



**Coimisiún na Scrúduithe Stáit
State Examinations Commission**

LEAVING CERTIFICATE EXAMINATION, 2010

MATHEMATICS – FOUNDATION LEVEL

PAPER 1 (300 marks)

FRIDAY, 11 JUNE – AFTERNOON 2:00 to 4:30

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 $\sqrt{93.4}$, correct to one decimal place.
- (ii) Find the exact value of $15.5 - 3.8 \times 2.6$.
- (iii) Find $\frac{5}{\sqrt{2}} + (1.6)^2$, correct to the nearest whole number.
- (iv) The price of a jacket is €60.80.
This price is reduced by 15%.
Find the reduced price.
- (v) Find the value in euro of 700 AUD (Australian Dollars) given that €1 = 1.72 AUD.
- (vi) Write $\frac{7}{19} + \frac{2}{9}$ as a decimal, correct to three decimal places.
- (vii) A bus journey begins at 11:30 and ends at 13:15.
The bus travels at an average speed of 80 km per hour.
What distance does the bus travel?
- (viii) Find the total cost of
3 loaves of bread at €1.20 each
4 litres of milk at 89 cent per litre
2.5 kg of oranges at 78 cent per kg.
- (ix) Find $\frac{(2.78 \times 10^3) + (2.96 \times 10^2)}{1.42 \times 10^2}$, correct to three significant figures.
- (x) Find $\frac{27.9 + 15.4}{(3.4)^3}$, correct to two decimal places.

2. (a) (i) Change 8.57 kg to grams.
- (ii) Change 7904 cm to metres.
- (b) Henry works for 40 hours in a particular week.
He is paid €12.50 per hour for the first 35 hours.
He is paid €18.50 per hour for the remaining hours.
- (i) Find Henry's gross pay for the week.
- (ii) Henry's tax rate is 20% and he has tax credits of €72 per week.
Calculate the tax payable by Henry.
- (iii) Find Henry's take-home pay.
- (c) A train travels a distance of 281 km from Cork to Dublin.
The train travels at an average speed of 80 km/h for the first 90 minutes of the journey.
- (i) Find the distance the train travels in this time.
The train travels the remaining distance at an average speed of 92 km/h.
- (ii) Find the total time for the journey from Cork to Dublin.
- (iii) Find the average speed of the train over the whole journey, correct to the nearest km/h.
3. (a) A student estimated the height of a building as 5.4 m. The actual height of the building is 4.8 m.
- (i) Find the error in the estimate.
- (ii) Find the percentage error.
- (b) Helen borrowed €4000 at 5.5 % per annum compound interest.
She paid back €1000 at the end of the first year.
How much did she owe at the end of the second year?
- (c) A shop-owner agrees to contribute €7 for every €50 collected by his customers who are raising funds for facilities in a school.
- (i) The customers raise €900 in the first week.
How much does the shop-owner contribute?
- (ii) At the end of the fund raising the total amount raised was €1995.
How much of this was collected by the customers?

4. (a) Solve for x

$$4x - 9 = 7x + 15.$$

- (b) Solve the simultaneous equations

$$3x + 2y = 1$$

$$5x + 3y = 3.$$

- (c) (i) Solve $3x - 1 \leq 14, x \in \mathbb{Z}.$

- (ii) Solve $5 - 4x < 13, x \in \mathbb{Z}.$

- (iii) Plot on a number line the values of x which satisfy both of the above inequalities.

5. (a) (i) Write down all the whole number factors of 30.

- (ii) List which of these numbers are prime numbers.

- (b) (i) Solve the quadratic equation $x^2 + 6x + 8 = 0.$

- (ii) Solve the quadratic equation $2x^2 - 5x - 4 = 0,$ correct to two decimal places.

- (c) At a restaurant an adult's meal costs €8 more than a child's meal.
Let x be the price of a child's meal.

- (i) Write an expression in x for the price of an adult's meal.

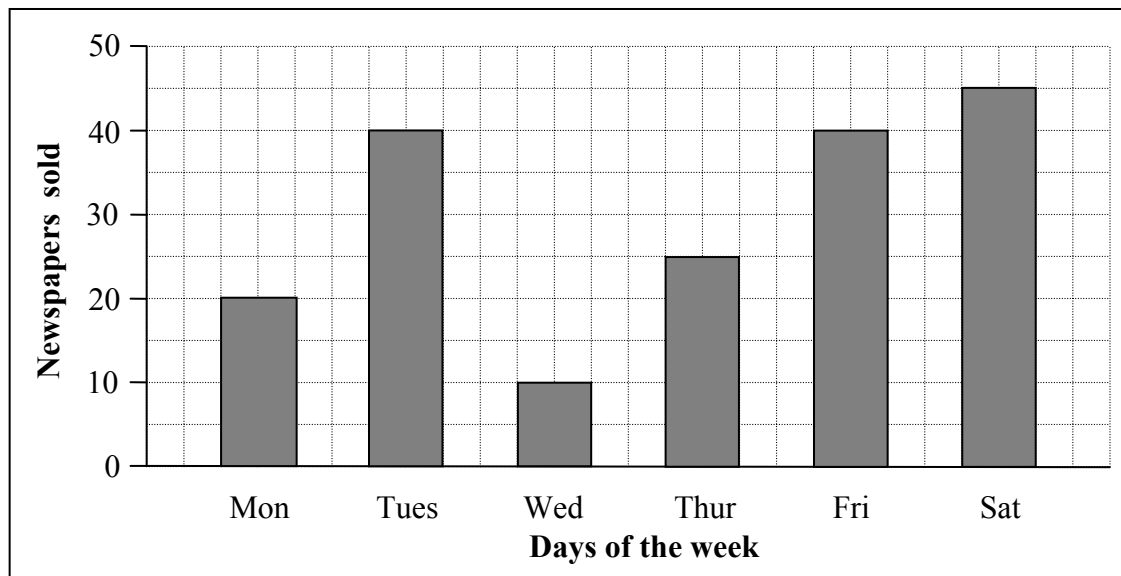
The total cost of the meals for 5 adults and 4 children is €103.

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

- (iii) Solve this equation to find the price of a child's meal.



6. The bar chart shows the number of newspapers sold from Monday to Saturday in a shop. For example, on Thursday, 25 newspapers were sold.



- (i) On what day was the lowest number of newspapers sold?
- (ii) On which two days were the same number of newspapers sold?
- (iii) What was the difference between the number of newspapers sold on Saturday and on Monday?
- (iv) What was the average number of newspapers sold per day over the 6 days from Monday to Saturday?
- (v) If the average number of newspapers sold per day over the 7 days (including Sunday) of that week was 35, how many newspapers were sold on Sunday?

7. Draw the graph of the function

$$f : x \rightarrow 2x^2 - 6x - 7, \text{ for } -1 \leq x \leq 4, x \in \mathbb{R}.$$

Use your graph to estimate

- (i) the minimum value of $f(x)$
- (ii) the roots of $f(x) = 0$
- (iii) the values of x for which $f(x) = -9$
- (iv) the range of values of x for which $f(x)$ is decreasing.

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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