



**Coimisiún na Scrúduithe Stáit
State Examinations Commission**

LEAVING CERTIFICATE EXAMINATION, 2009

MATHEMATICS - FOUNDATION LEVEL

PAPER 1 (300 marks)

FRIDAY, 5 JUNE - MORNING 9:30 – 12:00

Attempt **QUESTION 1** (100 marks) and **FOUR** other questions (50 marks each).

WARNING: Marks will be lost if all necessary work is not clearly shown.

**Answers should include the appropriate units of measurement,
where relevant.**

1. (i) Find $\sqrt{246 \cdot 8}$, correct to two decimal places.
- (ii) Find the exact value of $\frac{1}{(0 \cdot 4)^2} - (1 \cdot 7)^2$.
- (iii) Find $(7 \cdot 91)^3$, correct to three decimal places.
- (iv) Find the exact value of $14 \cdot 2 - 2 \cdot 7 \div 0 \cdot 3$.
- (v) Find 21.5% of €300.
- (vi) Find the value in euro of \$240, given that €1 = \$1.47.
Give your answer correct to the nearest cent.
- (vii) A train journey begins at 13:00 and finishes at 15:30.
The average speed of the train for this journey is 60 km per hour.
How far does the train travel?
- (viii) Harry spent $\frac{1}{3}$ of his money. He then had €15.60.
How much money did he start with?
- (ix) Find $\frac{(4 \cdot 5 \times 10^6) - (5 \cdot 8 \times 10^5)}{2 \cdot 4 \times 10^3}$, correct to two significant figures.
- (x) Find $\frac{(38 \cdot 7)(15 \cdot 9)}{10 \cdot 2 - 4 \cdot 7}$, correct to the nearest integer.

2. (a) Change to metres

(i) 1.56 km

(ii) 4900 mm

(b) The following information was used to calculate the cost of gas used by a family:

Previous meter reading	125689
Present meter reading	127312
First 700 units charged at	4.5 cent per unit
Remaining units charged at	3.6 cent per unit.

(i) Calculate the number of units used between these two meter readings.

(ii) Calculate the cost of the first 700 units used.

(iii) Calculate the cost of all the units used between these two readings, correct to the nearest cent.

(c) Tom earns €650 per week and has tax credits of €78 per week.

(i) The rate of tax is 20%. How much tax does Tom pay per week?

(ii) Find his weekly take home pay.

(iii) What percentage of his total pay is paid in tax?

3. (a) A teacher estimates that a particular exam will take the students 1 hour to complete. The students actually finish the exam in 50 minutes.

(i) Find the error in the estimate given by the teacher.

(ii) Find the percentage error.

(b) €5200 was invested for four years at 2.5% per annum compound interest.

What was the total value of the investment at the end of the four years, correct to the nearest cent?



(c) Susan is 10 years old and Jane is 14 years old. A sum of money is divided between them in the ratio of their ages. Susan gets €50.

(i) How much money will Jane get?

(ii) How much money is divided between them?

In one year's time the sum of money to be divided will be increased by €114.

This sum of money will be divided between them in the ratio of their ages at that time.

(iii) How much will each person get next year?

4. (a) Solve for x

$$2x + 7 = 5x - 5$$

- (b) Solve the simultaneous equations:

$$7x - y = 11$$

$$4x + 3y = 17$$

- (c) John cycles to school in x minutes. Mark gets the bus to school and takes 10 minutes longer. Brendan walks to school and takes twice as long as Mark.



- (i) Express the time taken by Brendan to get to school in terms of x .

When the times taken by the three boys to get to school are added, the total is 90 minutes.

- (ii) Write this information as an equation in terms of x .

- (iii) Find how long it took John to get to school.

5. (a) (i) Write down all the prime numbers between 1 and 10.

- (ii) How many of these prime numbers are factors of 21?

- (b) (i) Solve $x^2 - 5x - 36 = 0$.

- (ii) Solve $x^2 - 7x + 8 = 0$.

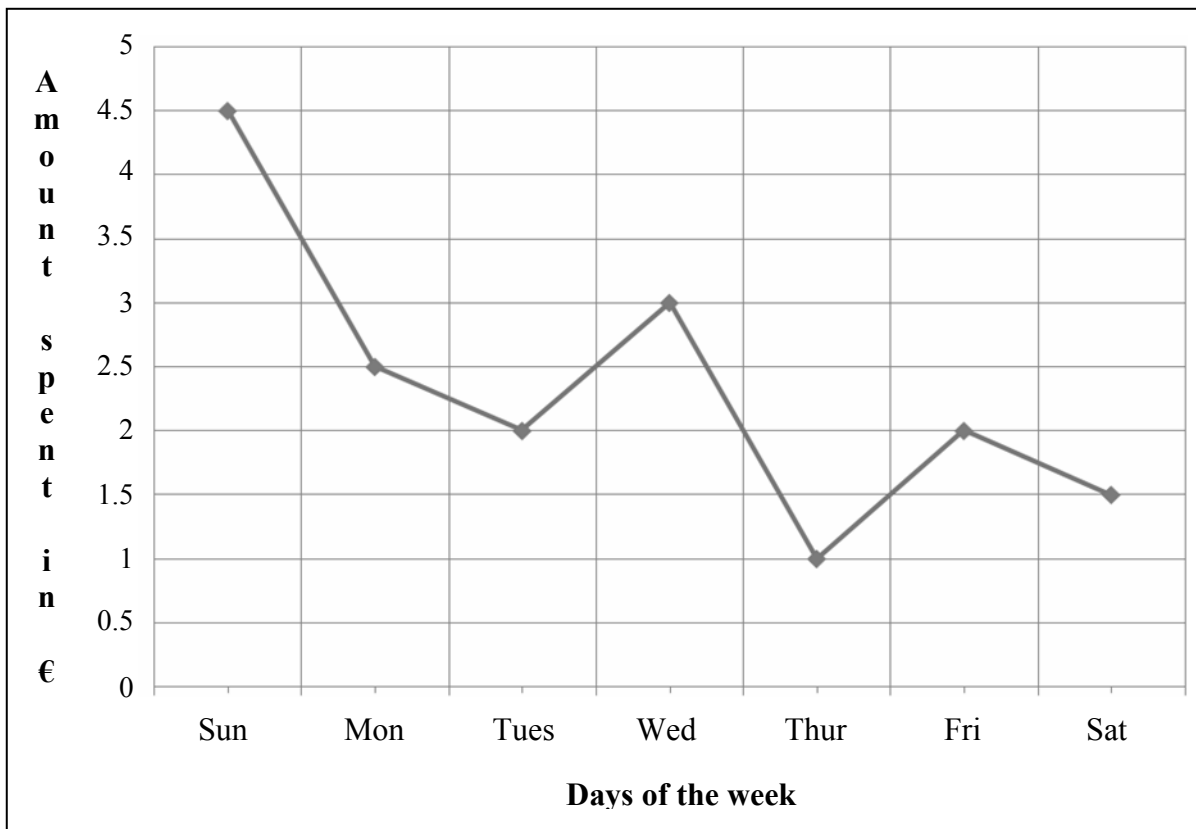
Give your answers correct to one decimal place.

- (c) (i) Solve $3x - 4 < 8$, $x \in \mathbf{Z}$.

- (ii) Solve $12 - 2x \leq 16$, $x \in \mathbf{Z}$.

- (iii) Write down all the values of x which satisfy both of the above inequalities.

6. The graph shows a record of the amount of money spent by a student on fruit on each day of a particular week. For example on Wednesday the amount spent was €3.



- (i) How much did the student spend on Saturday?
- (ii) On which two days was the same amount spent?
- (iii) What was the difference between the amounts spent on Wednesday and on Friday?
- (iv) What was the average amount spent per day during this week, correct to the nearest cent?
- (v) Express the amount spent on Wednesday as a percentage of the total spent on Monday, Tuesday and Saturday.

7. Draw the graph of the function

$$f(x) = 2x^2 - 4x - 5, \quad \text{for } -2 \leq x \leq 4, \quad x \in \mathbf{R}.$$

Use your graph to answer the following:

- (i) Write down the minimum value of $f(x)$.
- (ii) What are the values of x for which $f(x) = 3$?
- (iii) For what range of values of x is $f(x)$ increasing?
- (iv) Draw the axis of symmetry of the graph.

FORMULAE FOR PAPER 1

Compound Interest and Depreciation:

$$A = P \left(1 \pm \frac{r}{100} \right)^n ; \quad P = \frac{A}{\left(1 \pm \frac{r}{100} \right)^n} .$$

The solutions of the quadratic equation $ax^2 + bx + c = 0$ are

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

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