

Level 3 Certificate MATHEMATICAL STUDIES

Paper 1 Predicted Examination — June 2026

Time allowed: 1 hour 30 minutes

Materials

- a clean copy of the Preliminary Material and Formulae Sheet (enclosed)
- a scientific calculator or a graphics calculator
- a ruler

Instructions

- Use black ink or black ball-point pen. Pencil should only be used for drawing.
- Answer all questions.
- You must answer each question in the space provided. Do not write outside the box.
- Show all necessary working; otherwise marks for method may be lost.
- Final answers should be given to an appropriate degree of accuracy.

Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is **60**.

Answer all questions in the spaces provided.

1**[4 marks]**

A teacher wants to survey students about how they travel to school. The school has the following numbers of students in each year group.

Year 7	Year 8	Year 9	Year 10	Year 11
240	210	180	195	175

1 (a) A student selects 20 students from each year group.

What is the name of this sampling method?

[1]

1 (b) Give one advantage and one disadvantage of this sampling method.

[2]

Advantage

Disadvantage

1 (c) The question asked is: *“How do you travel to school?”*

Which two words describe the data collected? Tick two boxes.

[1]

☐ qualitative ☐ quantitative ☐ primary ☐ secondary

2**[7 marks]**

A traveller exchanges pounds (£) into euros (€).

2 (a) On 1 June, the exchange rate is $\text{£}1 = \text{€}1.17$.

They exchange £850 into euros. Work out how many euros they receive.

[2]

2 (b) When exchanging back, the bank charges a commission of 2.8% of the euros exchanged.

On 20 June, the exchange rate is $\text{£}1 = \text{€}1.25$

They return with €920

Work out how many pounds they receive after commission.

[5]

3**[6 marks]**

The times (in minutes) taken by 15 students to complete a short test are:

12, 14, 15, 15, 16, 17, 18, 18, 19, 20, 21, 22, 22, 24, 28

3 (a) Work out the median.

[1]

3 (b) Work out the lower quartile and the upper quartile.

[3]

Lower quartile

Upper quartile

3 (c) Work out the interquartile range (IQR).

[1]

3 (d) Give one comment about the spread of the data using your IQR.

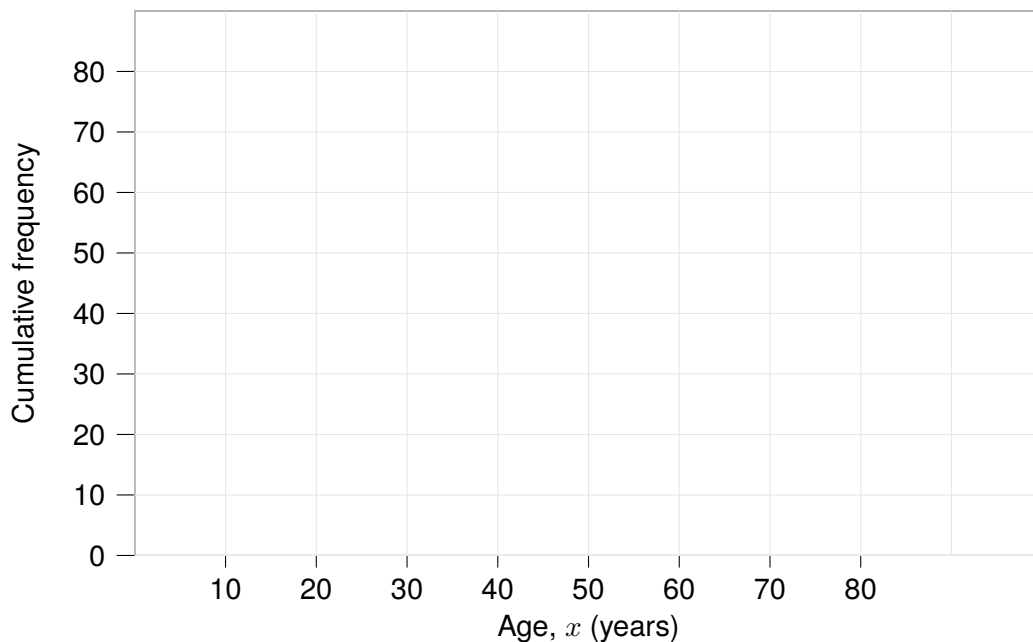
[1]

4**[8 marks]**

The table shows the ages of 80 visitors at an event.

Age, x (years)	Frequency
$10 < x \leq 20$	6
$20 < x \leq 30$	14
$30 < x \leq 40$	22
$40 < x \leq 55$	26
$55 < x \leq 70$	12

4 (a) On the grid, draw a cumulative frequency graph for this information.

[4]

4 (b) Use your graph to estimate the median age.

[1]

_____ years

4 (c) Use your graph to estimate the interquartile range.

[2]

_____ years

4 (d) Estimate the percentage of visitors who are more than 50 years old.

[1]

_____ %

5**[4 marks]**

Estimate, and write in the form of a ratio, the number of hours an average person spends using a smartphone in one year to the number of hours they are awake in one year.

State any assumptions you make. You must show your working.

[4]

6**[10 marks]**

Use **Income Tax and National Insurance 2025–2026** from the Preliminary Material.

A worker has an annual gross salary of £58 000 and has the standard personal allowance of £12 570. They pay income tax and National Insurance but have no other deductions.

6 (a) Work out their taxable income. **[2]**

6 (b) Work out the total income tax they pay in a year. **[4]**

6 (c) Work out the total National Insurance they pay in a year. **[3]**

6 (d) Work out their annual net salary. **[1]**

7**[10 marks]**

Use **Student Loans** from the Preliminary Material.

A graduate is on **Plan 2**. Their annual gross salary is £39 858. Their outstanding loan balance at the start of the year is £27 500.

Assume:

- the repayment threshold is £28 470 per year
- repayments are 9% of income above the threshold
- the RPI rate used is 4.3%
- the interest rate while graduated is $\text{RPI} + 1.5\%$ for this salary

7 (a) Work out the annual repayment. **[3]**

7 (b) Work out the interest rate (as a percentage) applied for this year. **[2]**

_____ %

7 (c) Work out the interest added to the loan balance during the year. **[3]**

7 (d) At the end of the year, has the loan balance increased or decreased?
Show your conclusion using your answers. **[2]**

8**[7 marks]**

Use **The Party Factory** from the Preliminary Material.

A machine produces **small simple items** at a rate between 950 and 1000 items per hour. On one day, the factory needs to produce 18 600 small items.

8 (a) Work out the **minimum** time (in hours and minutes) this could take. **[3]**

8 (b) Work out the **maximum** time (in hours and minutes) this could take. **[3]**

8 (c) The factory runs the machine for 19 hours to complete the order. Comment on whether this is consistent with the stated production rate. **[1]**

9

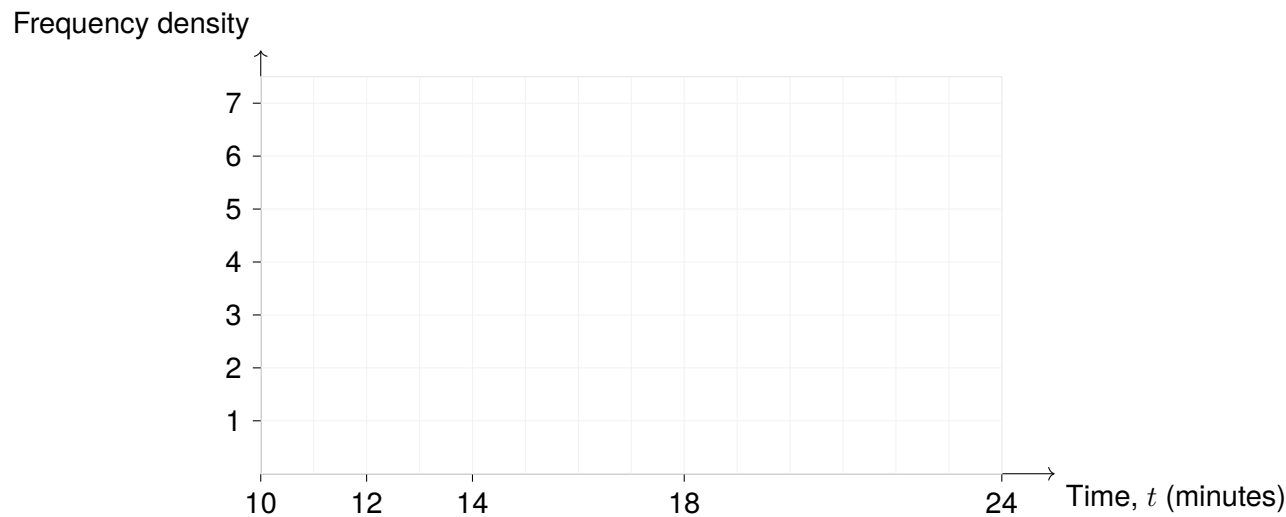
[4 marks]

The times (in minutes) taken by 40 runners to complete a course are grouped below.

Time, t (minutes)	Frequency
$10 \leq t < 12$	6
$12 \leq t < 14$	14
$14 \leq t < 18$	16
$18 \leq t < 24$	4

9 (a) Draw a histogram to represent this data.

[3]



9 (b) The qualification time is 15 minutes or less.
Estimate how many runners qualified. You must show your working.

[1]

END OF QUESTIONS