Clocks

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Clock questions are commonly included in quantitative aptitude exams. These questions typically require the application of basic arithmetic and algebraic concepts to solve problems related to time, such as calculating the time difference between two events, determining the time at which two hands of a clock will coincide, and calculating the speed or rate at which a clock is running.

Clock problems are often used in exams to test a candidate's ability to reason with numbers, perform calculations accurately and quickly, and apply mathematical concepts to real-world situations. They can be a useful tool for assessing a candidate's overall Quantitative Aptitude and problem-solving skills.

Clocks Formulas and Concepts

Here are some formulas, concepts, and shortcuts related to clocks that are commonly used in quantitative aptitude exams:

Minute Spaces:

A typical analog clock has a circular face with twelve-hour markings, and 60-minute markings placed around the circumference of the circle, called minute spaces.

- When it comes to telling time, clocks use two primary hands: the hour hand and the minute hand.

- Meanwhile, the larger, faster-moving hand is called the minute hand or long hand.
- The markings on the face of a clock are 60 spaces, one each for a minute. Every hour, the minute hand completes one round of 60 spaces and the hour hand completes one full round every 12 hours.

Important Points and Shortcuts for Clock

- *In 60 minutes, the minute hand gains 55 spaces (also known as minute spaces) over the hour hand. For example, if the initial time is 12:00, then after 1 hour, the minute hand would cover 60 spaces whereas the hour hand would cover only 5 spaces. Thus, the minute hand covers 55 spaces extra than the hour hand.*
- *The minute hand covers 360 degrees in 60 minutes. => In 1*

- *The hour hand covers 360 degrees in 12 hours. => In 1 hour, the hour hand covers 360 / 12 = 30 degrees => In 1 minute, the hour hand covers 30 / 60 = 0.50 degrees*
- *The angle between the minute hand and the hour hand increases by 5.50 degrees every minute. For example, after 2 minutes, angle made by the minute hand = 2 x 6 = 12 degrees and angle made by the hour hand = 2 x 0.50 = 1 degree => Angle between the hour hand and the minute hand after 2 minutes = 12 – 1 = 11 degrees = 2 x 5.50 degrees*
- *In every hour, the minute hand and the hour hand coincide once.*
- *If the minute hand and the hour hand are in the same line, then the angle between them is either 0 degree or 180 degrees.*
- *The angle between the minute hand and the hour hand is 180 degrees if they are 30 spaces apart, 90 degrees if they are 15 spaces apart, and 0 degrees if they are 0 spaces apart.*
- *If the clock shows time ahead of the actual time, it is said to be*

is actually 12:00 PM, then the clock is said to be running 15 minutes fast.

- *If the clock shows time behind the actual time, it is said to be running slow. For example, if the clock is showing 2:15 PM but it is actually 2:30 PM, then the clock is said to be running 15 minutes slow.*

Angle Equivalence of a Minute

The mentioned tables below contain the angular values of the first ten minutes:

Minute(s)	Angular values
1	6°
2	12°
3	18°
4	24°
5	30°
6	36°
7	42°
8	48°
9	54°

Clocks - Examples

Example 1:

Problem Statement: At what time between 5 PM and 6 PM would the two hands of the clock be together?

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Solution:

At 5 PM, the hour hand would be at 25 spaces and the minute hand would be at 0 spaces. The minute hand would need to cover these 25 spaces to meet the hour hand. Since the minute hand gains 55 minutes over the hour hand in 60 minutes, we get:

25 minutes would be gained in (60/55) × 25 = 1500/55 = 300/11 minutes

Thus, the two hands of the clock meet at 300/11 minutes past 5 PM, i.e., around 5:27 PM.

Example 2:

Problem Statement: In a clock, the time is 6.55. What is the angle between the hour hand and the minute hand of the clock?

Solution:

(360/12 × 13/2) degrees = 195 degrees.

The minute hand covers 360 degrees in 60 minutes, so the angle traced by the minute hand in 30 minutes is:

(360/60 × 30) degrees = 180 degrees.

Hence, the required angle between the hour hand and the minute hand of the clock is:

|195 – 180| = 15 degrees.

Related Reads: Practice Quiz on Clocks

Conclusion

Clock aptitude questions evaluate an individual's ability to calculate angles between clock hands, determine the time of overlap, and analyze clocks' gaining or losing time. Mastery of these concepts is essential for effective time management and problem-solving, making them a common feature in competitive exams.

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