग्री के कोण पर आने में (लगभग) कितना समय (मिनटों में) लगेगा?

☒ (a) 27
(c) 24

(b) 25
(d) 22

SSC GD 2026, 04.05.2026, Shift-2

QUESTION:- 37

At what time between 4 and 5 O' clock will the hands of a watch point in opposite directions?

4 से 5 बजे के बीच किस समय घड़ी की सूइयां विपरीत दिशाओं में होंगी?

↓
180°

$$\frac{60}{11}(H \pm 6)$$

$$\frac{60}{11}(4 \pm 6)$$



$$\frac{60}{11}(4+6) = \frac{60}{11}10 = \frac{600}{11} = 54\frac{6}{11}$$

$$4:54\frac{6}{11}$$

QUESTION:- 38

At what time between 7 and 8 O'clock will the hands of a clock be in the same straight line but not together?

7 से 8 बजे के बीच कस समय घड़ी की सूइयाँ एक ही सीधी रेखा में होंगी लेकिन एक साथ नहीं? 180°

$$\frac{H}{7} + 8$$

$$\frac{60}{11}(H \pm 6) \Rightarrow \frac{60}{11}(7 \pm 6)$$

$$\Rightarrow \frac{60}{11}(7-6) = \frac{60}{11} = 5\frac{5}{11}$$

$$7:5\frac{5}{11}$$

QUESTION:- 39

4-5

$$\frac{60}{11}(4) = \frac{240}{11}$$
$$= 21\frac{9}{11}$$

4:21 $\frac{9}{11}$

At what time between 4 and 5 O'clock will the hands of a clock be together?

4 से 5 बजे के बीच कस समय घड़ी की सुइयां एक साथ होंगी?

(a) $5\frac{5}{11}$, past 4

(b) $10\frac{10}{11}$, past 4

✓ (c) $21\frac{9}{11}$, past 4

(d) $21\frac{7}{11}$, past 4

QUESTION:- 40

$$12 \leftrightarrow 0$$

$$\frac{60}{11}(6 \pm 6) = 0$$

6:00

At what time between 6 O'clock and 7 O'clock will be hands of a clock in opposite direction?

6 बजे से 7 बजे के बीच किस समय घड़ी की सूइयां विपरीत दिशा में होंगी? 180°

(a) $5\frac{5}{11}$ min, past 6

(b) 30 min, past 6

(c) $16\frac{4}{11}$, past 6

✓ (d) Can't be formed
नहीं बनता है