GENERAL APTITUDE

CLOCK

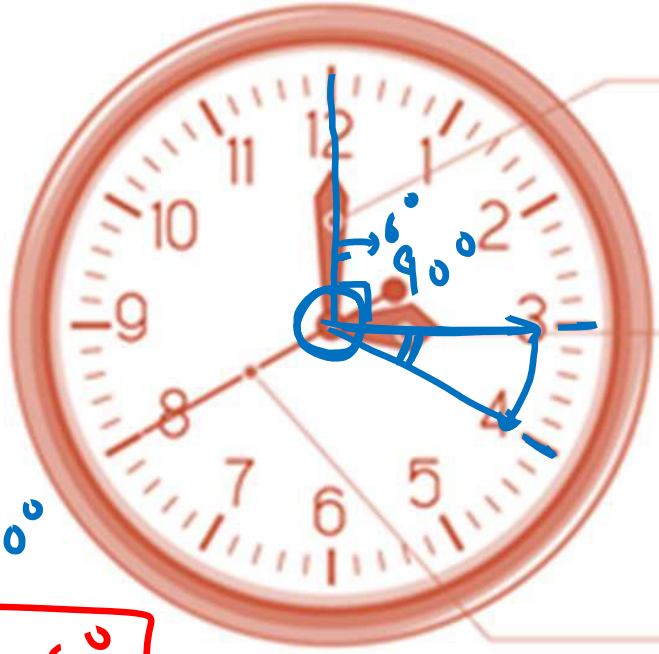
1 Hour

60 → 360°

1 → 360°/60 = 6°

6 × 5 = 30°

1 min ≡ 6°



Minute Hand

Hour Hand

Second Hand

3:00

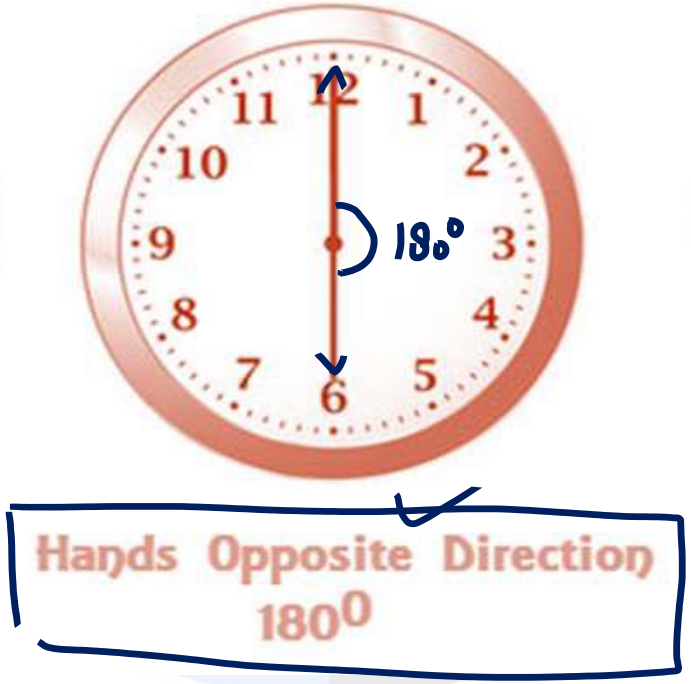
I. **Hour Hand**: The hour hand (or short hand) indicates time in hours.

II. **Minute Hand**: The minute hand or long hand indicates time in minutes.

When the hands are coincident, the angle between them is 0^0

When the hands point in opposite direction, the angle between them is 180^0

The hands are in the same straight line, when they are coincident or opposite to each other. So the angle between the two hands is 0^0 or 180^0



In a period of 12 hours, the hands make an angle of :

- 0^0 with each other (i.e. they coincide with each other) 11 times.
- 180^0 with each other (i.e. they lie on the same straight line) 11 times
- 90^0 or any other angle with each other 22 times

In every hour:

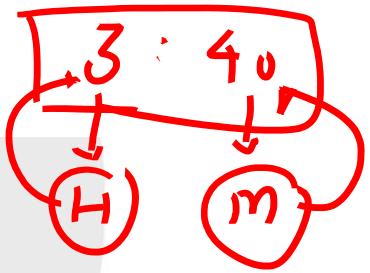
- Both the hands coincide once
- The hands are straight (point in opposite directions) once. In this position, hands are 30 minutes spaces apart.
- The hands are twice at right angles. In this position, hands are 15 minutes spaces apart.

Important formula

Angle between Hours (H) and Minutes (M)

$$= \frac{1}{2}|60\,H - 11\,M|$$

mod



$$\text{Angle} = \frac{1}{2}|(60 \times 3) - (11 \times 40)|$$

$$\frac{1}{2}|180 - 440|$$

$$\frac{1}{2}|-260|$$

$$\frac{1}{2} \times 260 = 130^\circ$$

Find the angle between hour hand and minute hand of a clock at 05:30.

(1) 10^0 (2) 15^0 (3) 20^0 (4) 30^0

H M

$$\theta = \frac{1}{2}\left|(60\times 5) - (11\times 30)\right|$$

$$= \frac{1}{2}\left|300 - 330\right|$$

$$\frac{1}{2}\times 30 = 15^0$$

Q At what time between 5 and 6 O' clock are the hands of a clock together?

(1) 25(3/11) (2) 26(3/11) (3) 27(3/11) (4) 28(3/11)

0°

Ans

H M

5 ?

$\theta = \frac{1}{2}\left|(60 \times 5) - 11m\right|$

$\theta = \left|300 - 11m\right|$

$300 - 11m = 0$

$11m = 300$

$m = \frac{300}{11} = 27\frac{3}{11}$

or

$11m - 300 = 0$

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

At what time between 5 and 6 O' clock will the hands of a clock be at right angle?

(1) 10 (10/11) minutes past 5 AM (2) 20 (10/11) minutes past 5

(3) 30 (10/11) minutes past 5 (4) 40 (10/11) minutes past 5

$$90 = \frac{1}{2}\left|(60 \times 5) - 11m\right|$$

$$180 = \left|300 - 11m\right|$$

$$180 = 300 - 11m$$

$$11m = 120$$

$$m = \frac{120}{11} = 10\ \frac{10}{11}\ \text{min}$$

$$180 = 11m - 300$$

$$11m = 480$$

$$m = \frac{480}{11} = 43\ \frac{7}{11}\ \text{min}$$

At what time after 4 O' clock, the hour and the minute hands will lie opposite to each other?

(1) 4 - 50’ 31’’ (2) 4 - 52’- 51’’ (3) 4 - 53’- 23’’ (4) 4 - 54’- 33’’

Ans

$\theta = 180^\circ$

H m

4 54

$180 = \frac{1}{2}\left|(60\times 4) - 11m\right|$

$360 = \left|240 - 11m\right|$

$360 = 240 - 11m$

$11m = -120$

$m = \frac{-120}{11}$ ✗

$360 = 11m - 240$

$11m = 600$

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

11 | 600 | 54

55

50

44

6

$\frac{6}{11}\times 60 = \frac{360}{11}$

≈ 33 sec

54 $\frac{6}{11}$

What is the angle between the minute and hour hand of a clock at 7:35?

(1) 0° (2) 17.5° (3) 19.5° (4) 20°

H M

$$\theta = \frac{1}{2}\left|(60\times 7) - (11\times 35)\right|$$

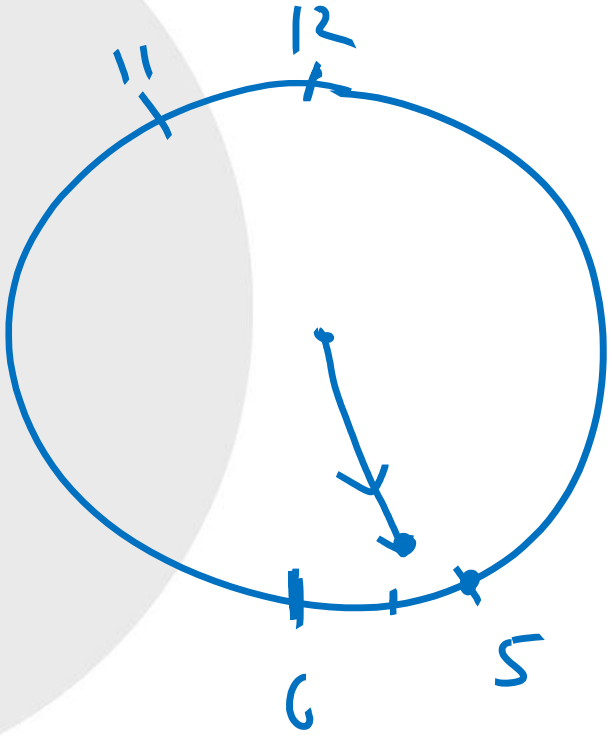
$$= \frac{1}{2}\left|420 - 385\right|$$

$$= \frac{1}{2}\left|35\right|$$

$$= 17.5^{\circ}$$

At one instant, the hour hand and the minute hand of a clock are one over the other in between the markings for 5 and 6 on the dial. At this instant, the tip of the minute hand:

(1) is closer to the marking for 6
(2) is equidistant from the markings for 5 and 6
(3) is closer to marking for 5
(4) is equidistant from the markings for 11 and 12

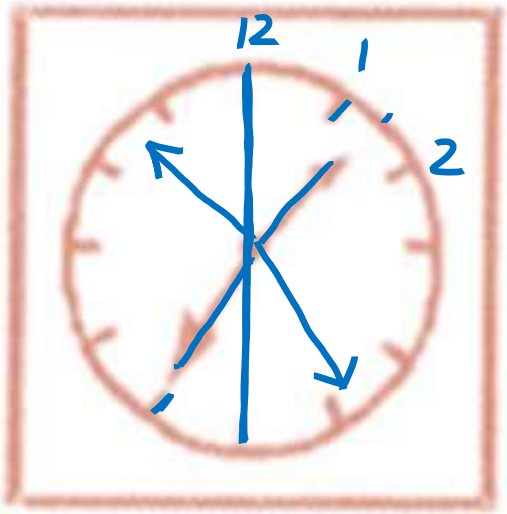


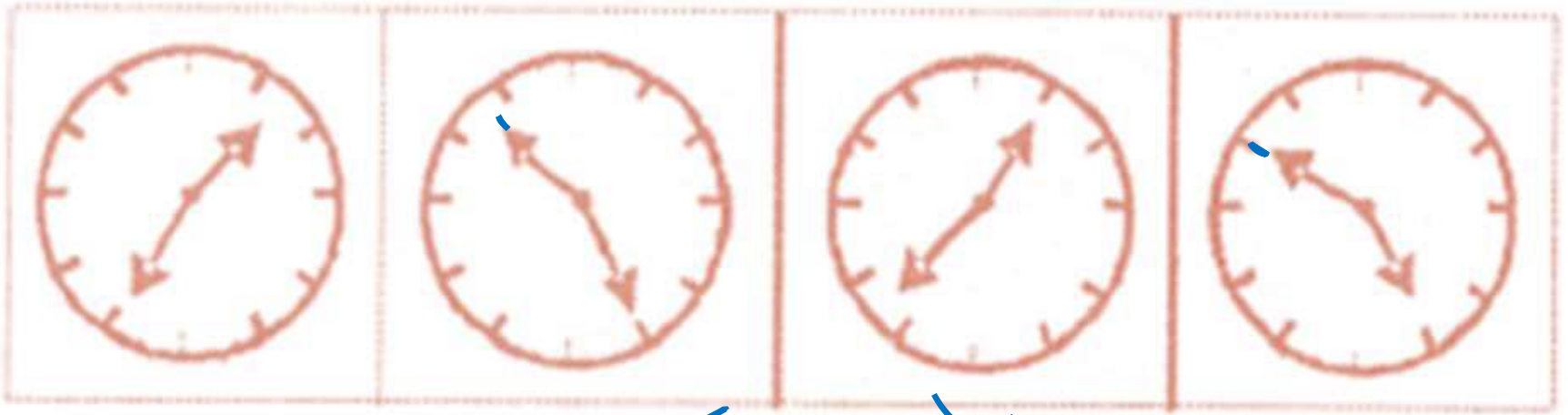
How many times starting at 1:00 pm would the minute and hour hands of a clock make an angle of 40° with each other in the next 6 hours?

(1) 6 (2) 7 (3) 11 (4) 12

MIRROR IMAGE OF CLOCK

Choose the correct mirror image of below image





(A) (B) (C) (D)

Looking into a mirror, the clock shows 9:30 as the time. The actual time is

(a) 2:30 (b) 3:30

(c) 4:30 (d) 6:30

$$\begin{array}{r} 11:60 \\ -\ 9:30 \\ \hline 2:30 \end{array}$$

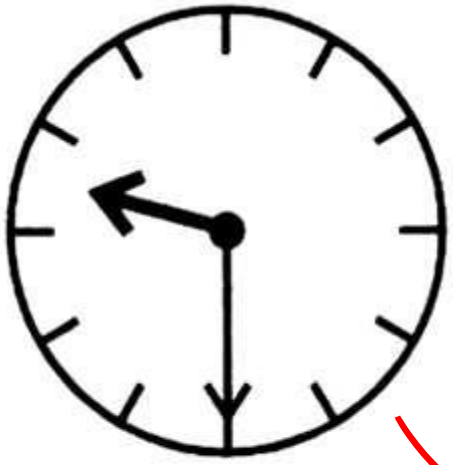


Fig. A

Time = 9 : 30

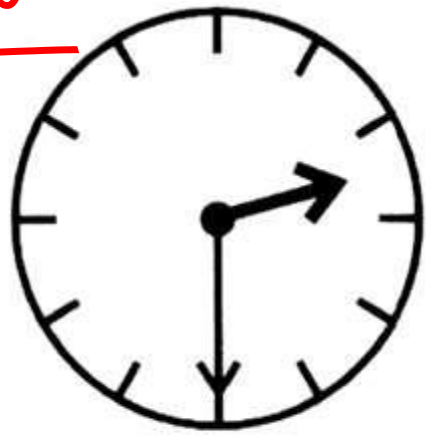


Fig. B

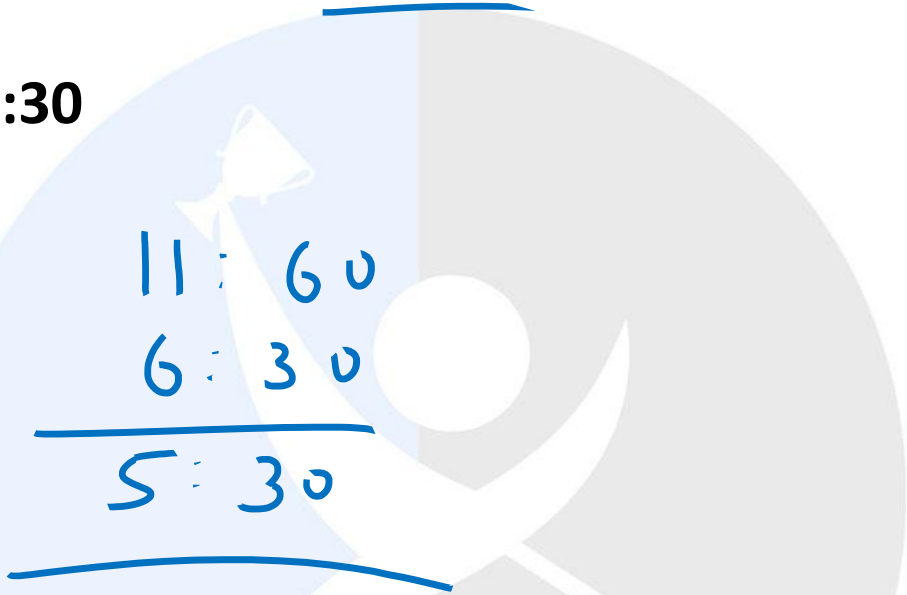
Time = 2 : 30

When seen through a mirror, a clock shows 8:30. The correct time is

(a) 2:30 (b) 3:30 (c) 5:30 (d) 8:30

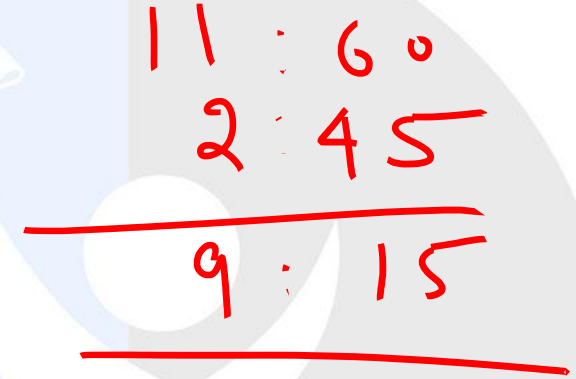
By looking in a mirror, it appears that it is 6:30 in the clock. What is the real time?

(a) 6:30 (b) 5:30 (c) 6:00 (d) 6:30



A clock seen through a mirror shows quarter to three. What is the correct time shown by the clock?

(a) 8:15 (b) 9: 12 (c) 8:17 (d) 9:15



00:00

Real → 11:15

mirror →

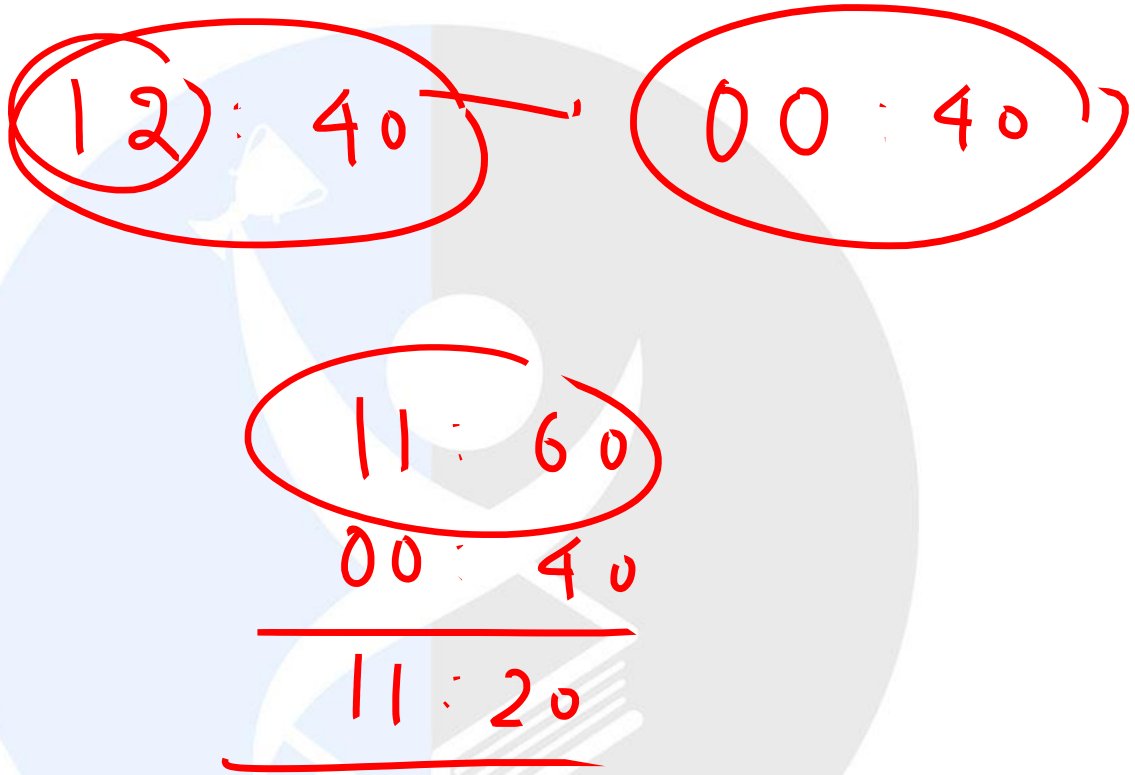
11:60

11:15

00:45

12:45

THANK YOU



12 : 40 → 00 : 40

11 : 60
00 : 40

11 : 20