

C1.15 Time

Name: _____ Class: _____ Date: _____

Total: 20 marks

KEY WORDS time zone 时区 • rate 比率

Objective

Use time to solve Core IGCSE Mathematics problems.

You must be able to:

- Calculate durations across midnight
- Use 12-hour and 24-hour clock notation correctly
- Adjust time-zone differences and state the arrival day

1 Key knowledge and worked examples

■ Key knowledge: Time

One hour is 60 minutes; one minute is 60 seconds; one week is 7 days. Use 365 days for a year here. In 24-hour time, add 12 to a p.m. hour except noon. Find elapsed time in stages across midnight. For time zones, first convert departure time to the destination clock, then add travel time and check the date.

■ Worked example: Time

22:45 Monday	00:00 Tuesday	02:20 Tuesday
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A journey starts Monday at 22:45 and lasts 3 h 35 min.

- To midnight is 1 h 15 min.
- Remaining time: $t = 3 \text{ h } 35 \text{ min} - 1 \text{ h } 15 \text{ min} = 2 \text{ h } 20 \text{ min}$.
- Arrival is Tuesday at 02:20.
- If the destination clock is 2 hours ahead, its arrival time is Tuesday 04:20.

■ Method check

Write a timeline before adding durations. Apply the time-zone difference after finding the arrival on one consistent clock.

2 Practice

2.1 Convert 4:35 p.m. and 00:20 to the other clock system. [2]

2.2 Convert 2.5 hours to minutes and 185 seconds to minutes and seconds. [2]

2.3 A train leaves at 09:48 and arrives at 12:17. Find its journey time. [2]

2.4 Find the number of days in three weeks and in two years, using 365 days per year. [2]

3 Exam-style questions

3.1 Apply the time methods below. Show working and include units where appropriate.

(a) A flight leaves Friday at 21:50 and takes 5 h 25 min. Find arrival time on the departure clock. [2]

(b) The destination is 3 hours behind. Find the local arrival time and day. [2]

(c) A connecting bus leaves at 01:10 local time. Find the waiting time. [2]

3.2 A train leaves on Saturday at 23:35. It travels for 2 h 50 min, waits for 20 min, then travels for 1 h 15 min.

(a) Find the total journey duration and arrival time and day. [3]

(b) The arrival station clock is one hour ahead of the departure clock. Find local arrival and the wait until a bus at 06:30 local time. [3]

Solutions

Award method and answer marks as indicated; accept equivalent correct methods.

2.1

- Add 12 to the p.m. hour: **16:35**. 00:20 is **12:20 a.m.**.

2.2

- $m = 2.5 \times 60 = \mathbf{150}$ min; $185 = 3(60) + 5$, so **3 min 5 s**.

2.3

- 09:48 to 11:48 is 2 h, then 29 min: **2 h 29 min**.

2.4

- $d_w = 3 \times 7 = \mathbf{21}$; $d_y = 2 \times 365 = \mathbf{730}$.

3.1

(a)

- Add 5 h to reach Saturday 02:50, then 25 min: **Saturday 03:15**.

(b)

- Subtract 3 h: **Saturday 00:15**.

(c)

- 00:15 to 01:10 is **55 minutes**.

3.2

(a)

- Total duration $t = 2 \text{ h } 50 + 20 \text{ min} + 1 \text{ h } 15 = \mathbf{4 \text{ h } 25}$.
- Arrival clock time **04:00**, on **Sunday**.

(b)

- Add one hour for the destination: **Sunday 05:00**.
- Wait $w = 06:30 - 05:00 = \mathbf{1 \text{ h } 30 \text{ min}}$.