

**AN ROINN OIDEACHAIS AGUS EOLAÍOCHTA**

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**LEAVING CERTIFICATE EXAMINATION, 2000**

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**MATHEMATICS - FOUNDATION LEVEL**

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**PAPER 1 ( 300 marks )**

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**THURSDAY, 8 JUNE - MORNING, 9.30 - 12.00**

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

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

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1. (i) Find  $\sqrt{65}$ , correct to one decimal place.
- (ii) Find  $(0.45)^2 - (0.14)^2$ , correct to three decimal places.
- (iii) Find the value of  $\frac{25.68}{\sqrt{6.25}}$ .
- (iv) Find the value of  $\frac{1}{0.0025} - (19.8)^2$ .
- (v) Find 16% of IR£25.18, correct to the nearest penny.
- (vi) Find  $\frac{2}{9} + \frac{5}{11}$ , correct to two decimal places.
- (vii) On a certain day, IR£1 = £0.8149 sterling.  
Find, to the nearest IR£, the value of £250 sterling on that day.
- (viii) A journey of 36 km started at 1100 hours and finished at 1125 hours.  
Find the average speed for the journey in km/hr.
- (ix) Find the value of

$$\frac{(2.45 \times 10^6) - (1.8 \times 10^4)}{(0.16 \times 10^5)}.$$

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

$$\frac{(84.7 - 19.8)}{(2.46 \times 0.27)}.$$

2. (a) A person is paid IR£5.80 for each hour worked. The person works a 35 hour week.

(i) Calculate the gross income for a week.

(ii) The tax free allowance for a week is IR£116.  
Tax is paid on taxable income at the rate of 22%.  
Calculate the income tax paid for a week.

(iii) The first IR£100 of gross income in a week is exempt from PRSI.  
PRSI is paid on the balance of gross income at the rate of 4.5%.  
Calculate, to the nearest penny, the PRSI paid for a week.

(iv) Calculate the take-home pay for a week.

(b) A motorist travels a journey of 185 km.  
The motorist travels the first 80 km at an average speed of 75 km/hr.  
How many hours and minutes does it take the motorist to travel the first 80 km?

The remainder of the journey takes 1 hour and 45 minutes.  
Calculate the average speed for this part of the journey in km/hr.

3. (a) The mass of a rock is estimated to be 65 kg. Its true mass is 67.5 kg.  
Find

(i) the error

(ii) the percentage error, correct to one decimal place.

(b) A car which costs IR£16 900 will depreciate at the rate of 15% per year.  
How much will it be worth at the end of four years?  
Give your answer correct to the nearest IR£.

(c) In a competition, team A scored  $22\frac{1}{2}$  points and team B scored  $17\frac{1}{2}$  points.  
The two teams share a prize of IR£25 000 in proportion to the number of points they scored.  
How much money does each team receive?

If the prize is increased by 10%, how much money will each team then receive?

4. (a) Write 5324 in the form  $a \times 10^n$ , where  $1 \leq a < 10$  and  $n \in \mathbf{N}$ .

(b) Solve the simultaneous equations

$$3x - 4y = 18$$

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

(c) (i) Solve  $4x - 3 \leq 13$ .

(ii) Solve  $5 - 2x \leq 11$ .

(iii) Write down all the whole numbers which satisfy both  $4x - 3 \leq 13$  and  $5 - 2x \leq 11$ .

5. (a) Solve for  $x$

$$9x - 17 = 2x - 3.$$

- (b) Solve the quadratic equation

$$3x^2 + 4x - 1 = 0.$$

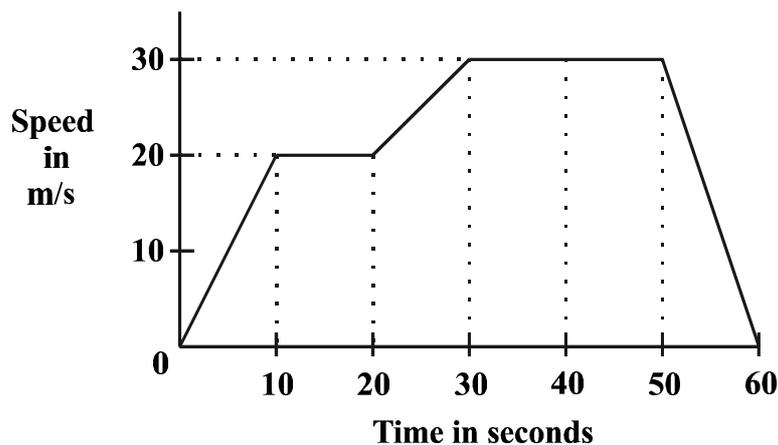
Give your answers correct to two places of decimals.

- (c) Five times a certain number added to 12 is the same as three times the same number added to 20.

Let  $x$  represent this number and write this information as an equation in  $x$ .

Solve the equation for  $x$ .

6. The graph below shows the speed of a car over a period of 60 seconds. The speed, in metres per second, is shown on the vertical axis. The time, in seconds, is shown on the horizontal axis. For example, the speed of the car is 20 m/s at 10 seconds.



- (i) What was the speed of the car at 20 seconds?
- (ii) For how many seconds altogether was the speed of the car increasing?
- (iii) What was the maximum speed of the car?
- (iv) For how long was the car travelling at its maximum speed?
- (v) Calculate the distance travelled by the car at its maximum speed.
- (vi) The total distance travelled was 1300 metres. Calculate, in m/s, the average speed of the car over the 1300 metres travelled. Give your answer correct to two places of decimals.

7. Draw the graph of the function

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

Use your graph to find as accurately as possible

- (i) the values of  $x$  for which  $f(x) = 0$
- (ii) the value of  $f(-0.5)$
- (iii) the minimum (least) value of  $f(x)$
- (iv) the range of values of  $x$  for which  $f(x)$  is increasing.

### 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

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