Mahendra's

SSC CGL/CPO/CHSL

REASONING

CLOCK

PART-2

LIVE 07:30 PM

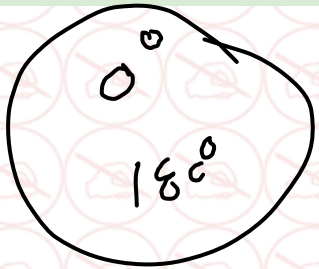
IMPORTANT POINT

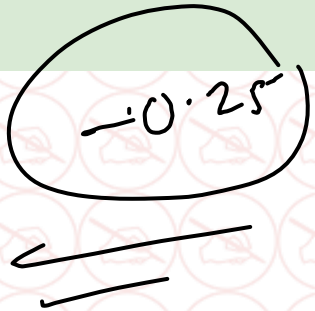
Hands	In one minute
Minute hand	6°
Hour hand	1/2°
Second hand	360°

Q.6: How many time the minute hand and hrs hand will be in straight line in 24 hrs? 24 घंटे में कितनी बार मिनट की सुई और घंटे की सुई एक सीधी रेखा में होगी?

(A) 22 times **(B) 44 times**

(C) 24 times **(D) 23 times**





Remember The Fact/याद रखने वाले तथ्य

Straight Line 44
Times
सीधी रेखा 44 बार

Note: Both hand(min. & hr.) of the clock crosses each other at every $65\frac{5}{11}$ min or 1 hr $5\frac{5}{11}$ minute.

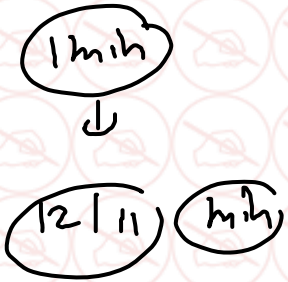
नोट: घड़ी के दोनों सुईया (मिनट और घंटे) प्रत्येक $65\frac{5}{11}$ मिनट या 1 घंटा 55/11 मिनट में एक-दूसरे को पार करती हैं

IMPORTANT POINT

LEAD BY MIN HAND ON HRS HAND IN TERMS OF DEGREE = 11/2 °

Derivation

TO TAKE LEAD OF ONE MINUTE WHAT IS ACTUAL TIME REQUIRED = 12/11 MIN



HOW MANY TIMES ANGLE PATTERN ARE FORMED

कोण पैटर्न कितने बार बनता है

ANGLE	12 HRS	24 HRS
0° 	11	22
90° 	22	44
180° 	11	22

Q.7: At what time between 03:00 to 04:00 o´clock, will the hands of a clock be together? 03:00 से 04:00 बजे के बीच किस समय घड़ी की सुइयां एक साथ होंगी?

(A) $3:16\frac{05}{11}$ **(B)** $3:16\frac{04}{11}$

(C) $3:18\frac{02}{11}$ **(D)** $3:12\frac{08}{11}$

$3:15 \times \frac{12}{11}$ (3)

$3:\frac{180}{11}$

$3:16\frac{04}{11}$

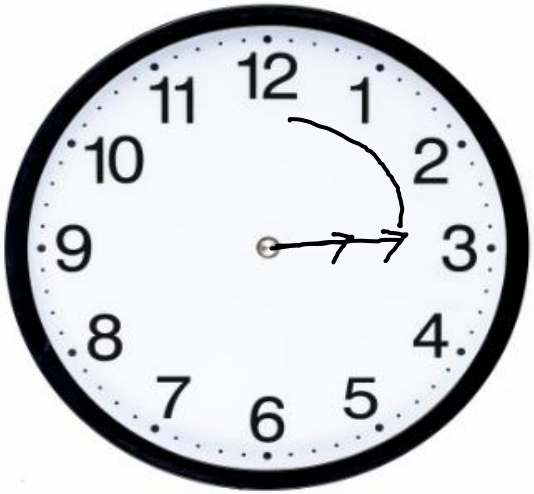
$11\overline{)180}\ (16$

-11

$\times 70$

-66

04



$1\text{min} = \frac{12}{11}$

Q.8: At what time between 11:00 to 12:00 o´clock, will the hands of a clock be together? 11:00 बजे से 12:00 बजे के बीच किस समय घड़ी की सुइयां एक साथ होंगी?

(A) 12:00 o'clock
(B) $11:54\frac{6}{11}$
(C) None of these
(D) $11:48\frac{2}{11}$

5

$11:\cancel{55} \times \frac{12}{11}$

$11:60$

12:00

11 to 12

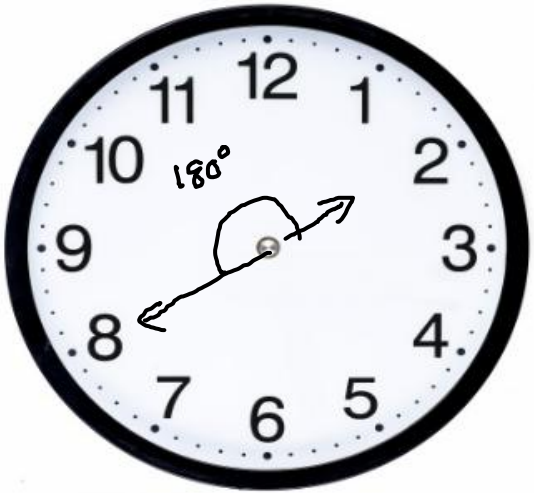
0°

can't form

Q.9: At what time between 02:00 to 03:00 o´clock, will the hands of a clock be opposite to each other? 02:00 बजे से 03:00 बजे के बीच किस समय घड़ी की सुइयां एक-दूसरे के विपरीत होंगी?

(A) $2:43\frac{09}{11}$ (B) $2:43\frac{07}{11}$

(C) $2:46\frac{04}{11}$ (D) $2:42\frac{08}{11}$



$2:40 \times \frac{12}{11}$

$2:\frac{480}{11}$

$2:43\frac{07}{11}$

0° → 11 to 12 ✗

180° → 5 to 6 ✗

direct

90° → 2 to 3 - 1 Box

8 to 9 → 1 Box

Q.10: At what time between 05:00 to 06:00 o´clock, will the hands of a clock be opposite to each other? 05:00 बजे से 06:00 बजे के बीच किस समय घड़ी की सुइयां एक-दूसरे के विपरीत होंगी?

(A) 06:00 o'clock

(B) $05:55\frac{05}{11}$

(C) none of these

(D) $05:54\frac{06}{11}$

$5 \times \frac{12}{11}$

$5:60$

$6:00$

Q.11: At what time between 5:00 to 6:00 o´clock, will the hands of a clock be at 47° at first time? 5:00 से 6:00 बजे के बीच किस समय घड़ी की सुइयां पहली बार 47° पर होंगी?

(A) $05:18\frac{07}{11}$ (B) $05:21\frac{09}{11}$

(C) $05:18\frac{08}{11}$ (D) $05:15\frac{05}{11}$

$05:18\frac{08}{11}$

5 to 6

$= \frac{2}{11}(\theta_1 \pm \theta_2)$

$= \frac{2}{11}(150 + 47)$

$\theta_1 \Rightarrow 5 \times 30^\circ = 150^\circ$

$\theta_2 = 47^\circ$

(2nd time)

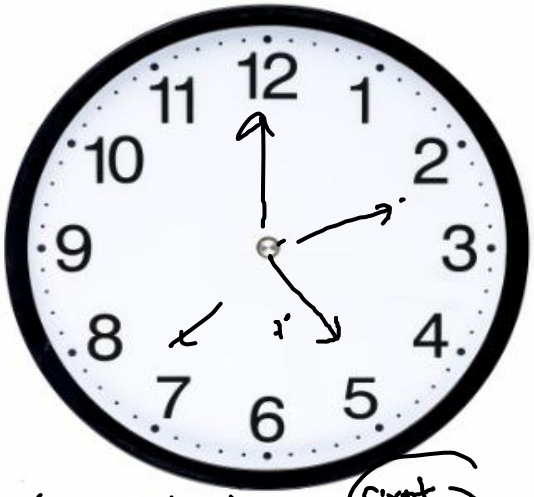
$= \frac{2}{11}(150 + 47)$

$= \frac{2}{11}$

$= \frac{2}{11}(150 - 47)$ — first time

$= \frac{2}{11}(103)$

$= \frac{206}{11} = 18\frac{08}{11}$



FIND TIME OF ANY ANGLE

30°

$$\text{Time} = \frac{2}{11}(Q_1 \pm Q_2)$$

Q_1 = time angle

Q_2 = given angle

47°

5 to 6

$5 \times 30^\circ = 150^\circ$

Q.12: At what time between 03:00 to 04:00 o´clock, will the hands of a clock be at 70°? 03:00 से 04:00 बजे के बीच किस समय घड़ी की सुइयां 70° पर होंगी?

(A) $03:14\frac{06}{11}$ **(B)** $03:38\frac{02}{11}$

(C) $03:15\frac{05}{11}$ **(D)** $03:42\frac{08}{11}$

Time = 2/11(Q1±Q2)

3 to 4

$\times 30$

$3:03\frac{07}{11}$

$\frac{2}{11}(90^\circ + 70^\circ)$

$\frac{2}{11} \times 160^\circ = \frac{320^\circ}{11}$

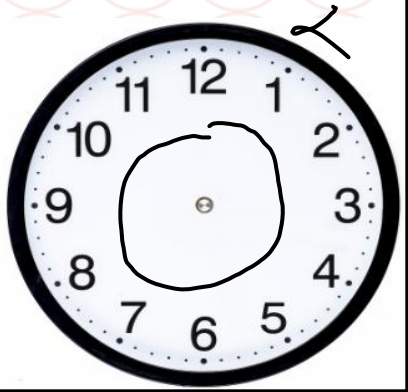
$29\frac{01}{11}$

$\Rightarrow \frac{2}{11}(90^\circ - 70^\circ)$

$= \frac{40}{11} = 3\frac{07}{11}$

12 hrs = 360°

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



$$0 \text{ min} \le \frac{2}{11}(\theta_1 \pm \theta_2) \le 60 \text{ min}$$

$+ \rightarrow 2^{nd}$ time

$- \rightarrow 1^{st}$ time

7 to 8

7 to 7:30

7:30 to 8

7:30 to 8

↓

7 to 8

Q.13: At what time between 7:30 to 8:00 o´clock, will the hands of a clock be at 135°? 7:30 से 8:00 बजे के बीच किस समय घड़ी की सुइयां 135° पर होंगी?

(A) $7:13\frac{07}{11}$

(B) $7:31\frac{07}{11}$

(C) $7:34\frac{06}{11}$

(D)

Time = 2/11(Q1±Q2)

99.99 → ऊपर

7:00 to 8:00

$7 \times 30° = 210°$

$\frac{2}{11}(210° + 135°)$

$\frac{2}{11}(345°)$

$\frac{690°}{11}$ = 62

135° one line

Can't form 135°

360° − 135° = 225°

Q.14: At what time between 04:00 to 05:00 o´clock, is the minute 7 min ahead the hrs hand 04:00 से 05:00 बजे के बीच किस समय, मिनट 7 मिनट घंटे की सुई से आगे है?

(A) $04:43\frac{07}{11}$ **(B)** $04:45\frac{05}{11}$

(C) $04:14\frac{02}{11}$ **(D)** $04:14\frac{03}{11}$

Time = 2/11(Q1±Q2)

1 min = 6°

7 min = 7×6 = 42° (+)

Q1 = 4×30°

120° + 42°

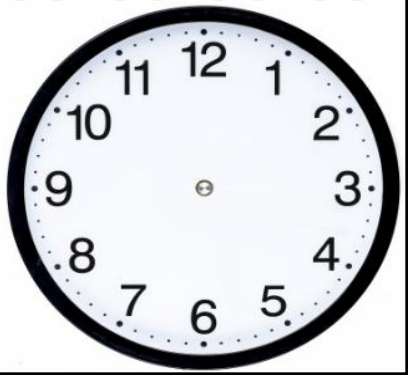
162°

$\frac{2}{11}(120° + 42°)$

$\frac{162° \times 2}{11} = \frac{324}{11}$

$29\frac{05}{11}$

$4:29\frac{05}{11}$



Q.15: At what time between 04:00 to 05:00 o´clock, is the minute 11 min behind the hrs hand? 04:00 से 05:00 बजे के बीच किस समय, मिनट घंटे की सुई से 11 मिनट पीछे है?

(A) $04:09\frac{10}{11}$ **(B)** $04:08\frac{02}{11}$

(C) $04:09\frac{09}{11}$ **(D)** $04:07\frac{03}{11}$

Time = 2/11(Q1±Q2)

4 to 5

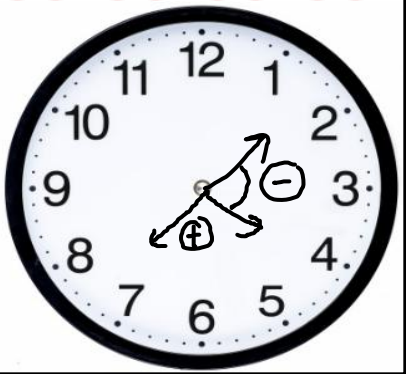
66°

$\frac{2}{11}(120° - 66°)$

$= \frac{2}{11}(54°) = \frac{108}{11}$

$4:09\frac{09}{11}$

C



Q.16: At what time between 12:00 to 01:00 o´clock, will the hands of a clock be at 110° at second time 12:00 बजे से 01:00 बजे के बीच किस समय घड़ी की सुइयां दूसरी बार 110° पर होंगी?

(A) 12:20 (1st time)

(B) 12:20 $\frac{01}{11}$

(C) 12:45 $\frac{05}{11}$

(D) can't be determine

Time = 2/11(Q1±Q2)

$\frac{2}{11}(0° + 110°)$

$\frac{2}{11} \times 110° = 20$

12 : 20

$\frac{2}{11}(360° - 110°)$

$\frac{2}{11}(250°)$

$45\frac{05}{11}$

12 : 45 $\frac{05}{11}$