



Coimisiún na Scrúduithe Stáit State Examinations Commission

Leaving Certificate Applied 2009

Mathematical Applications (200 marks)

Friday, 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.

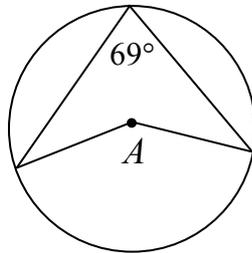
ALL QUESTIONS CARRY EQUAL MARKS.

<i>For the Superintendent only</i>	<i>For the Examiner only</i>	
<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: auto;"> <p><i>Centre Stamp</i></p> </div>	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 72% of €382.28.

(b) The respective heights of five students are 143 cm, 160 cm, 156 cm, 157 cm and 166 cm.
What is the mean height of the five students?

(c) Calculate A .



(d) Calculate $2\frac{1}{3} \times 1\frac{5}{6}$.

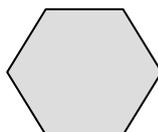
(e) A carton contains 2 litres of juice. A full glass holds 250 ml. How many full glasses of juice can be filled from this carton?

(f) Helen's rate of pay is €9.40 per hour.
Overtime is paid at 'time and a half'.
How much will Helen get paid for 4.5 hours of overtime?

(g) €2600 is divided between Michael and Billy in the ratio 3:2.
How much does Billy receive?

(h) There are 6 red balls and 5 black balls in a bag.
A ball is chosen at random from the bag.
What is the probability that the chosen ball is red?

(i) A regular hexagon has side of length 8.36 cm.
Find the perimeter of the hexagon.



(j) Write the number 54 599 correct to the nearest thousand.

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

2. Research Element Question on Holiday and Travel Mathematics

Below is an airline return ticket from Dublin to New York for a family of three.

Going Out - All times are local		
From Dublin(DUB) to New York(NY) Web Fare		
Wednesday	Flight No. 818	
Depart	Dublin(DUB)	10:00
Arrive	New York(NY)	<input type="text"/>
Coming Back - All times are local		
From New York(NY) to Dublin(DUB) Web Fare		
Saturday	Flight No. 819	
Depart	New York(NY)	06:20
Arrive	Dublin(DUB)	17:20
Pricing		
Total for 3 Passengers		
Fare		835.36 EUR
Airport Check-in Fee		18.00 EUR
Credit Card Fee		18.00 EUR
EUR Web Baggage Fee		12.00 EUR
Taxes & Charges		<input type="text"/>
TOTAL PRICE		1044.20 EUR

(a) Local time in New York is 5 hours behind local time in Dublin.
The estimated flight time between these two cities is six hours.
Calculate the estimated time of arrival in New York and fill in your answer on the above ticket.

(b) Fill in the cost of the Taxes & Charges on the above ticket.

(c) The family has €2000 spending money.
Given an exchange rate of €1 = \$US 1.54, convert the €2000 to US dollars.

(d) The family spends \$US 1078.00 on accommodation and meals.
Calculate the percentage of the family's spending money that this represents.

$$C = \frac{5(F - 32)}{9}$$

(e) The temperature in New York is 77° Fahrenheit.
Convert 77° Fahrenheit to degrees Celsius.

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

3. (a) In the box below, construct a rectangle 8 cm long and 6 cm wide.



(b) Calculate the area of the rectangle.

(c) Draw a diagonal of the rectangle you have drawn in part (a).
Measure the length of the diagonal and write your answer here.

(d) Use the theorem of Pythagoras to check your answer to part (c).
The theorem of Pythagoras states:
“In a right angled triangle, the square on the hypotenuse is equal to the sum of the squares on the other two sides.”

(e) Construct, on your diagram, a circle with the mid-point of the diagonal as centre, and with the diagonal as diameter.

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

4. Five Candidates stood for election to Dáil Éireann in a 3 seat constituency.
The election was conducted under the PR system.
The total electorate as contained in the 'Register of Electors' was 27 800.
The total poll was 21 430.
The number of spoiled votes (votes which were invalid) was 310.

(a) Calculate the valid poll.

(b) Calculate the quota, using the quota formula:

$$\text{Quota} = \frac{\{\text{Valid Poll} \div (\text{number of seats} + 1)\} + 1}{1}$$

(c) On the first count candidate A received 5620 first preference votes.
How many surplus votes did candidate A receive?

The selling price of an electric drill, including VAT, is €307.50.
Before VAT is added, the price of the drill is €250.00.

(d) Calculate the percentage VAT rate used.

(e) The VAT rate is changed to 15%.
Calculate the new selling price of the electric drill.

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		Quantity and price	Description	Amount € CR = Credit
Present	Previous			
TARIFF: DOMESTIC				
65649	64663	<input type="text"/> × €0.1597	GENERAL UNITS	<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		Pay by		Total now due €
E = Estimated C = Customer	2 JAN 09 – 5 MAR 09	23 MAR 09		<input type="text"/>

(b) Sheila borrows €8000 at the rate of 10.75% per annum compound interest.
How much will Sheila 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 5

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For the examiner only

Question	Mark
1	
2	
3	
4	
5	
Total	
Irish Bonus	
Grand Total	