



**Coimisiún na Scrúduithe Stáit
State Examinations Commission**

LEAVING CERTIFICATE EXAMINATION, 2003

MATHEMATICS - FOUNDATION LEVEL

PAPER 1 (300 marks)

THURSDAY, 5 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 $\sqrt{73}$, to two decimal places.
- (ii) Find $(4.83)^3$.
- (iii) Find $2.07 + (3.45)^2$.
- (iv) Find the value of $\frac{3}{0.2} - \sqrt{24.01}$.
- (v) A house bought for €95 000 is sold at a profit of 250%. What is the selling price of the house?
- (vi) Find, to the nearest dollar (\$), the value of €500, given that \$1 = €1.12.
- (vii) Find $\frac{5}{11} + \frac{2}{7}$, correct to one decimal place.
- (viii) Find the total cost of
- 12 apples at 45 cent each
2 bottles of water at €1.20 each
6 bars of chocolate at 64 cent each.

- (ix) Find the value of

$$\frac{(6.2 \times 10^4) - (7.4 \times 10^3)}{(1.05 \times 10^2)}$$

- (x) Find, correct to the nearest whole number, the value of

$$\frac{32.3 + 1.27}{18.3 \times 0.04}$$

2. (a) Change to metres
- (i) 0.15 km
 - (ii) 350 cm.
- (b) Michael earns €450 a week and has tax credits of €105 a week. Find
- (i) the amount of tax he pays per week if the tax rate is 42%
 - (ii) his weekly take-home pay.
- (c) Joanne is 12 years old and Ronan is 8 years old. €140 is divided between them in the ratio of their ages. How much money does each receive?

In four years time, another €140 will be divided between them in the ratio of their ages at that time. How much of that money will they each then receive?

3. (a) The price quoted for painting a house was €400. The actual cost was €384.
- Find
- (i) the error in the price quoted
 - (ii) the percentage error, correct to one decimal place, in the price quoted.

- (b) €4000 is invested at a rate of 4.5% per annum compound interest.
- Find, to the nearest cent, its value at the end of 4 years.

- (c) A shopkeeper buys

10 kg of hazel nuts at €9 per kg
8 kg of pecan nuts at €15.25 per kg and
7 kg of Brazil nuts at €10.50 per kg.

Find the total cost.

The shopkeeper mixes all the nuts together. Find the cost per kg of the mixed nuts.

The shopkeeper sells the mixed nuts at a profit of 50%. What is the selling price per kg of the mixed nuts?

4. (a) Solve for x

$$6x + 7 = 34 - 3x.$$

- (b) Solve the simultaneous equations

$$\begin{aligned}2x - y &= 3 \\ x + 4y &= 24.\end{aligned}$$

- (c) A music store sells special-offer CDs at €5 less than full-price CDs.

The total cost of two special-offer CDs and one full-price CD is €41.

Let x be the price of a special-offer CD and write this information as an equation in x .

Solve this equation for x to find the cost of a special-offer CD.

5. (a) (i) Write down all of the prime numbers between 1 and 20.

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

- (b) Solve the quadratic equation $3x^2 - 7x + 3 = 0$.

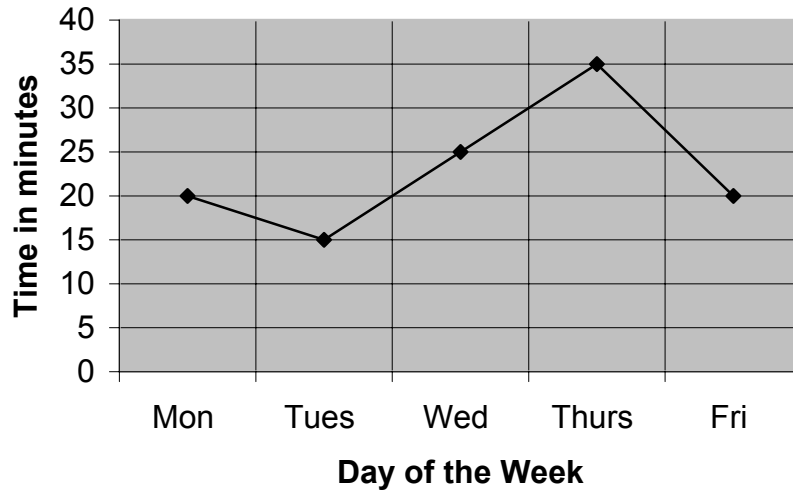
Give your answer correct to two decimal places.

- (c) (i) Solve $5x - 1 \geq 14$.

- (ii) Solve $3 - 2x \geq -7$.

- (iii) Write down all the whole numbers which satisfy both $5x - 1 \geq 14$ and $3 - 2x \geq -7$.

6. A sixth year student lives 10 km from school. Each day she travels to school by scooter. The graph below shows the time taken in minutes to travel to school on each day of a particular week. For example on Wednesday it took 25 minutes.



- (i) On which day did the student take the shortest time to travel to school?
- (ii) On which two days did she take the same time to travel to school?
- (iii) What was the average time per day spent travelling to school over the week?
- (iv) What was her average speed for the journey to school on Monday?
- (v) On which day did the student travel at the slowest average speed?
Write this speed in km/hour, giving your answer correct to the nearest whole number.

7. Draw the graph of the function

$$f : x \rightarrow 3x^2 + 6x - 2 \quad \text{for} \quad -3 \leq x \leq 1, x \in \mathbf{R}.$$

Use your graph to find as accurately as possible

- (i) the minimum (least) value of $f(x)$
- (ii) $f(-1.5)$
- (iii) the values of x for which $f(x) = 4$
- (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

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

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