



Coimisiún na Scrúduithe Stáit State Examinations Commission

Leaving Certificate Applied 2003

Mathematical Applications

(200 marks)

Thursday, 5th June

Morning 9.30 – 11.30

General Directions

1. Write your EXAMINATION NUMBER in this space:
2. Write all answers in the boxes or spaces in this answerbook.
3. Show necessary work on right hand blank page opposite each question.
4. Calculators may be used.
5. Answers involving money should be given correct to the nearest cent, unless otherwise indicated.

ATTEMPT QUESTION ONE AND THREE OTHER QUESTIONS.

ALL QUESTIONS CARRY EQUAL MARKS.

<i>For the Superintendent only</i>	<i>For the Examiner only</i>	
Centre Stamp	1. Total of end of page totals.	
	2. Aggregate total of all disallowed questions.	
	3. Total mark awarded (1 minus 2)	
	4. Bonus mark for answering through Irish (if applicable)	
	5. Total mark awarded if Irish Bonus. (3 + 4)	
	Note: The mark in row 3 (or row 5 if an Irish bonus is awarded) must equal the mark in the Mór-Iomlán box on the script.	

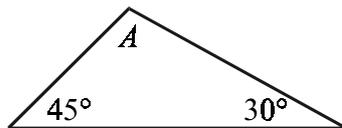
1. (a) Find 18% of €210.20.

(b) €48 is divided between Mary and John in the ratio 3:5.
How much does Mary receive?

(c) How long does it take a car to travel 270 km at an average speed of 50 km/hr?

Use the formula $T = \frac{D}{S}$.

(d) Calculate the size of the angle A .



(e) Calculate $\sqrt{234}$, correct to two decimal places.

(f) The scale on a map shows 1 cm = 45 km.
On the map the distance between two towns is 5.2 cm.
What is this distance in km?

(g) The price of a TV is €490.
In a sale this price is reduced by 15%.
What is the sale price of this TV?

(h) At a football match the total number of supporters was 29 256.

$\frac{5}{8}$ of these were home supporters.

Find the number of home supporters.

(i) A rectangle is 100 m long and 45 m wide.
Calculate the length of the perimeter.

(j) A die is thrown. What is the probability of getting a 5?

You may use this page to show any necessary work for Question 1.

2. **Research Element Question on VAT.**

- (a) John works in the accounts department of 'Beautiful Bathrooms Ltd.'
His job is to send out invoices to the customers.
Complete the invoice below for Murphy's DIY.

INVOICE <i>Beautiful Bathrooms Ltd</i> <i>Cork</i>			
Customer: Murphy's DIY Wexford.		 VAT No. IE 123456X	
Quantity	Description	Unit Price	Amount
4	Baths	€200	
6	Bathtaps	€20.40	
3	Cisterns	€64.20	
		Total (excluding VAT)	
		Trade Discount 15%	
		Total less Trade Discount	
		VAT at 21%	
		Total Due	

The VAT rate on the sales and purchases of a small business is 21%.
The sales and purchases are as follows:

Sales excluding VAT = €175 000

Purchases excluding VAT = €110 000

- (b) Calculate the VAT on sales.

- (c) Calculate the VAT on purchases.

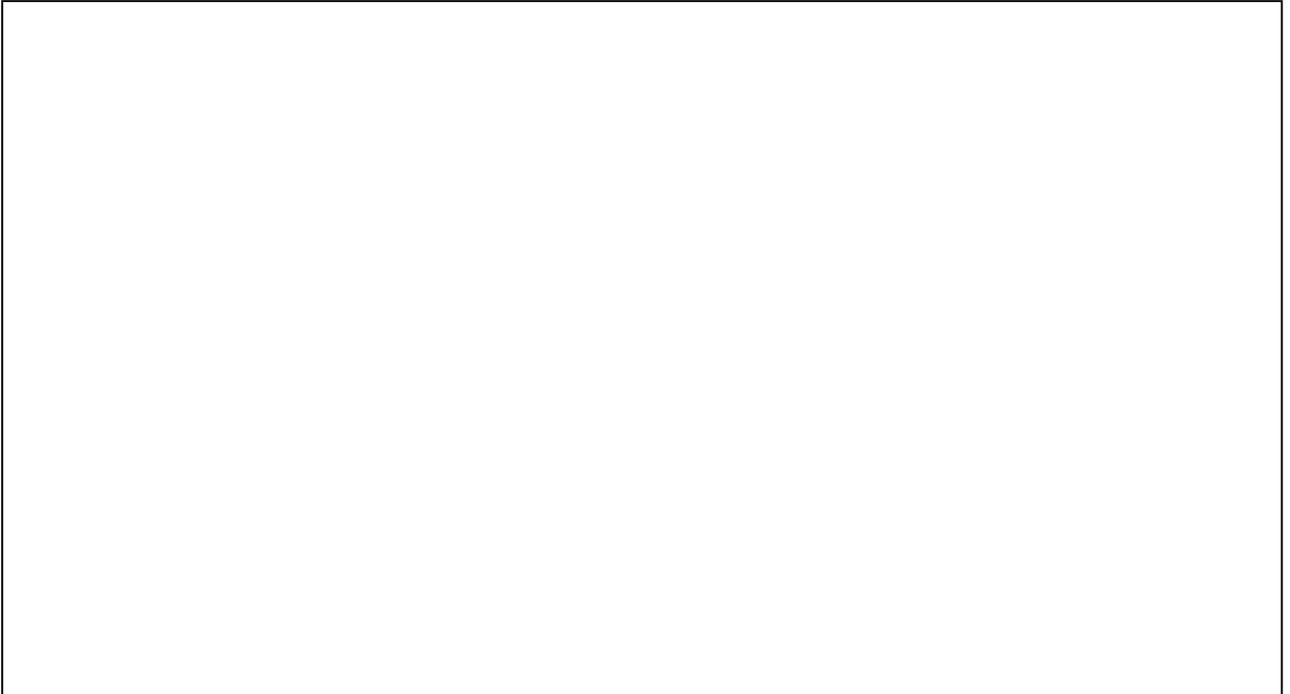
- (d) The VAT due to the Revenue is the VAT on sales less the VAT on purchases.
Calculate the amount of VAT due to the Revenue.

You may use this page to show any necessary work for Question 2.

3. A survey of car sales is taken in an area.
The results are shown in the table below.

Make of Car	Ford	Renault	Toyota	Skoda	Opel
Number of Car Sales	800	400	750	300	550

- (a) Draw, in the box below, a bar chart to illustrate this data.



- (b) The total sales of Toyota cars is €13 875 000.
Calculate the average price paid for a Toyota car.



- (c) Name another type of chart or graph
on which the information from the survey
could be shown.



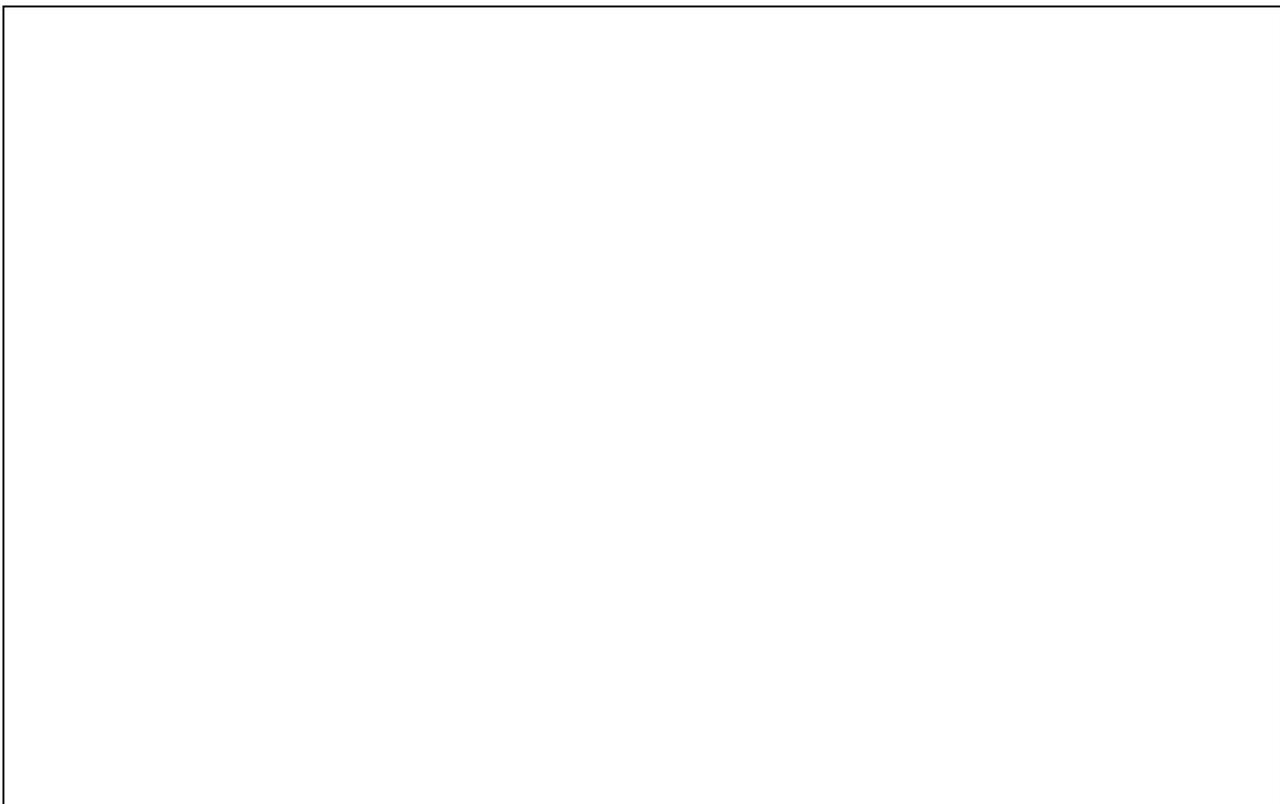
- (d) Anne borrows €10 000 at the rate of 8% per annum compound interest to help her buy a car.
How much will Anne owe at the end of 3 years if she makes no repayments in the meantime?

Compound interest formula

$$A = P\left(1 + \frac{R}{100}\right)^n$$

You may use this page to show any necessary work for Question 3.

4. (a) Construct, in the box below, a circle of radius 2.5 cm.



- (b) Draw a diameter in the circle you have constructed in part (a) and write its length here.



- (c) Construct a triangle with each of its corner points on the circle you have constructed in part (a) such that:
the diameter is one side of the triangle
and the other two sides measure 3 cm and 4 cm.

- (d) Mark the right angle in your triangle.

- (e) Use the measurements from your triangle to test the Theorem of Pythagoras which states:
“ the square on the hypotenuse is equal to the sum of the squares on the other two sides.”



You may use this page to show any necessary work for Question 4.

5. (a) There are five teams in a league.
Each team plays each of the other teams exactly twice.
How many games are played in total?

(b) The numbers 1 to 101 are used in a raffle.
What is the probability that the first number chosen is an odd number?

(c) Fill in the seven missing details on the gas bill below.

Gas Company		Billing period 01 Jan 2003 to 28 Feb 2003		
Date of issue 01 March 2003		Account John W Brunnell	Account No. 987654321	
Meter No. 65987		Previous balance: € 0.00		
METER READING IN UNITS		CONVERSION		GAS USED
PRESENT	PREVIOUS	UNITS x CONV. FACTOR = kWh		
71365	70751	<input type="text"/>	x 11.5761	= <input type="text"/>
Gas used in kWh to nearest kWh	= <input type="text"/>	@ 2.0245c	= €	<input type="text"/>
Supply charge			= €	25.62
VAT @ 12.5% on	<input type="text"/>		= €	<input type="text"/>
		TOTAL	= €	<input type="text"/>

All amounts are calculated to the nearest cent.

You may use this page to show any necessary work for Question 5.

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For the examiner only

Question	Mark
1	
2	
3	
4	
5	
Total	