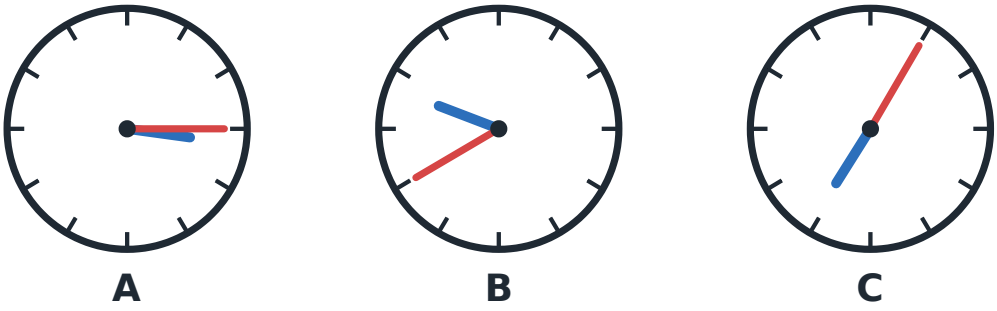
Extension & Challenge — Measurement & Time

Part A — Reading Clocks & 24-Hour Time

The same moment can be written two ways. **12-hour time** uses am and pm; **24-hour time** counts straight through to 23:59. After midday, add 12 to the hour: 1 pm becomes 13:00.

> **Worked example.** A clock shows $4{:}20$ in the afternoon. In 24-hour time that is $16{:}20$ (because $4 + 12 = 16$).

Read each clock (write 12- and 24-hour)



Clocks A, B and C. Read the hour and minute hands carefully.

1 Write the time shown on each clock, then write it in 24-hour time as if it were in the **afternoon/evening**.

A: _____ → _____

B: _____ → _____

C: _____ → _____

2 How much time passes from the time on clock A to the time on clock C (same afternoon)?

3 A film starts at the time on clock B and lasts 1 hour 45 minutes. What time does it finish?

Answer: _____

4 Complete these conversions.

(a) 90 minutes = _____ hours _____ minutes

(b) $2½$ hours = _____ minutes

5 Rewrite each 24-hour time as a 12-hour time with am or pm: $14:30$, $06:05$, $23:15$.

6 **Reasoning.** Give one real situation where 24-hour time avoids confusion that 12-hour time could cause.

Part B — Elapsed Time & Timetables

Elapsed time is how long passes between a start and an end. A good trick is to count up to the next whole hour first, then add the remaining hours and minutes.

> **Worked example.** From $10:40$ to $13:15$: count 20 min to 11:00, then 2 hours to 13:00, then 15 min more. Total: 2 h 35 min.

1 A bus leaves at $8:50\ am$ and arrives at $9:35\ am$. How long is the journey?

Answer: _____

2 Use the timetable to answer the questions.

Stop	Departs
Central	09:15
Riverside	09:48
Hilltop	10:25

(a) How long from Central to Riverside? _____

(b) How long for the whole trip, Central to Hilltop? _____

3 A train leaves at $13{:}20$ and the trip takes 2 hours 40 minutes. What time does it arrive (24-hour time)?

Answer: _____

4 Add these two durations: 1 h 50 min $+$ 2 h 25 min.

Answer: _____

5 **Work backwards.** You must arrive by $5{:}00\ pm$. The journey takes 1 hour 35 minutes. What is the latest time you can leave?

6 **Plan it.** You wake at $7{:}00\ am$. Breakfast takes 20 min, getting ready 25 min, and the walk to school 15 min. What time do you arrive? How much spare time before the $8{:}30\ am$ bell?