

# The 24-hour clock: an introduction

## CURRICULUM ALIGNMENT

MEA.TIM.3b

identify the relationship between different units and representations of time.

MEA.TIM.3a

compare, approximate and measure time using appropriate units of measurement.

**INTERACTIVES** (Analog Clock Builder · challenge, display, explore)

## WHAT THIS LESSON TEACHES

In the 24-hour clock the hours keep counting from 0 up to 23, so the time does not start again at 1 after midday. Morning times stay the same; for afternoon and evening times you add 12 to the hour.

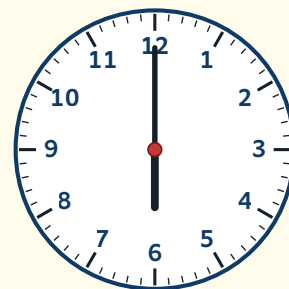
→ 3 p.m. becomes 15:00 because  $3 + 12 = 15$ .

→ Half past four in the afternoon is 16:30.

## MODEL THIS ON THE BOARD

### WRITING 6 P.M. IN 24-HOUR TIME

- 1 The clock shows 6 o'clock. It is 6 p.m., so it is after midday.
- 2 Add 12 to the hour:  $6 + 12 = 18$ .
- 3 Keep the minutes as **00**. Write **18:00**.



## DISCUSSION STARTER

### REFLECT

When might 24-hour time be clearer than saying o'clock or half past?

## LESSON ARC

Open with the bus-screen hook — 17:30 on the IWB — and let pupils argue whether it's breakfast or teatime. Walk the analog-clock interactive through three times: 09:00 stays, 15:00 adds 12, 14:30 keeps its half-past. Pupils predict each readout before it confirms, then rule a two-column table in their copy for four times. The Class Challenge reverses it — take 12 off to read 18:30 as half six.

## TEACHING MOVES

1. **Getting Started.** Put 17:30 up and take two or three hands without confirming. If a pupil says '17 take 12 is 5, so it's 5 in the afternoon', re-voice that loudly — it's the rule the whole lesson builds toward.
2. **Watch and Notice.** Walk the three clocks one at a time on the interactive. On the 15:00 clock, point to the hands at 3 AND the readout at 15:00 and say the rule aloud: 'afternoon and evening add 12, morning stays the same.' On the 14:30 clock, stress only the hour changes — the half-past stays half-past.
3. **Try It Together.** Name each time in words first, have a pupil set the hands, then ask the class to predict the 24-hour readout BEFORE the display confirms. Ask 'morning or afternoon?' first every time — that one question heads off pupils adding 12 to 'ten in the morning'.

4. **Write the Pairs in Your Copy.** While pupils rule their two-column table, walk the room scanning the right-hand column only. The tell is 8 a.m. written as 20:00 — catch it at the desk before it becomes a habit.
5. **Class Challenge.** Brisk turns at the board. Before each pupil sets the hands, ask 'morning time that stays, or afternoon time where we take 12 off?' Use the on-screen ✓ as part of your narration — 'yes, that's it' — and keep moving rather than re-explaining each one.
6. **What Did We Notice?.** Listen for the a.m./p.m. confusion answer. Re-voice a strong one: '7:30 could be breakfast or teatime, but 19:30 can only mean one thing.' Tie it straight back to the bus screen from the hook.

### COMMON MISCONCEPTIONS

⚠ Pupils add 12 to morning times too — they write 8 a.m. as 20:00 because the 'add 12' rule has stuck but the 'only afternoon and evening' condition hasn't.

Stop and ask 'morning or afternoon?' before any conversion. On the clock interactive, show 8 a.m. and 8 p.m. side by side: morning keeps its number, only the evening one adds 12.

⚠ Pupils read 13:00 as 'three o'clock' — they see the 3 in 13 instead of taking 12 off the whole hour. Slow it right down at the board: '13 take 12 is 1, so one o'clock.' Set the hands to 1, not 3, and have the class read the analog face back to confirm.

⚠ When converting half-past or quarter-past times, pupils change the minutes as well — turning 4:30 p.m. into 16:42 or similar.

Re-voice the 14:30 example from Watch and Notice: only the hour moves, the minutes never change. Circle just the hour digits on the IWB so the minutes visibly stay put.

### DIFFERENTIATION

#### EMERGING

- Keep these pupils on o'clock times only (no half-pasts) in their copy table, so they convert the hour without juggling minutes.
- Pre-rule the two-column table with the four left-hand times already written, so pupils only fill the 24-hour partner.

#### DEVELOPING

- After the copy table, ask: a bus leaves at 14:00 and arrives at 16:00 — how long is the trip? Bring the 24-hour times into a duration question.
- Give a missing-hour puzzle: 'a 24-hour time take 12 gives 9 p.m. — what was it?' (21:00).

#### PROFICIENT

- While the class finishes the Class Challenge, pose: 'how would you write five minutes past midnight, and why does 00:05 not become 12:05?' Let them reason it out and explain the midnight roll-over in their own words.
- Ask them to write three real 24-hour times they'd actually see — a TV time, a flight, a shop closing — and explain to a younger pupil how to read each one.

✓ **Cross-curricular:** Tie to Geography — hand out a real Irish Rail or Bus Éireann timetable and have pupils read off departure times, all printed in 24-hour form.

### ANSWER KEY

a) 9:00 a.m.: 09:00

b) 1:00 p.m.: 13:00

c) 5:30 p.m.: 17:30

d) 11:15 a.m.: 11:15

e) 8:45 p.m.: 20:45

f) 12:00 noon: 12:00

Q1: 08:00

Q2: 13:00

Q3: 7 a.m.

Q4: 16:00

**Spot:** After midday the hours keep counting on, so add 12 to the hour. 7:30 in the evening is **\*\*19:30\*\***, not 07:30 (which is morning).

## EXTENSION SHEET · STRETCH ANSWERS

**S1:** 15:55

**S2:** 15:55

**S3:** 1:35 pm ↔ 13:35

**S4:** 12:45 pm ↔ 12:45

**S5:** 1:35 pm ↔ 13:35

**Investigation:** Plan a day out — open-ended; scan pupils' working for valid solution paths rather than a single answer.