

AN ROINN OIDEACHAIS AGUS EOLAÍOCHTA

LEAVING CERTIFICATE EXAMINATION, 2001

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).

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

1. (i) Find $\sqrt{42}$, correct to one decimal place.
- (ii) Find $(2.05)^4$, correct to three significant figures.
- (iii) Find $2.36 + 3.24 \times 5.82$, correct to the nearest whole number.
- (iv) Find the value of $\frac{1}{(0.1)^2} - \frac{1}{0.25}$.
- (v) A person earns IR£254 a week.
 PRSI is paid at the rate of 2% on the first IR£100 and at 6% on the remaining IR£154.
 How much PRSI does the person pay in a week?
- (vi) Find $\frac{5}{8} + \frac{3}{7}$, correct to two decimal places.
- (vii) The price of a video is IR£12.85. The price is reduced by 15%.
 Find, correct to the nearest penny, the new price.
- (viii) Find, correct to the nearest euro, the value of £300 sterling given that
 IR£1 = £0.72 sterling and 1euro = IR£0.787564.
- (ix) Find the value of

$$\frac{(5.14 \times 10^3) + (3.1 \times 10^4)}{(2.6 \times 10^{-2})}$$

- (x) Find, correct to three significant figures, the value of

$$\frac{(27.9 - 5.67)}{(0.48 \times 10.8)}$$

2. (a) Change to kilogrammes
- (i) 2560 grammes
- (ii) 0.35 tonne (1 tonne = 1000 kg).
- (b) John normally works a 38 hour week. He is paid IR£6.40 for each hour worked.
- (i) Calculate John's gross income for a 38 hour week.
- (ii) The overtime rate is 2 times IR£6.40. This is paid for each hour worked over the 38 hours.
Calculate John's gross income for a 46 hour week.
- (c) Síle and Seán share a prize fund of IR£770.
For each IR£2 Seán gets, Síle gets IR£5.
How much money does Seán get?

If, instead, the prize fund of IR£770 is shared in the following way:
for each IR£4 Seán gets, Síle gets IR£7,
how much extra does Seán then get?
Express the extra amount Seán gets as a percentage of IR£770.
Give your answer correct to one decimal place.

3. (a) The depth of a swimming pool was estimated to be 1.65 m.
The true depth was 1.5 m.
Find (i) the error
(ii) the percentage error.
- (b) IR£1500 was invested for 3 years at the rate of 4% per annum compound interest.
Calculate the amount at the end of the 3 years.
Give your answer correct to the nearest IR£.
- (c) Mary started a journey of 90 km by car at 10:40.
She arrived at her destination at 12:10.
- (i) Calculate the average speed for the journey, in km/hr.
- (ii) If the average speed for the first 35 km of the journey was 84 km/hr,
how long, in hours and minutes, did it take to complete the remainder of the journey?

4. (a) Solve for x
- $$5x + 3 = 17 - 2x.$$
- (b) Solve the simultaneous equations
- $$\begin{aligned} 2x - y &= 8 \\ x + 3y &= 11. \end{aligned}$$
- (c) Anne is x years of age. Paul is 6 years older than Anne.
The sum of their ages is 16 years.

Write this information as an equation in x .
Hence, solve for x .

5. (a) List all the prime numbers which are less than 10.
Write 10 as the sum of two prime numbers.

- (b) Solve the quadratic equation

$$5x^2 + 8x - 6 = 0.$$

Give your answers correct to two places of decimals.

- (c) (i) Solve $4x + 1 \leq 17$.

- (ii) Solve $1 - 3x \leq -2$.

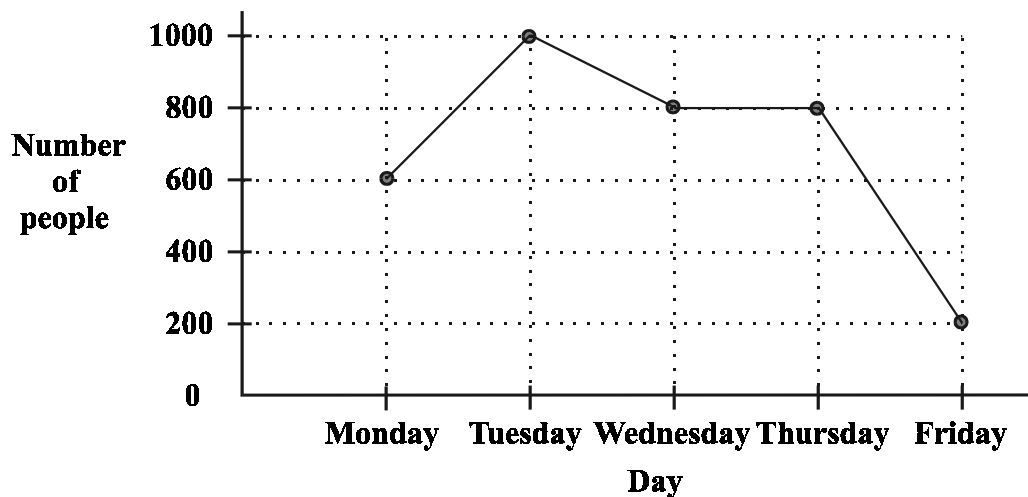
- (iii) Write down all the whole numbers which satisfy both $4x + 1 \leq 17$ and $1 - 3x \leq -2$.

6. The graph below shows the number of people who visited an art museum on each of the days Monday to Friday inclusive.

The number of people is shown on the vertical axis.

The day is shown on the horizontal axis.

For example, on Monday, the number of people who visited the museum was 600.



- (i) On which day did the largest number of people visit the museum?
- (ii) What was the increase in the number of people who visited the museum between Monday and Tuesday?
- (iii) On which days was the number of people who visited the museum the same?
- (iv) Find the decrease in the number of people who visited the museum between Thursday and Friday.
- (v) Calculate the average number of people who visited the museum per day over the five days.

7. Draw the graph of the function

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

Use your graph to find as accurately as possible

- (i) the value of $f(1.5)$
- (ii) the values of x for which $f(x) = 0$
- (iii) the minimum (least) value of $f(x)$
- (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 to the quadratic equation $ax^2 + bx + c = 0$ are

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