



**Coimisiún na Scrúduithe Stáit
State Examinations Commission**

LEAVING CERTIFICATE EXAMINATION, 2007

MATHEMATICS - FOUNDATION LEVEL

PAPER 1 (300 marks)

THURSDAY, 7 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 $\sqrt[3]{64 \cdot 64}$, correct to four decimal places.
- (ii) Find $(19 \cdot 3)^3$, correct to two significant figures.
- (iii) Find $\frac{1}{72 \cdot 91}$, correct to four decimal places.
- (iv) Find the exact value of $52 \cdot 78 + 14 \cdot 3 \times 0 \cdot 4$.
- (v) In a box of 90 oranges, 18 were bad. What percentage were good?
- (vi) A person took 4 hours and 30 minutes to travel 153 kilometres.
What was the average speed for the journey?
- (vii) Change 2650 Japanese yen to euro, at the exchange rate of 1 yen = 0·0091 euro.
Give your answer correct to two decimal places.
- (viii) Express $\frac{5}{7} + \frac{2}{3}$ as a decimal, correct to two decimal places.
- (ix) Find $\frac{(2 \cdot 05 \times 10^5) - (1 \cdot 35 \times 10^3)}{3 \cdot 67 \times 10^5}$, correct to three decimal places.
- (x) Find $\left(5 - \frac{13 \cdot 87}{18 \cdot 26}\right)(14 \cdot 25 - 11 \cdot 09)$, correct to three decimal places.

2. (a) (i) Change 6.85 kilograms to grams.
(ii) Change 462.5 grams to kilograms.
- (b) A person worked for 42 hours in a particular week.
The rate of pay for the first 35 hours was €12.48 per hour.
The rate of pay for the remaining hours was €18.72 per hour.

Find

- (i) the gross wage for the week
(ii) the tax at 20%, given a tax credit of €64.40
(iii) the PRSI, to the nearest cent, at 4% of gross wages
(iv) the take-home pay.
3. (a) A person was estimated to be 1.85 metres in height.
The person's actual height was 1.82 metres.
Find the percentage error, correct to one decimal place.
- (b) €940 was borrowed for three years at 6.5% per annum compound interest.
How much was owed after three years, correct to the nearest cent?
- (c) A machine was bought for €25 000.
It depreciated at the rate of 15% per annum.
What was its value after three years, correct to the nearest euro?

4. (a) Solve for x

$$10x - 13 - 3x = 15.$$

- (b) Solve the simultaneous equations:

$$\begin{aligned} 3x - 2y &= 15 \\ 2x + y &= 3. \end{aligned}$$

- (c) Seán and Siobhán are brother and sister. Seán is five years older than Siobhán. Their grandfather's age is seven times Seán's age added to three times Siobhán's age. Let x be Seán's age.

- (i) Write the grandfather's age as an expression in x .
(ii) If the grandfather is 75 years old, find Seán's age.

5. (a) (i) List the prime numbers from 2 to 11, including 2 and 11.
(ii) Which of the numbers you have listed are factors of 55?

- (b) Solve for x

$$5x^2 - 9x - 2 = 0.$$

- (c) (i) Solve $7x + 4 < 25$, $x \in \mathbf{N}$.
(ii) Solve $31 - 4x \geq 19$, $x \in \mathbf{N}$.
(iii) What values of x satisfy both of the inequalities in (i) and (ii)?

6. The number of litres of oil used to heat a building for five months is shown.

October	500
November	650
December	150
January	750
February	450

- (i) Draw a bar-chart to illustrate the information.
- (ii) Calculate the average amount of oil used per month.
- (iii) Draw a line across the bar-chart to show this average.
- (iv) Which month shows the greatest difference between the oil used and the average?
- (v) What is the average cost of heating the building per month, if oil costs €0.65 per litre?

7. Draw the graph of the function

$$f(x) = x^2 - 4, \quad \text{for } -3 \leq x \leq 3, \quad x \in \mathbf{R}.$$

Use your graph to answer the following:

- (i) For what range of values of x is $f(x)$ less than zero?
- (ii) Write down the minimum value of $f(x)$.
- (iii) For what values of x is $f(x) = 2.5$?

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 to the quadratic equation $ax^2 + bx + c = 0$ are

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