Worked Examples – Angle Between the Hands on the Clock – II

Find the angle between the minute hand and the hour hand on the clock at the following times:
1. 4:10
2. 5:18

Solutions:

At 4 o’clock, the minute hand started straight up. At 4:10 it has moved 60° (2×30°).
At 4 o’clock, the hour hand started at the 4, 120° from straight up.

Use \( h = \) number of degrees the hour hand has moved past the 4
\[
\frac{10\text{min}}{60\text{min}} = \frac{h}{30°} \quad \Rightarrow \quad h = 5°
\]

At 4:10 the hour hand is at 120° + 5° = 125°
125° – 60° = 65° Answer: 65°

At 5 o’clock, the minute hand started straight up.
Use \( m = \) number of degrees the hour hand has moved since 5 o’clock
\[
\frac{18\text{min}}{60\text{min}} = \frac{m}{360°} \quad \Rightarrow \quad m = 108°
\]

At 5 o’clock, the hour hand started at the 5, which is 150° from straight up.
Use \( h = \) number of degrees the hour hand moves in 18 min
\[
\frac{18\text{min}}{60\text{min}} = \frac{h}{30°} \quad \Rightarrow \quad h = 9° \quad \text{Hour hand is at} \quad 150° + 9° = 159°
\]

159° - 108° = 51° Answer: 51°

Objective: Given a time of day, find the angle between the hands on the clock.

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