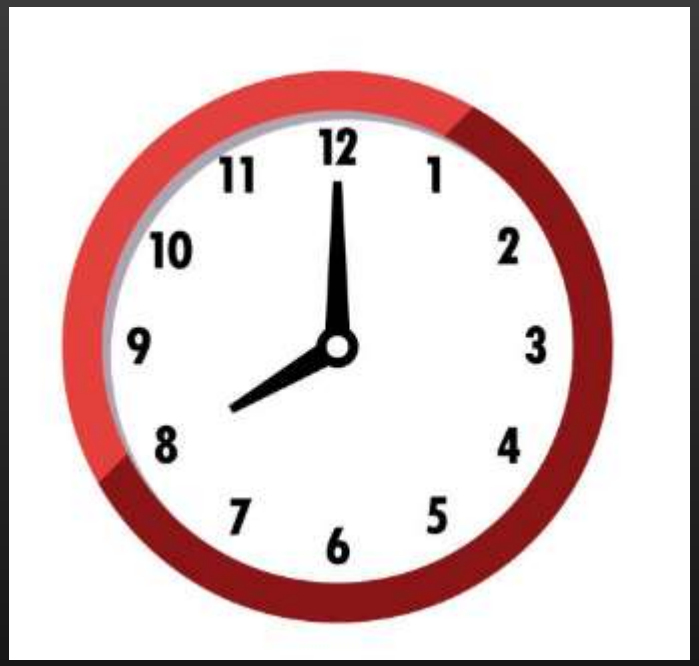
CLOCKS

Logical Reasoning



- A **clock** is a complete circle of **360 degrees**, divided into **12 equal parts**, so each hour mark is **30° apart** (360 ÷ 12 = 30°).

- The **minute hand** makes a full circle (360°) in **60 minutes**,
  → so it moves **6° per minute** (360 ÷ 60 = 6°).

- The **hour hand** makes a full circle (360°) in **720 minutes**,
  → so it moves **½° per minute** (360 ÷ 720 = 0.5°).

Some Key Facts About Clocks

- Coincidence of Hands
  - The hour and minute hands coincide once every hour.
  - In 12 hours, they coincide 11 times (not 12, because there's no coincidence between 11 and 12).
  - Therefore, in 24 hours, they coincide 22 times.
- Opposite Directions
  - The hands are in a straight line but opposite to each other when they form an angle of 180°.
  - This occurs 11 times in 12 hours, just like

Some Key Facts About Clocks

- Right Angles
  - The hands form a right angle (90°) twice every hour: once when the minute hand is ahead, and once when it's behind the hour hand.
  - Hence, there are 22 right angles formed in 12 hours, and 44 in a full day.

1)What is the angle between the hour and minute hands at 3:30?

(a) 75°
(b) 60°
(c) 45°
(d) 90°

2)What is the angle between the minute hand and hour hand at 10:10?

(a) 115°
(b) 120°
(c) 125°
(d) 130°

3)If the time on a clock is 7:20, what is the angle between the hands?

(a) 100°
(b) 110°
(c) 120°
(d) 130°

4)The hands of a clock are 180° apart at which of the following times?

(a) 6:00
(b) 9:00
(c) 12:00
(d) 3:00

5)At what time between 3 and 4 o'clock will the hands of a clock be together?

(a) 3:15
(b) 3:16 4/11
(c) 3:18
(d) 3:20

6)At what time between 2 and 3 o’clock will the hands of the clock be at a right angle?

(a) 2:15
(b) 2:25 5/11
(c) 2:20
(d) 2:27 3/11

7)If the mirror image of a clock shows 2:40, what is the actual time?

(a) 9:20
(b) 10:20
(c) 8:20
(d) 9:40

8)A clock is set right at 12 noon. It loses 2 minutes every hour. What will be the time shown in the clock when the actual time is 11 PM the same day?

(a) 11:22 PM
(b) 10:40 PM
(c) 10:22 PM
(d) 10:38 PM

MIRROR IMAGE OF CLOCK

- If the time is between 1 to 11 o'clock then to find the mirror image, time is subtracted by 11 : 60.
- If the time is between 11 to 1 then to find the mirror image, time is subtracted by 23 : 60.