



# Coimisiún na Scrúduithe Stáit State Examinations Commission

*Leaving Certificate Applied 2005*

## Mathematical Applications (200 marks)

**Friday, 10th 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>	
<b>Centre Stamp</b>	1. Cumulative end-of-page total.	
	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 <i>Grand Total</i> box on the inside flap.	

1. (a) Find 36% of €436.54.

(b) Write the number 36 758 correct to the nearest thousand.

(c) Time in New York is 5 hours behind time in Dublin.  
When it is 3:15 am in Dublin, what time is it in New York?

(d) A restaurant bill amounts to €192.18.  
The bill is divided equally between six people.  
How much does each person pay?

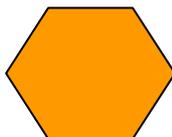
(e) Given that 1 kg = 2.205 pounds,  
convert 3.5 kg to pounds.

(f) Calculate  $1\frac{1}{2} + \frac{3}{8} + \frac{1}{4}$ .

(g) A day of the week is chosen at random.  
What is the probability that it begins with the letter 'S'?

(h) Write 5.64 km in metres.

(i) A regular hexagon has side of length 14.35 cm.  
Find its perimeter.



(j) A student works 6 hours 35 minutes on a Saturday and 3 hours 45 minutes on a Sunday.  
Calculate the total time worked over the two days.

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

**2. Research Element Question on Borrowing and Repayments.**

<i>Term Loan Monthly Repayments per €'000</i>			
Term	Loan Amount		
	Up to €8000	€8001 to €15 000	Over €15 000
24 months	52.10	51.60	50.90
36 months	36.40	35.90	35.20
48 months	28.60	28.00	27.40
60 months	24.00	23.40	22.70

(a) Susan is thinking about borrowing €14 000 over three years.  
Write down the relevant monthly repayment per €'000 from the table.

(b) How much will Susan have to repay each month?

(c) After Susan has finished all her payments how much will she have paid?

(d) Susan wants the money to buy a car that costs €14 000. Instead of the above loan Susan is considering the following offer from the car dealer: a deposit of €2000 and 24 monthly repayments of €650. Under this offer calculate the total amount that Susan will have to pay.

(e) Give one reason why Susan might choose the term loan and one reason why she might choose the dealer's offer.

Reason to choose the term loan .....

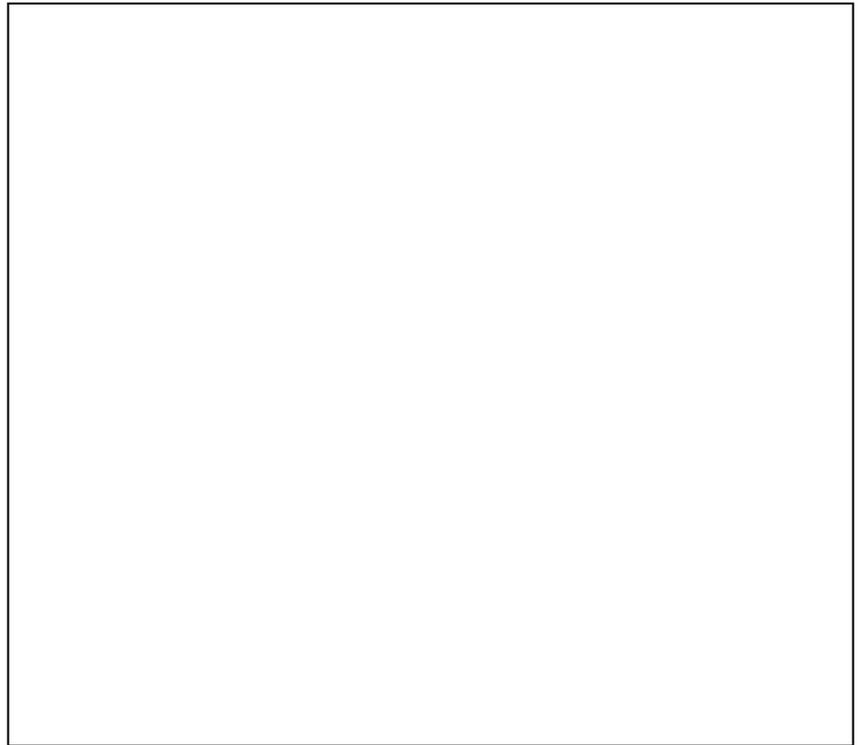
Reason to choose the dealer's offer .....

(f) Joe borrowed a sum of money for 2 years at 8% per annum compound interest. He made no repayments. After two years he owed €13 996.80. How much did he borrow?

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

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

3. (a) Construct a rectangle  
8 cm long and 6 cm wide.



- (b) Draw a diagonal in the rectangle in part (a) and write down its length.

Length of diagonal:

- (c) Use the theorem of Pythagoras to check your answer to part (b).  
The theorem of Pythagoras states:  
“The square on the hypotenuse is equal to the sum of the squares on the other two sides.”

- (d) The rectangle you have drawn in part (a) is a scaled drawing of the top of a kitchen table. The scale is 1:16. Calculate the actual measurements of the top of the table.

Length:

Width:

- (e) What is the area of the top of the table?  
Give your answer in  $\text{m}^2$ .

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

4. (a) The temperature is measured at noon each day for a week. The results are recorded in the following table:

Day	Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Temp (°C)	20	15	19	12	16	13	17

In the box below draw a trend graph to represent this information.

- (b) Calculate the average noon temperature for the week.

- (c) The above temperatures and the noon temperatures for the following week are as follows:  
20, 15, 19, 12, 16, 13, 17, 21, 18, 16, 13, 15, 14 and 13.

Complete the following frequency table:

Temperature	12	13	14	15	16	17	18	19	20	21
No. of Days										

- (d) Write down the modal temperature for the 14 days.

- (e) Convert the modal temperature to degrees Fahrenheit using the formula:

$$F = C \times \frac{9}{5} + 32.$$

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

5. (a) Fill in the **five** missing details on the electricity bill below.

Meter Readings		Units and Rate (cent)	Description	Amount (CR= Credit)
Present	Previous			
98199	97146	<input type="text"/> × 11.07	GENERAL DOMESTIC	<input type="text"/>
			STANDING CHARGES	6.88
			PUBLIC SERVICE OBLIGATIONS LEVY	3.02
		VAT @ 13.5% ON	€ <input type="text"/>	<input type="text"/>

	BILLING PERIOD	PLEASE PAY BY	TOTAL €
E = Estimated C = Customer	27 JUL 04 - 27 SEPT 04	12 OCT 04	€ <input type="text"/>

(b) A bag contains 5 red balls and 6 white balls.  
A ball is picked at random.  
What is the probability that the ball chosen is red?

(c) Anne takes three steps to walk the same distance as Sean walks in four steps.  
Each of Anne's steps covers 0.5 metres.  
How many metres does Sean walk in 24 steps?

**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	
Irish Bonus	
Grand Total	