17464 M 25

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LEAVING CERTIFICATE EXAMINATION, 1998

# MATHEMATICS — FOUNDATION LEVEL

## PAPER 1 (300 marks)

THURSDAY, 11 JUNE — MORNING, 9.30 to 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 $\sqrt{94}$, correct to one decimal place.

*(ii)* Find $(0.34)^2 - (0.24)^2$, correct to two decimal places.

*(iii)* Find $\dfrac{\sqrt{47.53}}{24.25}$, correct to 4 decimal places.

*(iv)* Find $\dfrac{1}{0.045}$ to the nearest whole number.

*(v)* Find 89% of IR£34.67, correct to the nearest penny.

*(vi)* Find $\frac{3}{7} + \frac{1}{9}$, correct to two decimal places.

*(vii)* If IR£1 = 7.85 French Franks, find to the nearest frank, the value of IR£456.

*(viii)* Find the total cost of

2.5 litres of paint at IR£7.68 per litre
3.75 metres of timber at IR£1.64 per metre
0.5 kg of putty at IR£3.46 per kg.

*(ix)* Find the value of

$$\frac{(3.64 \times 10^5) - (1.7 \times 10^3)}{(9.0575 \times 10^2)}.$$

*(x)* Find, correct to two significant figures,

$$\frac{(14.57 - 3.48)}{(3.75 \times 0.14)}.$$

2. (a) Find the value of $11 - (12 \div 4) + 3 \times (6 - 2)$.

(b) *(i)* A person earns IR£172.80, gross, for a 40 hour week. Calculate the rate paid per hour.

*(ii)* Overtime is paid at $1\frac{1}{2}$ times this rate. Calculate the overtime rate per hour.

(c) *(i)* A non-stop train journey lasted for 4 hours. The average speed was 65 km/hr. Calculate the distance travelled.

*(ii)* For the first 2 hours the train travelled at an average speed of 70 km/hr.

Calculate the average speed for the last two hours of the journey in kilometres per hour.

3. (a) The mass of a piece of metal was estimated to be 6 kg. Its true mass was 5.74 kg.

Find

*(i)* the error

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

(b) A car, which cost IR£10 500, depreciated at a rate of 14% per annum. What, to the nearest IR£, was the value of the car after three years?

(c) One town, A, has a population of 4800 and a second town, B, has a population of 6720. The two towns share a grant of IR£429 120 in proportion to their populations. How much does town A receive?

4. (a) Solve for $x$

$$5x - 13 = 2x - 7.$$

(b) Solve the simultaneous equations

$$\begin{aligned} 5x - 2y &= 7 \\ 2x + y &= 10. \end{aligned}$$

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

*(ii)* Solve $4 - 3x \leq 16$.

*(iii)* Write down the positive and negative whole numbers which satisfy both $2x - 1 \leq 5$ and $4 - 3x \leq 16$.

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

*(ii)* Write down the numbers in this set which are factors of 42.

**(b)** Solve the quadratic equation $5x^2 + 2x - 2 = 0$.

Give your answers correct to two places of decimals.

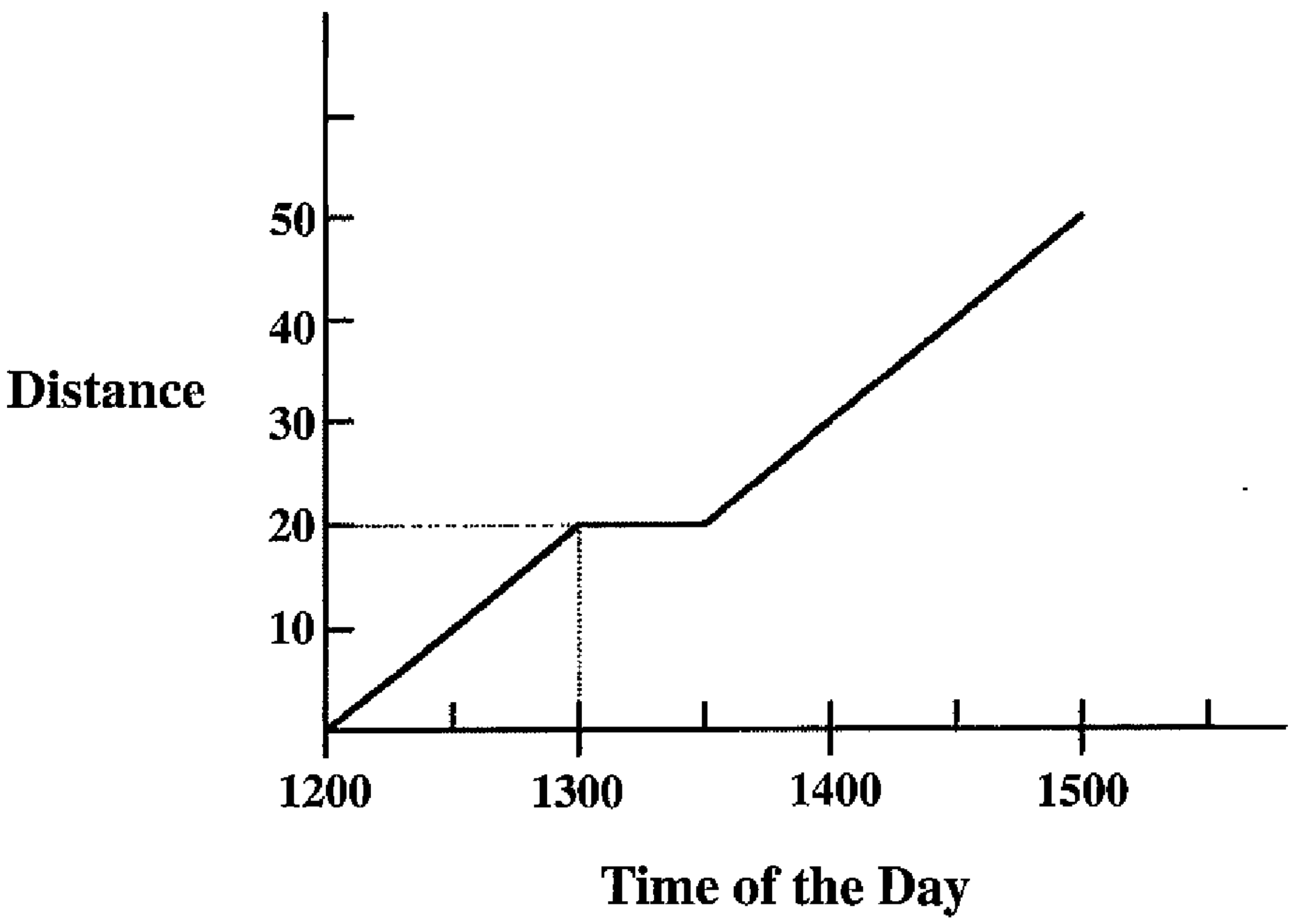
**(c)** The width and length of a rectangle differ by 4 cm. Let one of the sides be $x$ cm.

*(i)* Write down an equation in $x$, if the perimeter of the rectangle is 56 cm long.

*(ii)* Find the length and width of the rectangle.

6. The graph below shows the distance travelled by a bus and also the time taken on a completed journey. Distance, in kilometres, is shown on the vertical axis. The time of day is shown on the horizontal axis.

For example, at 1200 hours the bus had travelled zero kilometres, but at 1300 hours it had travelled 20 kilometres.




Estimate

*(i)* what time it was when the bus was 50 km from start

*(ii)* what distance, if any, did the bus travel between 1300 hours and 1330 hours

*(iii)* how far the bus travelled between 1330 hours and 1500 hours

*(iv)* how much time passed when travelling from a point 10 km from start to a point 40 km from start

*(v)* the average speed for the whole journey to the nearest km per hour.

7. Draw the graph of

$$f : x \rightarrow 2x^2 - x - 6 \text{ for } \quad -3 \leq x \leq 4, \quad x \in \mathbf{R}.$$

Use the graph to estimate

*(i)* the values of $x$ for $f(x) = 0$

*(ii)* the minimum (least) value of $f(x)$

*(iii)* the range of values of $x$ for which $f(x)$ is less than zero.

# FORMULAE FOR PAPER 1

Compound Interest and Depreciation:

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

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

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