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Clock - Aptitude Questions and Answers

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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 and time difference between two events.

Prerequisites: **Clock - Fundamentals**

Aptitude Questions on Clocks

Q1: Find the angle between the hands of a clock at 3:20 PM.

Solution:

Minute Hand: Completes a full circle (360 degrees) in 60 minutes.

*So, every minute, the minute hand moves by **6 degrees.***

Hour Hand: Completes a full circle (360 degrees) in 12 hours.
*So, every hour, the hour hand moves by **30 degrees.***
*But the hour hand also moves as the minutes pass. In 60 minutes, it moves 30 degrees, so every minute, the hour hand moves by **0.5 degrees**.*

Minute Hand at 20 Minutes:
Each minute, the minute hand moves 6 degrees.
*At 20 minutes: 20×6=**120 degrees** from the top (12 o'clock position).*
Hour Hand at 3:00:
*At exactly 3:00, the hour hand is at 3×30=**90 degrees** from the top.*
But it's not exactly 3:00; it's 3:20, so the hour hand has moved further.
But it's not exactly 3:00; it's 3:20, so the hour hand has moved

In 20 minutes: 20×0.5=10 degrees.
So, at 3:20, the hour hand is at 90+10=100 degrees from the top.

Finding the Angle Between the Hands
*The difference between them is 120−100=**20 degrees.***

Q2: At what time between 3 PM and 4 PM would the two hands of the clock be together?

Solution:

At 3:00 PM:
*Hour hand: At 3 × 30° = **90°** (from 12 o'clock).*
*Minute hand: At **0°**.*
Time After 3:00 PM When Hands Overlap:

Let t = minutes after 3:00 PM when the hands overlap.
Minute hand position: 6t degrees.
Hour hand position: 90+0.5t degrees.

At overlap:

6t=90+0.5t
6t−0.5t=90
5.5t=90

*t=5.5/90=180/11≈**16.3636 minutes***

The hour and minute hands overlap at: *approximately 3:16:22 PM*

Q3: How many times in a day the two hands of a clock coincide?

Solution:

Between 11 to 1, the hands of the clock coincide only once, i.e., at 12. At 12:00 AM and 12:00 PM, the hour hand and the minute hand do not coincide with each other So, every 12 hours, they coincide 11 times. Therefore, the two hands of the clock coincide 22 times in a day.

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Solution:

> *The angle between the minute hand and the hour hand at 5 o'clock is 150 degrees.*
> *The angle between the hands becomes 34 degrees when the angle changes by 116 degrees and 184 degrees, i.e. (150-34) and (150+34).*
> *The angle changes by 5.5 degrees in 1 min.*
> *The angle changes by 116 degrees in 1/5.5 x 116=21 1/11 min.*
> *The angle changes by 184 degrees in 1/5.5 x 184=33 5/11 min.*
> *Therefore the angle between the two hands is 34 degrees when the time is 5 hr 21 1/11 min, and again at 5 hr 33 5/11 min.*

Practice Questions on Clock

1. At what time between 3 and 4 o'clock will the hands of a clock be at right angles?

2. At what time between 5 and 6 will the hands of a clock be in opposite directions?

3. How many times do the hands of a clock overlap in a day?

4. At what time between 4 and 5 o'clock will the minute hand be 10 minute spaces ahead of the hour hand?

6. A clock shows 6:45. What is the angle between the hour and minute hands?

7. A clock is set correctly at 5:00 AM. The clock gains 3 minutes in 1 hour. What will be the true time when the clock indicates 10:00 PM of the same day?

8. The minute hand of a clock overtakes the hour hand at intervals of 65 minutes of correct time. How much does the clock gain or lose in a day?

9. A clock strikes once at 1 o'clock, twice at 2 o'clock, thrice at 3 o'clock and so on. How many times will it strike in 24 hours?

10. A watch which gains uniformly is 2 minutes slow at noon on Monday and is 4 minutes fast at 6 PM on the following Monday. When was it correct?

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