

Lesson 61 MEASURES

Elapsed time across hours and days

CURRICULUM ALIGNMENT

MEA.TIM.4

solve and pose practical tasks and problems involving the interpretation and calculation of time.

INTERACTIVES

Analog Clock Builder · challenge, display

Number Line Jumps · explore

WHAT THIS LESSON TEACHES

To find elapsed time jump forward in stages: first to the next whole hour then whole hours then last minutes and add the hops.

→ From 19:40 to 22:15: 20 min to 20:00 then 2 h to 22:00 then 15 min. Total 2 h 35 min.

→ From 22:30 to 06:15 next day: 1 h 30 min to midnight then 6 h 15 min = 7 h 45 min.

MODEL THIS ON THE BOARD

COUNT HOPS ON THE CLOCK

- 1 Start at 14:20 and add 2 h 45 min.
- 2 Jump 40 min to 15:00.
- 3 Add 2 whole hours to 17:00.
- 4 Add 5 min to 17:05.
- 5 Total time is 2 h 45 min.

LESSON ARC

Open with 19:40 to 22:15 on the IWB and surface the trap — subtracting the digits forces the minutes backwards. In Watch and Notice, walk the three-hop counting-up route on the analog-clock-builder: to the next whole hour, then whole hours, then last minutes, including a midnight-crossing example and a days-on-paper one. Pupils sketch bridging lines in copybooks for three journeys. The Class Challenge has pupils set arrival clocks by counting durations up, with the last item crossing midnight.

TEACHING MOVES

1. **Getting Started.** Display 19:40 and 22:15 side by side and take three hands-up answers after five seconds of quiet think-time. Listen for the pupil who says '15 take 40 is...' and stalls — that borrowing trap is the whole point, so surface it but don't resolve it yet.
2. **Watch and Notice.** Point at each labelled hop on the clock-builder as you say it, one example at a time. On the 22:30 to 06:15 example, tap the highlighted 00:00 hop and say 'we always stop at midnight first, then carry on into the new day'. Work the 09:00 Mon to 14:00 Wed example in board text as $24 + 24 + 5 = 53$ hours, and leave that working up — fast finishers get sent back to it.
3. **Try It Together.** Before revealing the hops for the 14:20 train, get three pupils to predict each hop in turn (40 min, then 2 hours, then 5 min), then check each against the screen. Watch for the pupil doing $17 - 14 = 3$ and stalling on the minutes — revoice counting-up as the route that never makes you borrow.
4. **Sketch the Bridging Line in Your Copy.** Walk the room glancing for the hop order — next whole hour first. The pupil to catch is the one who has skipped straight to whole hours and missed the opening jump. This is practice, not marking.

5. **Class Challenge.** Keep it brisk — class predicts the arrival aloud, then a pupil sets the hands and the elapsed readout confirms. On the last item, pause and have the class count to 00:00 first (1 h 20 min), then on into the new day (6 h 25 min), revoicing 'stop at midnight, then carry on'.
6. **What Did We Notice?.** Steer pupils to a settling test: run both methods on 19:40 to 22:15 and see which gives 2 h 35 min cleanly. Revoice a strong answer as 'counting up never makes you borrow, so it never trips you up'.

COMMON MISCONCEPTIONS

⚠ Pupils subtract the digits — '22 take 19 is 3, 15 take 40 is...' — and either invent a negative or flip to 40 take 15.

Don't correct the arithmetic; show why the method fails. Run the counting-up hops on the clock-builder alongside the failed subtraction so the class sees one gives a clean 2 h 35 min and the other forces a borrow that goes backwards.

⚠ When crossing midnight, pupils read the duration off as the finish time — 06:15 becomes '6 hours 15' instead of counting from the start.

Stop and rebuild on the clock: count up to 00:00 first (the highlighted waypoint hop), then on into the new day, and add the two pieces. Say 'the landing time is not the journey length'.

⚠ Pupils try to put the two-day span (09:00 Mon to 14:00 Wed) onto the clock face and get lost in the laps.

Point back to the board working still up from Watch and Notice: each whole day is 24 hours on paper, $24 + 24 + 5 = 53$. Stress days go on paper, not the clock face.

DIFFERENTIATION

EMERGING

- Stay with same-day journeys that don't cross midnight while the class moves on; keep the first hop pre-marked on the clock so pupils only count the whole hours and last minutes.
- In the copybook, give the start time already on the bridging line so pupils add hops rather than drawing the whole structure.

DEVELOPING

- After the copybook journeys, give a reverse problem — a film runs 2 h 35 min and ends at 22:15, what time did it start? Count back in hops.
- Swap one Class Challenge item for a start-plus-duration that crosses into the new day, e.g. 23:50 plus 0 h 40 min, so the midnight waypoint matters.

PROFICIENT

- Pose the days-on-paper span as a teacher-narrated stretch: 16:30 Friday to 11:00 Monday — how many whole days, how many extra hours? Ask them to justify why the clock face won't help here.
- Pull fast finishers ahead into the Student Activity Book page while the class finishes the Class Challenge.

✓ **Cross-curricular:** Tie to Geography — pupils work out the duration of a real Irish Rail journey (e.g. Dublin Heuston to Galway) from the timetable departure and arrival times.

ANSWER KEY

Scaffold: visual check on the page

Q1: 2 h 30 min

Q2: 18:15

Q3: 53 h

a) Always — The method works for any start and end times within the range.

b) Never — Hops work across midnight by going to midnight then adding more.

c) Always — It is always 5 hours so the statement is true always but fits the skill.

d) Sometimes — It is needed exactly when direct subtraction would require borrowing across hours.

EXTENSION SHEET · STRETCH ANSWERS

S1: 23:43

S2: 5 h 52 min

S3: 5 h 3 min

S4: 7 h 15 min

S5: 3 h 22 min