

E1.15 Time

Name: _____ Class: _____ Date: _____ **Total: 12 marks**

KEY WORDS 24-hour clock 二十四小时制 • duration 时长 • timetable 时刻表
• average speed 平均速度 • decimal hours 小时的小数形式

Objective

Build the skills to answer Extended exam questions on **time** 时间 — converting between the **12-hour** 十二小时制 and **24-hour clock** 二十四小时制, calculating **durations** 时长 that cross the hour, reading a **timetable** 时刻表, and using time in a **speed** 速度 calculation.

You must be able to:

- write a time in 24-hour clock form and back again
- find the length of a journey that crosses one or more hours
- convert a decimal number of hours into hours and minutes, and use it in speed = distance ÷ time

1 Worked examples

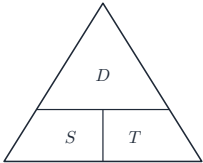
■ Time counts in sixties, not in tens

The same instant, written two ways

12-hour	9.00 a.m.	12.00 noon	1.00 p.m.	4.30 p.m.	7.15 p.m.	11.50 p.m.
	same	same	+12	+12	+12	+12
24-hour	09 00	12 00	13 00	16 30	19 15	23 50

A 24-hour time always has four digits and never a.m. or p.m. Midnight is 00 00 and midday is 12 00 – only afternoon and evening times gain the 12.

Only afternoon and evening times gain the 12



cover the one
you want

$$S = \frac{D}{T} \quad (\text{cover } S: D \text{ over } T)$$

$$D = S \times T \quad (\text{cover } D: S \text{ next to } T)$$

$$T = \frac{D}{S} \quad (\text{cover } T: D \text{ over } S)$$

cyclist: 45 km in 3 h 45 min = 3.75 h $\Rightarrow S = \frac{45}{3.75} = 12 \text{ km/h}$

Time in a speed calculation must be in hours, as a decimal

- **24-hour clock:** always four digits, never a.m. or p.m. 7.45 p.m. is 19 45.
- **Duration:** count on in stages. From 09 52 to 10 00 is 8 minutes, then to 12 00 is 2 hours, then 18 minutes more — 2 h 26 min.
- **Decimal hours:** 2.25 hours is 2 h 15 min, because $0.25 \times 60 = 15$. It is **not** 2 h 25 min.
- **Speed:** 1 h 48 min = 1.8 h, so 135 km in that time is $135 \div 1.8 = 75 \text{ km/h}$.

Answer shapes (marked by **method marks** — M1 for a correct method, A1 for the correct answer): converting minutes into a decimal of an hour, or counting the duration in stages, is the method mark.

2 Practice

2.1 Write 7.45 p.m. as a 24-hour clock time. [1]

2.2 A film starts at 18 40 and lasts 2 hours 35 minutes. Find the time it finishes. [2]

2.3 A train leaves at 09 52 and arrives at 12 18. Find the journey time. [2]

2.4 Convert 2.25 hours into hours and minutes. [1]

3 Exam-style questions

3.1 Part of a bus timetable is shown.

	Depart A	Arrive B	Depart B	Arrive C
Bus	08 47	09 23	09 31	10 09

(a) Find the time the bus takes to travel from A to B. [1]

(b) Find the total time from leaving A to arriving at C. [2]

3.2 A journey of 135 km takes 1 hour 48 minutes. Calculate the average speed in km/h.[3]

Solutions

Marking: **M1** a correct method, **A1** the correct answer.

Each answer shows the steps, then the **result**.

2.1

- p.m. after midday, so add 12 to the hour

$$\mathbf{19\ 45}$$

2.2

- $18\ 40 + 2\ \text{h} = 20\ 40$, then $+35\ \text{min}$ crosses the hour

$$= \mathbf{21\ 15}$$

2.3

- 09 52 to 12 00 is 2 h 8 min, then 18 minutes more

$$= \mathbf{2\ h\ 26\ min}$$

2.4

- $0.25 \times 60 = 15\ \text{minutes}$

$$= \mathbf{2\ h\ 15\ min}$$

3.1

(a)

- 08 47 to 09 23 is 13 minutes to the hour and 23 after

$$= \mathbf{36\ minutes}$$

(b)

- 08 47 to 10 09

$$= \mathbf{1\ h\ 22\ min}$$

- the 8-minute wait at B is part of the total, so do not subtract it

3.2

- convert the time: $48\ \text{min} = 48 \div 60 = 0.8\ \text{h}$, so the time is 1.8 h
- speed = distance $\div$ time = $135 \div 1.8$

$$= \mathbf{75\ km/h}$$