Coimisiún na Scrúduithe Stáit
State Examinations Commission

LEAVING CERTIFICATE EXAMINATION, 2004

MATHEMATICS - FOUNDATION LEVEL

PAPER 1 (300 marks)

THURSDAY, 10 JUNE - MORNING 9:30 – 12:00

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

Marks may be lost if necessary work is not clearly shown.

1. **(i)** Find $\sqrt{55}$, correct to two decimal places.

(ii) Find the exact value of $(17.5)^2 - (2.5)^2$.

(iii) Find $(4.08)^3$, correct to three decimal places.

(iv) Find the exact value of $61.09 + \frac{3.24}{0.08}$.

(v) Find 21% of €43.27, correct to the nearest cent.

(vi) A book costs £18 sterling. Find its cost in euro if €1= £0.72 sterling.

(vii) Write $\frac{6}{11} - \frac{3}{13}$, as a decimal, correct to one decimal place.

(viii) In an examination, a student scores 116 marks out of a possible 140 marks. Express this score as a percentage, correct to the nearest whole number.

(ix) Find the exact value of

$$\frac{\left(1.25 \times 10^4\right) - \left(9.1 \times 10^3\right)}{\left(6.8 \times 10^1\right)}.$$

(x) Find the exact value of

$$\frac{59.4 - 3.85}{6.54 + 4.46}.$$

2. **(a)** Change to metres

(i) 2.5 km

(ii) 650 cm

(b) Michael is paid €8.50 per hour. The table below shows the hours he worked last week.

Day	**Starting Time**	**Finishing Time**
Monday	10:00	13:00
Tuesday	15:00	17:30
Friday	18:00	21:00

(i) How many hours did Michael work last week?

(ii) How much did he earn last week?

(c) A family travelled 110 km by car from Cavan to Dublin, and a further 50 km to Wicklow. The total time for the journey was 4 hours.

(i) Calculate the total distance travelled.

(ii) Calculate the average speed for the whole journey.

(iii) The average speed from Cavan to Dublin was 44 km/hr. How long did this part of the journey take?

3. **(a)** A student estimates the height of a tree to be 12 metres. The true height of the tree is 11.35 metres.

Find

(i) the error in the estimate

(ii) the percentage error, correct to two decimal places.

(b) **(i)** Express the ratio 15:21 in its simplest form.

(ii) A prize of €72 is divided between two people in the ratio 15:21. How much does each person get?

(c) €3500 is invested for four years at a fixed rate of compound interest. During the first year it earns €140.

(i) What is the annual rate of interest?

(ii) How much will the investment be worth at the end of the four years? Give your answer correct to the nearest euro.

4. **(a)** Solve $5x - 7 = 2x + 14$

(b) Solve the simultaneous equations

$$x + 3y = 4$$
$$2x - y = 15 .$$

(c) When 8 is added to five times a certain number, the result is the same as when 12 is added to three times the number.

Let x represent this number.

(i) Write this information as an equation in x.

(ii) Solve the equation to find the value of x.

5. **(a)** **(i)** Write down the whole number factors of 20.

(ii) Write down the factors of 20 that are prime.

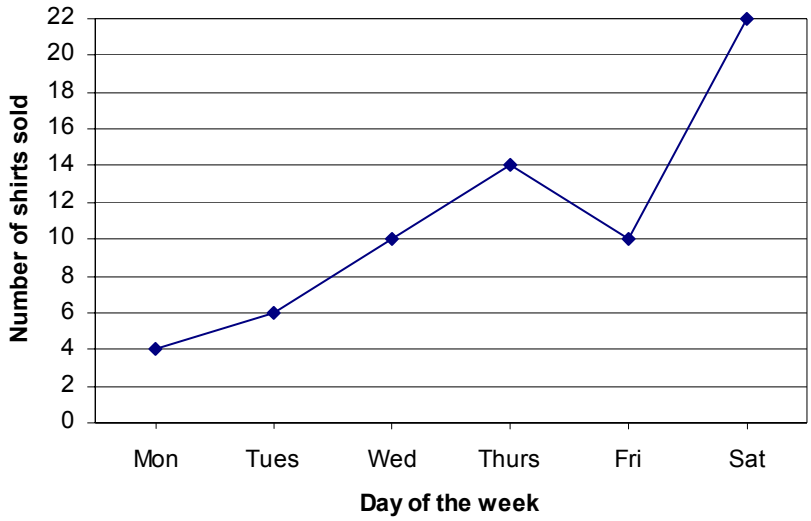
(b) Solve the quadratic equation $2x^2 + 5x - 1 = 0$.
Give your answers correct to two decimal places.

(c) **(i)** Solve $2x - 5 \leq 1$

(ii) Solve $4 - x \leq 3$

(iii) Write down all the whole numbers which satisfy both
$2x - 5 \leq 1$ and $4 - x \leq 3$

6. The graph below shows the number of shirts that a shop sold each day in a certain week.



(i) How many shirts were sold on Tuesday?

(ii) On which day of the week was the smallest number of shirts sold?

(iii) The shop had 100 shirts at the start of the week. How many were left at the end of the week?

(iv) Calculate the average number of shirts sold per day?

(v) The shirts were sold for €10 each. The shop paid €6 for each shirt. Calculate the average daily profit from shirt sales.

7. Draw the graph of the function

$$f : x \to 2x^2 - 4x + 1 \quad \text{for} \quad -1 \le x \le 3,\ x \in \mathbf{R}.$$

Use your graph to estimate

(i) the minimum value of $f(x)$

(ii) the value of $f(2.5)$

(iii) the values of x for which $f(x) = 2$

(iv) the range of values of x for which $f(x)$ is increasing.

FORMULAE FOR PAPER 1

Compound Interest and Depreciation :

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

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

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