Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate Applied 2011

Mathematical Applications
(200 marks)

Friday, 10 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.

For the Superintendent only
Centre Stamp

For the Examiner only				
			Question	Mark
			1	
			2	
Cumulative check			3	
Running total			4	
– Disallowed			5	
= Total		↔	Total	

1. ***(a)*** Calculate $\sqrt{119}$, correct to 2 decimal places.

(b) John scored a goal after 83 minutes of a game which started at 14:45.
At what time did John score the goal?

(c) The length of a side of a square is 4·5 cm.
Calculate the area of the square.

(d) Two friends shared a Lotto prize of €24 000 in the ratio 4:1.
How much did each person receive?

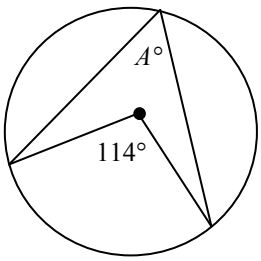
(e) Calculate $\frac{3}{4}$ of 72 .

(f) A jacket costing €96·00 is reduced by 10% in a sale.
What is the sale price?

(g) Mary got a loan of €100.
She had to pay €10 each month for a year to clear the loan.
How much did the loan cost her?

(h) Add 340 g, 2 kg and 23 g.
Give your answer in grammes.

(i) Calculate *A*.



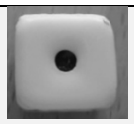
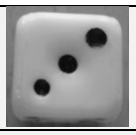
(j) The average of four numbers is 22.
A fifth number, 12, is then added on.
Calculate the new average.

Use this page to show any necessary work for Question 1

2. Statistics and Probability

A single die was thrown 54 times. The results were recorded on the frequency table below.

Frequency Table

RESULT						
Frequency	**9**	**7**	**11**	**10**		**9**

(a) Complete the frequency table by working out how many times a  was thrown.

(b) Draw a bar chart to illustrate the above data. Use the grid below to draw your bar chart.

(c) Write down the modal throw.

(d) Sheila has a bag of beads consisting of 4 green beads, 3 yellow beads and 2 red beads.
She picks a bead at random out of the bag.

(i) What is the probability that Sheila picks a red bead?

(ii) Sheila wants each colour to have the same probability of being picked.
She wants to keep the total number of beads the same.
How many of each colour should she have in the bag?

(e) A number of four legged stools and three legged stools together have a total of 20 legs.
Calculate the number of three-legged stools.

Use this page to show any necessary work for Question 2

3. ***(a)*** In the box below, construct a triangle with all sides measuring 5 cm.

(b) Calculate the perimeter of the triangle.

(c) Measure any one of the angles in the triangle in part ***(a)***.
Write down your answer**.**

(d) On a scaled diagram of a rectangular kitchen floor,
the length measures 30 cm and the width measures 20 cm.
The scale is 1:20.

(i) What are the actual measurements of the floor?

(ii) Siobhan is going to use square tiles to cover the floor.
Each tile measures 0·25 m × 0·25 m.
How many tiles are needed to cover the floor completely?

(iii) There are 18 tiles in a box.
Each box costs €15·99.
Calculate the cost of the tiles.

Use this page to show any necessary work for Question 3

4. A lending agency is offering the following lending rates on term loans:

	MONTHLY REPAYMENT					
	TERM					
	1 year (12 monthly payments)		2 years (24 monthly payments)		5 years (60 monthly payments)	
Loan Amount	Fixed rate	Variable rate	Fixed rate	Variable rate	Fixed rate	Variable rate
€1000 up to €5000	**€89·17**	**€89·04**	**€47·71**	**€47·67**	**€23·38**	**€23·35**
€5000 up to €10 000	**€88·96**	**€88·91**	**€47·48**	**€47·44**	**€23·04**	**€22·95**

Notes

The **MONTHLY REPAYMENT** figures given are **per €1000** and are inclusive of all interest and charges.

(a) Find the initial monthly repayment on a loan of €3000 which is to be repaid over 5 years at a variable rate.

(b) If the €3000 were to be borrowed over 2 years at a variable rate, what would be the difference in the initial monthly repayment?

(c) John borrows €7000 to buy a car.
He will repay the loan over 2 years at the fixed rate.
How much will the loan cost John?

(d) John's car, now worth €7000, will depreciate by 14% per year.
Calculate the value of the car after one year.

(e) Find the maximum loan that Caoimhe can get if she can only afford to repay €115 per month over five years.

Use this page to show any necessary work for Question 4

5.

Kilometres (approx)	**Galway**	**Cork**	**Belfast**	**Dublin**
Galway		207	300	216
Cork	207		422	256
Belfast	300	422		167
Dublin	216	256	167	

Use the distance chart above to answer the following questions.

(a) Denis travelled from Cork to Dublin and on to Galway.
How many kilometres did he travel?

(b) It took Denis 7 hours and 20 minutes to make this journey.
Calculate his average speed.

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

(c) Denis receives travelling expenses of 57 cent per kilometre.
Calculate his travelling expenses for the journey in part ***(a)*** above.

Last year, Séan worked for 40 hours in a particular week.
He was paid €9·40 per hour for the first 35 hours.
He was paid €11·30 per hour for the remaining hours.

(d) Calculate Séan gross pay.

(e) Séan's tax rate was 20% and he had tax credits of €56 per week.
Calculate the tax paid by Séan.

(f) Calculate Séan's take home pay for that week.

Use this page to show any necessary work for Question 5

Blank Page