

Clock problems analyze the rate of angular rotation of two or more moving bodies relative to each other.

To solve clock problems easily, treat them as traditional uniform motion or relative speed problems. The clock face is a circular track spanning a full **360°** or **60 minute space**.

SHORT CUT: The $\frac{12}{11}$ Rule

When working under strict exam time limits, you can skip setting up relative motion rate systems entirely. Any standard clock problem variation can be solved using the $\frac{12}{11}$

Reference Rule:

$$t = \frac{12}{11} (\text{Target Minute Spaces Gain})$$

How to Apply the Shortcut Instantly:

1. Imagine the hour hand is completely frozen at its starting location (for this problem, sitting perfectly at the 12 marker).
2. Look at how many minute spaces the minute hand would have to travel across the face on its own to create the requested condition.
 - To form a 120° angle, it needs to travel down to the 4 o'clock marker, which is exactly **20 spaces** away.
3. Multiply that number directly by $\frac{12}{11}$:

$$t = \frac{12}{11} (20) = \frac{240}{11} = 21.82 \text{ minutes}$$