THE QUESTION | TIME AND CLOCKS

A man started from home at 14:30 hours and drove to a village, arriving there when the village clock indicated 15:15 hours. After staying for 25 minutes, he drove back by a different route of length 1.25 times the first route at a rate twice as fast, reaching home at 16:00 hours. As compared to the clock at home, the village clock is:

Time and Distance | Clock Offsets | Hidden Trap: trusting the village clock for the trip time

(a) 10 minutes slow
The man reached the village at 15:10 home time, so the village clock is ahead, not behind.

(b) 5 minutes slow
Right size, wrong direction. The village clock showed more than home time.

(c) 10 minutes fast
Would need an outbound trip of 35 minutes, but the calculation gives 40.

(d) 5 minutes fast ✓
Arrival was 15:10 by home clock. Village clock said 15:15, so it runs 5 minutes fast.

CRACK THE HIDDEN RULE

Use only the home clock for durations, because it is the only clock that is both started and stopped at home. The village clock is useful only at the instant of arrival.

Split the 90 minutes at home into outbound, stay and return. The return takes 1.25 times the distance at twice the speed, so 0.625 times the outbound time.

$$t + 25 + 0.625t = 90 \rightarrow t = 40 \text{ min}$$

TOTAL AT HOME	DRIVING TIME	OUTBOUND
14:30 to 16:00 = 90 min	90 - 25 = 65 min	t = 65 / 1.625 = 40 min

WORKED IN 3 CLEAN STEPS

1 Remove the stay from the home-clock time
14:30 to 16:00 is 90 minutes. Subtract 25 for the stay, leaving 65 minutes of driving.

2 Split the driving time
Outbound = t. Return = (1.25 / 2) t = 0.625t. t + 0.625t = 65, so t = 40 minutes.

3 Compare the clocks at arrival
Home clock at arrival = 14:30 + 40 min = 15:10. Village clock showed 15:15, so it is 5 minutes fast.

ANSWER: (d) 5 minutes fast

THE 3-SECOND SHORTCUT

Use one clock for all durations (the home clock). Compare the clocks only at the moment of arrival. Return time = (distance ratio) / (speed ratio) x outbound time.

one trusted clock for durations | 1.25 / 2 = 0.625 return ratio | compare clocks at the arrival instant

→ Fast or slow is decided by village reading minus home reading at the same moment.
→ Remove the 25 minute stay from the 90 minutes before splitting the driving time.

WHY ASPIRANTS LOSE MARKS HERE

1. **Using 15:15 - 14:30 = 45 minutes as the outbound time.** That mixes two different clocks.
2. **Using the same speed for the return trip.** The return is twice as fast.
3. **Reversing fast and slow.** Village clock showing a later time at the same moment means it is fast.

ATTEMPT	FLAG	SKIP
~70 sec	if you doubt the stay time	under time pressure
Three clean steps, but keep the clocks apart.	Treat the stay as 25 real minutes and check totals.	A mid-length question, skip if time is short.

THE ONE-LINE TAKEAWAY

Use one trusted clock for durations and compare the two clocks only at the arrival moment.

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