

AQA Level 3 Certificate MATHEMATICAL STUDIES**Paper 1 – Predicted Paper based on June 2026
Preliminary Material**

Time allowed: 1 hour 30 minutes

Instructions

- Use black ink or black ball-point pen.
- Answer all questions.
- Show all your working.
- Do not use a calculator where instructions state “You must not use a calculator”.

Information

- The maximum mark for this paper is 60.
- You may use the Preliminary Material for reference.

Answer all questions.

Question 1**[3 marks]**

The standard personal allowance for 2025–2026 is £12 570.

A person has an annual gross income of £29 800.

- (a) Find this person’s taxable income. [1]
- (b) Income tax is 20% on taxable income up to £37 700.
Calculate the income tax this person pays. [2]

Question 2**[5 marks]**

Amir has an annual gross income of £104 000.

- (a) Show that his personal allowance is reduced to £10 570. [2]
- (b) Find Amir’s taxable income. [1]
- (c) Amir pays 20% income tax on the first £37 700 of his taxable income and 40% on the rest (up to £125 140).
Calculate his total income tax. [2]

Question 3**[4 marks]**

Bella has an annual gross income of £132 000.

- (a) Explain why Bella's personal allowance is zero. [2]
- (b) Bella pays 45% income tax on any taxable income over £125 140.
Calculate the extra tax she pays at 45% compared with someone whose taxable income is exactly £125 140. [2]

Question 4**[4 marks]**

The table shows National Insurance (NI) rates for 2025–2026.

Percentage NI	Minimum yearly income	Maximum yearly income
0%		up to £12 570
8%	£12 570	£50 270
2%	above £50 270	

Lena has a yearly income of £39 000.

- (a) Find the amount of Lena's income on which she pays 8% NI. [1]
- (b) Calculate the NI Lena pays in a year. [3]

Question 5**[5 marks]**

Noah has a yearly income of £62 000.

- (a) Show that Noah pays 8% NI on £37 700 of his income. [2]
- (b) Calculate the total NI Noah pays in a year. [3]

Question 6**[4 marks]**

The Party Factory produces small simple items at a rate between 950 and 1000 items per hour. One machine is set to produce 975 items per hour.

- (a) Assuming the rate stays constant, calculate how many items this machine produces in an 8-hour shift. [2]
- (b) The factory needs 8000 of these items.
Explain whether one 8-hour shift is enough to meet this target. [2]

Question 7**[6 marks]**

Larger items made of more than one basic shape take longer to produce. The factory can produce between 350 and 520 of these items per hour.

A special order requires 3000 large items.

- (a) At a rate of 520 items per hour, find the minimum time needed to produce 3000 items.
[2]
- (b) At a rate of 350 items per hour, find the maximum time needed to produce 3000 items.
[2]
- (c) The factory has 7 hours available on one day.
Comment on whether it is realistic to complete the order in one day. [2]

Question 8**[5 marks]**

A student takes out a Plan 2 Student Loan in September 2024.

While studying, the interest rate is $\text{RPI} + 3\%$. In March 2024, RPI was 4.3%.

- (a) Write down the interest rate applied to the loan while the student is studying. [1]
- (b) The student borrows £18 000 in total while studying.
Assuming no repayments are made while studying, calculate the amount of interest added in one year. [2]
- (c) Explain one reason why the total amount owed after graduation may be higher than £18 000 plus one year's interest. [2]

Question 9**[7 marks]**

After graduating, the interest rate on a Plan 2 Student Loan is RPI plus between 0% and 3% depending on earnings.

For 2024–2025, RPI is 4.3%.

- If you earn £28 470 or less, the interest rate is just RPI.
- If you earn over £28 470, the added percentage increases up to 3% when income reaches £51 245.

A graduate earns £39 858 in a year.

- (a) Explain why the added percentage for this graduate is approximately 1.5%. [3]
- (b) Hence find the total interest rate applied to the loan that year. [1]
- (c) The graduate owes £32 000 at the start of the year.
Calculate the amount of interest added during the year. [3]

Question 10**[6 marks]**

For Plan 2 loans, you repay 9% of your income above the threshold of £28 470 per year.

A graduate earns £36 000 in a year.

- (a) Find how much of their income is above the threshold. [1]
- (b) Calculate their annual repayment. [2]
- (c) The graduate owes £40 000 at the start of the year. The interest rate that year is 7.3%.
Calculate the amount they owe at the end of the year after interest and repayment. [3]

Question 11**[5 marks]**

The table shows RPI rates from 2020 to 2025.

Date for RPI	Period applied	RPI rate (%)
March 2020	Sept 2020–Aug 2021	2.1
March 2021	Sept 2021–Aug 2022	2.9
March 2022	Sept 2022–Aug 2023	13.8
March 2023	Sept 2023–Aug 2024	11.6
March 2024	Sept 2024–Aug 2025	4.3

- (a) Between which two consecutive periods did the RPI rate increase the most? [2]
- (b) A student studied from September 2021 to August 2024. For how many academic years was their loan interest rate above 10%? [3]

Question 15**[5 marks]**

A graduate has a Plan 2 loan.

In one year:

- their income is £45 000
- the repayment threshold is £28 470
- the interest rate is 7.3%
- they owe £27 500 at the start of the year.

- (a) Calculate their annual repayment. [2]
- (b) Calculate the interest added during the year. [2]
- (c) Hence find the amount they owe at the end of the year. [1]

Question 16**[5 marks]****The Party Factory**

The factory is producing small simple items for a themed party.

The machines can produce between **950 and 1000 items per hour**.

One machine is set to produce items at a constant rate of **980 items per hour**.

- (a) Calculate how many items this machine produces in **6 hours**. [2]
- (b) The factory needs **6000 items** for an order.
Explain whether the factory can complete the order using **one machine in a single 6-hour shift**. [2]
- (c) Give **one reason** why the actual number of items produced in practice might be **less** than your answer in part (a). [1]

Question 17**[7 marks]****The Party Factory**

The factory produces:

- small simple items at a rate between **950 and 1000 per hour**
- larger complex items at a rate between **350 and 520 per hour**

A customer orders:

- **4200 small items**
- **2100 large items**

- (a) Calculate the **minimum time** needed to produce **4200 small items**. [2]
- (b) Calculate the **maximum time** needed to produce **2100 large items**. [2]
- (c) The factory has **one 8-hour working day** available.

Explain whether it is possible to complete **both orders in one day**. You must justify your answer using your calculations. [3]

END OF PAPER