



gradeup

Prep Smart. Score Better.

Q1

Clock



Agenda of the session

Q $11:60$
 $5:13$

$6:47$

Why? Q

$23:60 = 11:60$

$14:25 = 02:25$

$\frac{-3}{9} : 35$

$\frac{9}{9} : 35$

Q $23:60$
 $12:45 = 00:45$
 $11:15$

$23:60$
Q $12:00$

$11:60 = 12:00$

✓ 7:20 | ✓ 4:40 | ? 7:20 | 4:40

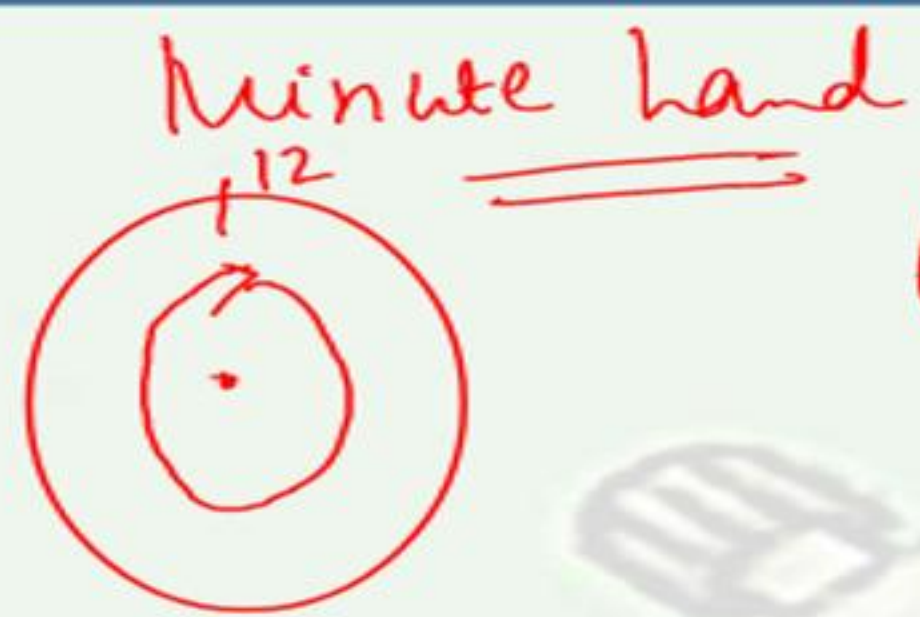
11:60
4:40
7:20

$N = \text{NO of mirror}$

If N is even then Object = Image

If N is odd then Find Image

Just one time.



$$60m = 360^\circ$$

$$1m = 6^\circ \quad (1 \text{ min space}).$$

Hour Hand



$$12hr = 360^\circ$$

$$1hr = 30^\circ$$

$$60m = 30^\circ$$

$$1m = \frac{1}{2}^\circ$$

Note- In every minute, min hand is rotated of the hour hand by $5\frac{1}{2}^\circ$ i.e. $(\frac{11}{2})^\circ$.

$$6 - \frac{1}{2} = 5\frac{1}{2} \quad (5.5^\circ)$$

12 Noon -

$4:40$
 $4 \text{ hr } 40 \text{ min}$

Hour
 $1 \text{ hr} = 30^\circ \times 4 = 120^\circ$

$1 \text{ min} = \frac{1^\circ}{2} \times 40 = 20^\circ$
140

12 o'clock

A clock is started at noon. By 40 minutes past 4, the hour hand has turned through the angle is?

एक घड़ी दोपहर में चलना शुरू करती है। 4 बजकर 40 मिनट पर, घंटे की सुई कितने डिग्री कोण घूम चुकी है?

A. 140 degree ✓

B. 145 degree

C. 175 degree

D. 155 degree

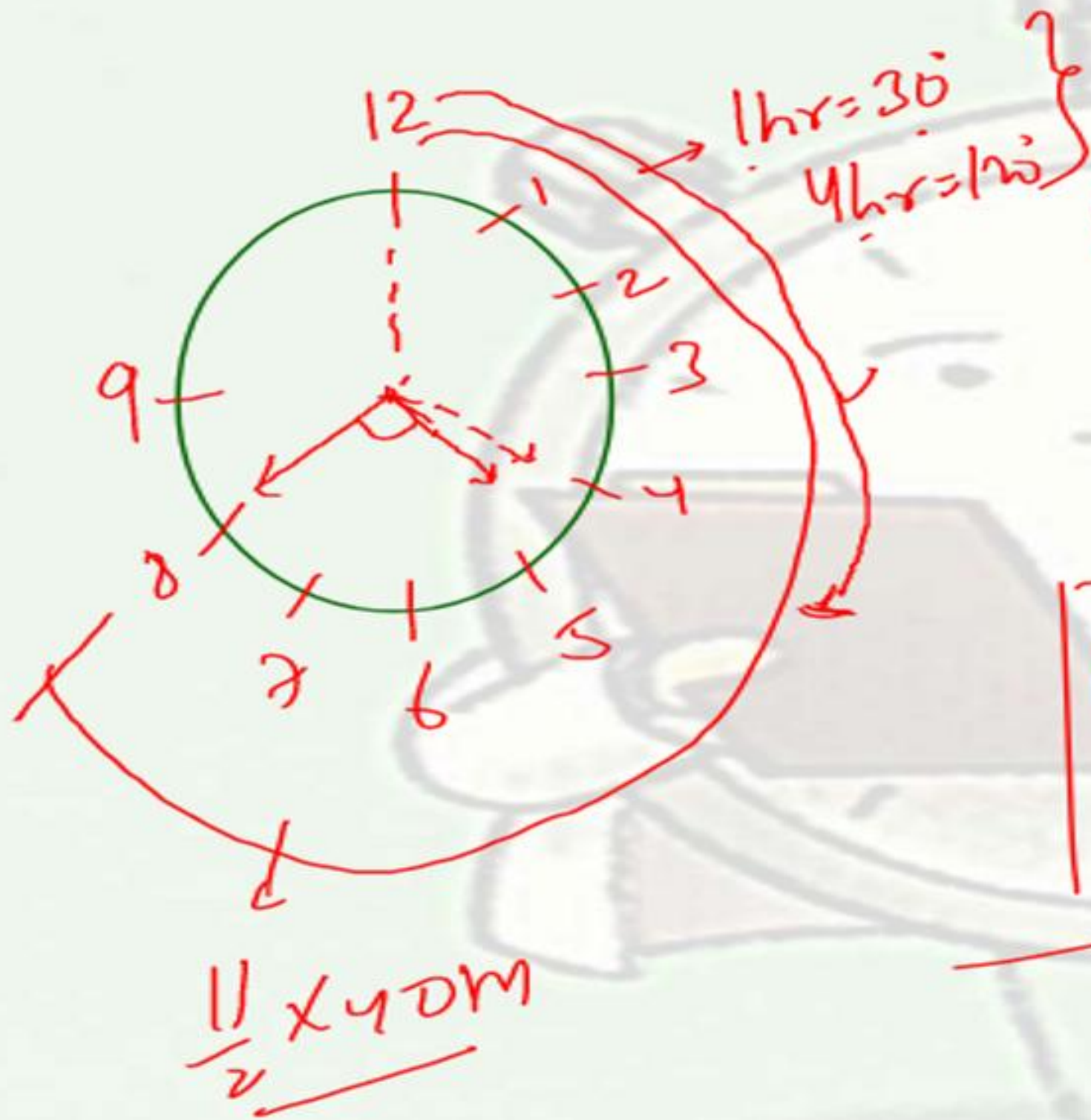
$4 \text{ hr } 40 \text{ min}$
 120
 $\frac{20}{2}$
 $120 + 20 = 140$

Angle

4:40

Relative difference

$$\boxed{1 \text{ m} = \frac{11}{2}}$$



$$\theta = \left| \frac{11}{2} \times 40 - 30 \times 4 \right| \rightarrow \text{mode}$$

$$\boxed{\theta = \left| \frac{11}{2} \text{ m} - 30 \text{ H} \right|}$$











$$\theta = \left| \frac{11}{2}m - 30H \right|$$

$$= \left| \frac{11}{2} \times 25 - 30 \times 5 \right|$$

$$= \left| \frac{275}{2} - 150 \right|$$

$$= \left| 137\frac{1}{2} - 150 \right|$$

$$= \left| -12.5 \right| = 12.5$$

What is the angle between the needles when the time is 5:25?

जब समय 5:25 हो, तो सुइयों के बीच कोण क्या होगा?

A. 12.5

B. 15

C. 20

D. 17.5

$$\theta = \frac{11}{2} \times 20 - 30 \times 3$$

$$= 110^\circ - 90^\circ$$

$$20^\circ$$

What is the angle between the needles when the time is 3:20?

जब समय 3:20 हो, तो सुइयों के बीच कोण क्या होगा?

A. 40

☒ B. 20

C. 50

D. 15

Find the angle between the minute hand and the hour hand of a clock when the time is 5.10?

जब समय 5.10 हो तो मिनट की सूई और घंटे की सूई के बीच का कोण ज्ञात करें?

A. 65 degree

B. 45 degree

C. 75 degree

D. 95 degree

Q. At what time between 4 & 5, the hands of the
 will make an angle of ① 0° ② 90° ③ 180°



$$\theta = \left| \frac{11}{2} m - 30H \right|$$

$$\pm 0^\circ = \left| \frac{11}{2} m - 30 \times 4 \right|$$

$$\frac{11}{2} m = 120$$

$$m = \frac{240}{11} = 21 \frac{9}{11} \text{ min}$$

4: $21 \frac{9}{11} \text{ min}$ → Ans

0°

$$|1-2| = 2$$

$$|x| = 2 \Rightarrow x = \pm 2$$

$$\theta = \left| \frac{11}{2}m - 30H \right|$$

$$(4-5)$$

$$\underline{q_0}$$

$$q_0 = \left| \frac{11}{2}m - 30 \times 4 \right|$$

$$180 = \left| \frac{11}{2}m - 30 \times 4 \right|$$

$$\pm 180 = \left| \frac{11}{2}m - 120 \right|$$

$$q_0 = \frac{11}{2}m - 120$$

$$-q_0 = \frac{11}{2}m - 120$$

$$\frac{11}{2}m = 30$$

$$m = \frac{60}{11} = 5 \frac{5}{11}$$

$$\frac{11}{2}m = 210$$

$$m = \frac{420}{11} = 38 \frac{2}{11}$$

$$(4:38 \frac{2}{11}) \rightarrow \text{Ahead}$$

$$(4:5 \frac{5}{11}) \rightarrow \text{Behind}$$

$$\frac{11}{2}m = 300$$

$$m = \frac{600}{11}$$

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

$$\frac{11}{2}m = -60$$

$$m = \frac{-120}{11} = -10 \frac{10}{11}$$

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

$$5:50$$



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Q. At what time between 3.30 and 4 will the hands of a clock be at right angles?

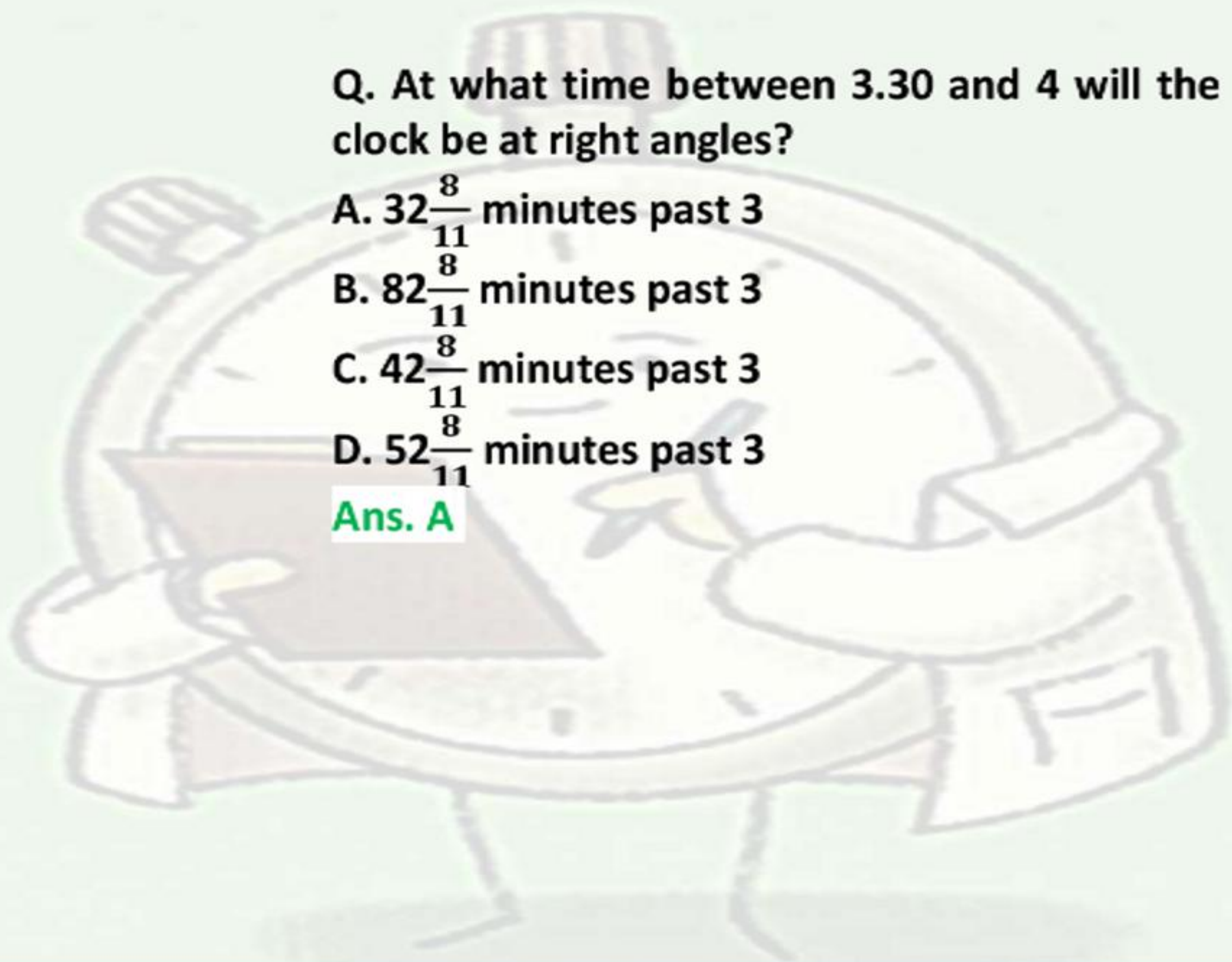
A. $32\frac{8}{11}$ minutes past 3

B. $82\frac{8}{11}$ minutes past 3

C. $42\frac{8}{11}$ minutes past 3

D. $52\frac{8}{11}$ minutes past 3

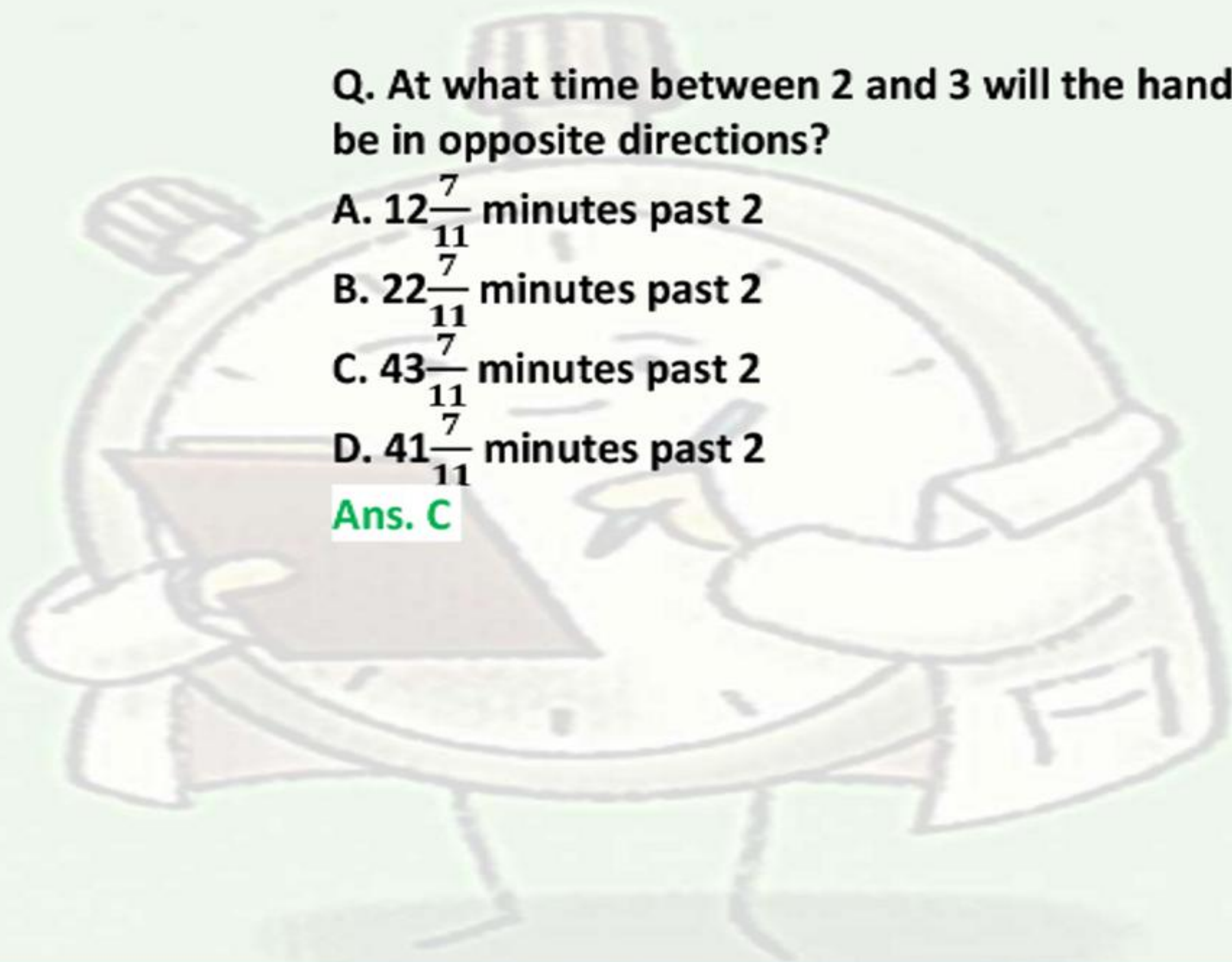
Ans. A



Q. At what time between 2 and 3 will the hands of a clock be in opposite directions?

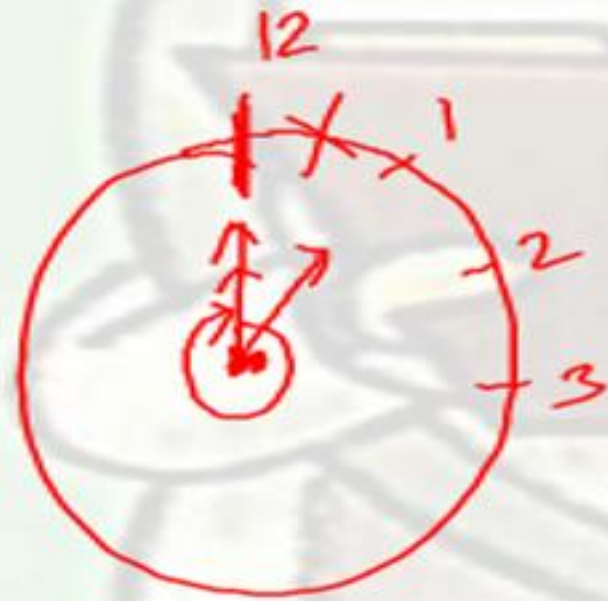
- A. $12\frac{7}{11}$ minutes past 2
- B. $22\frac{7}{11}$ minutes past 2
- C. $43\frac{7}{11}$ minutes past 2
- D. $41\frac{7}{11}$ minutes past 2

Ans. C



$$\begin{aligned}
 \text{In } 12 \text{ hr} = 0^\circ &= \frac{12}{24} \text{ times} \quad (11) \\
 90^\circ &= \frac{24}{24} \text{ times} \quad (22) \\
 180^\circ &= \frac{12}{24} \text{ times} \quad (11)
 \end{aligned}$$

$$0^\circ =$$



$$\begin{aligned}
 & \textcircled{12-1} \\
 0 &= \left| \frac{11}{2} m - 30 \times 12 \right|
 \end{aligned}$$

$$\frac{11}{2} m = 360$$

$$m = \frac{720}{11}$$

$$\boxed{65 \frac{5}{11}}$$

$$\boxed{1:55 \frac{5}{11}}$$

Overlapping
time