6. calendar and clock mcq

Calendar Problems — Solved Examples

Example 1: Find the day of the week on 4th July 2025 if 1st January 2025 is Wednesday.

Step 1: Find total days from 1 Jan 2025 to 4 July 2025 (excluding 1 Jan).

Months with days:
Jan = 31, Feb = 28 (2025 is not leap year), Mar = 31, Apr = 30, May = 31, Jun = 30, and days in Jul = 4

Sum days = 31 + 28 + 31 + 30 + 31 + 30 + 4 = 185 days

Step 2: Calculate odd days
Odd days = 185 % 7 = 185 ÷ 7 = 26 weeks + 3 days remainder → 3 odd days

Step 3: Find the day after adding 3 odd days to Wednesday.

- Wednesday + 3 days → Thursday (1), Friday (2), Saturday (3)

Answer: 4th July 2025 is **Saturday**.

Example 2: What day will it be 250 days after Monday?

Step 1: Find odd days
250 % 7 = 250 ÷ 7 = 35 weeks + 5 days remainder → 5 odd days

Step 2: Add 5 days to Monday

Monday + 5 days → Tuesday (1), Wednesday (2), Thursday (3), Friday (4), Saturday (5)

Answer: It will be **Saturday**.

Example 3: How many Sundays are there in March 2024? (Leap year)

March has 31 days.

- 1 March 2024 is Friday (known fact or use calendar)
- Sundays in March 2024 fall on 3, 10, 17, 24, 31

Count: 5 Sundays

Clock Problems — Solved Examples

Example 1: Find the angle between hour and minute hand at 2:20.

Step 1: Calculate hour hand angle
Hour hand moves 30 degrees per hour + 0.5 degrees per minute
At 2:20 → (2 × 30) + (20 × 0.5) = 60 + 10 = 70 degrees

Step 2: Calculate minute hand angle
Minute hand moves 6 degrees per minute
20 × 6 = 120 degrees

Step 3: Find the angle difference
|120 - 70| = 50 degrees

Answer: The angle between hands is **50 degrees**.

Example 2: At what time between 5 and 6 o'clock will the hands be together?

Step 1: Calculate initial hour hand angle at 5 o'clock = 5 × 30 = 150 degrees

Let x = minutes after 5:00 when hands overlap

- Hour hand angle = 150 + 0.5x
- Minute hand angle = 6x

Set equal:

6x = 150 + 0.5x
6x - 0.5x = 150
5.5x = 150
x = 150 / 5.5 = 27.27 minutes (27 minutes 16 seconds approx)

Answer: Hands overlap at **5:27:16**.

Example 3: Find the time between 7 and 8 o'clock when the hands are at right angle.

Step 1: Hour hand angle at 7 = 7 × 30 = 210 degrees
Let x = minutes after 7:00

Hour hand angle = 210 + 0.5x
Minute hand angle = 6x

Angle difference = 90 degrees

Case 1: (210 + 0.5x) - 6x = 90
210 - 5.5x = 90
-5.5x = -120
x = 21.82 minutes

Case 2: 6x - (210 + 0.5x) = 90
6x - 210 - 0.5x = 90
5.5x = 300
x = 54.54 minutes

Answer: At **7:21:49** and **7:54:32**, the hands are at right angles.

Unsolved Problems — Practice with Answer Key

No.	Problem	Answer
1	Find the day of the week on 15th August 2024 if 1 Jan 2024 is Monday.	Thursday
2	What day will it be 100 days after Friday?	Monday
3	How many Saturdays are there in November 2024?	5
4	Find the angle between hour and minute hand at 9:45.	22.5 degrees
5	At what time between 2 and 3 o’clock will the hands be together?	2:10:55
6	What time between 6 and 7 o’clock will the hands be at 120 degrees apart?	6:32:44 and 6:58:11
7	Find the smaller angle between hour and minute hands at 12:20.	130 degrees
8	How many days from 1 Jan to 31 Dec 2025?	365 days
9	Find the day on 31st December 2025 if 1st Jan 2025 is Wednesday.	Thursday
10	What day will it be 45 days after Sunday?	Monday