



# Coimisiún na Scrúduithe Stáit State Examinations Commission

*Leaving Certificate Applied 2008*

## Mathematical Applications (200 marks)

**Friday, 6th 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 21% of €648·42.

(b) Three cheques were lodged into a current account.  
The cheques were for €26·74, €1043·29 and € 236·28.  
Calculate the total amount lodged.

(c) The length of a side of a square is 4·6 m.  
Calculate the area of the square.

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

(e) A driver leaves Newbridge at 05:20 and arrives at his destination at 14:15. The stops he makes for breaks total 1·5 hours.  
Calculate his actual driving time.

(f) A bag of fertilizer weighs 25 kg.  
How many bags weigh 1 tonne?

(g) A letter is picked at random from the word STATISTICS.  
What is the probability that the letter chosen is T?

(h) A rugby team played 5 matches.  
Their scores were 22, 17, 33, 20 and 7.  
What was the median score?

(i) A car travels 270 km in 5·4 hours.  
Calculate the average speed of the car.  
Use the formula  $S = \frac{D}{T}$ .

(j) The scale on a map is 1:250.  
What distance does 6 cm represent?

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

## 2. Research Element Question on *Budgets*

Patrick's net weekly pay is €397·80.  
His expenses are shown in the table.

Expenses	Weekly	Daily
<i>Essential</i>		
Rent	€65	
Groceries	€76	
Fuel bills	€42	
Loans	€32	
<i>Discretionary</i>		
Mobile Telephone Credit	€20	
Cigarettes (1 pack per day)		€7·20
Savings	€25	

- (a) Calculate the total of Patrick's essential expenses per week.

- (b) Calculate his weekly discretionary income.

Discretionary income = net income – essential expenses

- (c) How much does he spend on cigarettes in a week?

- (d) What percentage of his discretionary income does he spend on cigarettes?

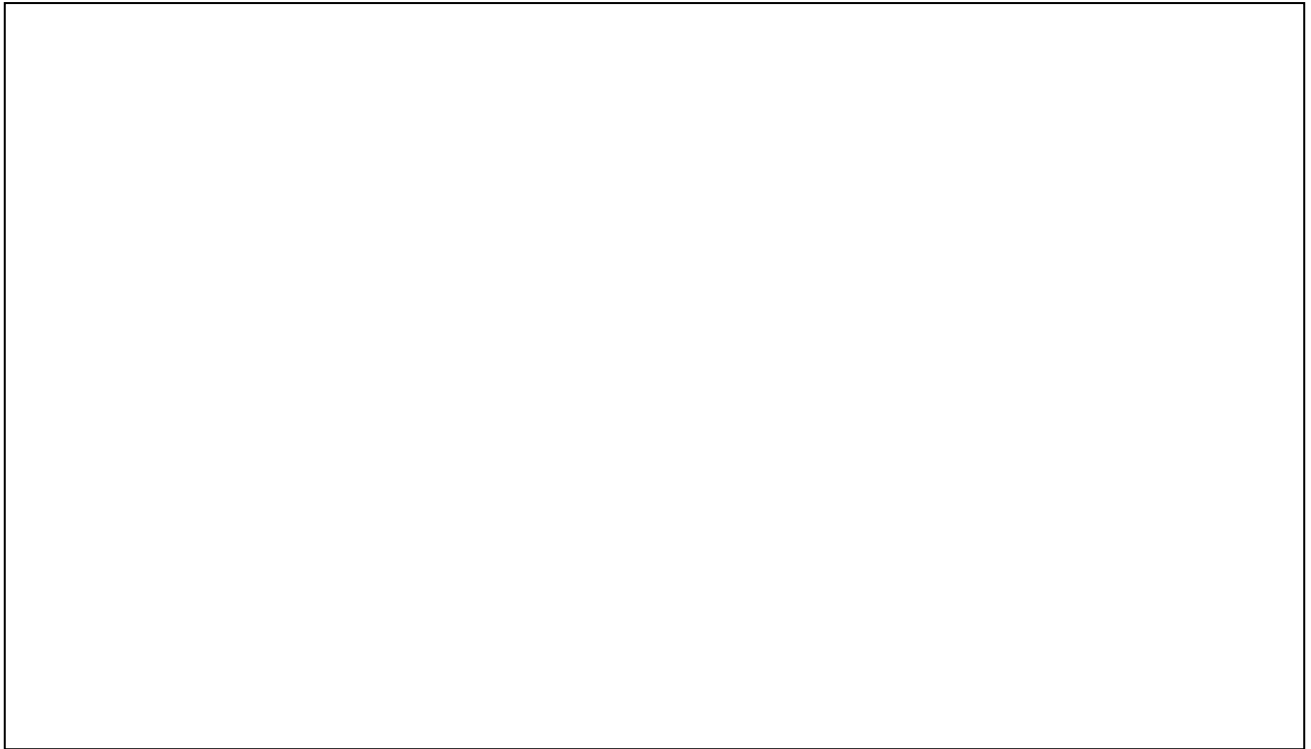
- (e) Calculate Patrick's weekly surplus after **all** the expenses are paid.

- (f) Tax changes announced in the national budget result in Patrick's net income increasing by €4·20 per week. However, cigarettes will increase by 50 cent per pack.

Calculate the change in Patrick's weekly surplus.

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

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



(b) Draw a diameter in the circle and write down its length.

(c) Construct a triangle with its three vertices on the circle such that:

- the diameter you have drawn is one side of the triangle, and
- one side is 3 cm long.

(d) Write down the length of the third side.

(e) Mark the right angle on your diagram.

(f) Find the area of the circle, taking  $\pi = 3.14$ .

Area of circle =  $\pi r^2$

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

4. Below are the one-day ticket prices for *Funworld* amusement park:

SEASON	DATES	ADULT	CHILD (Under 12)	FAMILY (2 Adults +2 Children)
Low	01/01 to 31/03	€10	€5	€20
Mid	01/04 to 31/05	€12	€8	€30
High	01/06 to 31/08	€16	€10	€40

(a) How much does it cost for one adult to spend a day in *Funworld* on 20<sup>th</sup> March?

(b) There are two adults and four children in the Collins family. The children are aged three, five, eleven and sixteen. How much will it cost the family to spend a day in *Funworld* in July?

(c) The family needs to convert some sterling to euro. Given an exchange rate of £1 = €1.34, convert £550 to euro.

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(d) Richard has a weekly income of €385.  
His tax rate is 20%.  
His tax credits are €52 per week.  
How much tax does Richard pay per week?

(e) After paying his tax, what percentage of Richard's gross income is left?



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

5. Mary is a second-year student. Her timetable is as follows:

	<b>Monday</b>	<b>Tuesday</b>	<b>Wednesday</b>	<b>Thursday</b>	<b>Friday</b>
9:00 – 9:40	French	English	History	English	Irish
9:40 – 10:20	Maths	History	Maths	Science	Science
10:20 – 11:00	Religious Ed.	Irish	English	Geography	S.P.H.E.
11:00 – 11:15	<i>Morning Break</i>				
11:15 – 11:55	English	French	Geography	Maths	Religious Ed.
11:55 – 12:35	Irish	Maths	Home Ec.	Maths	Art
12:35 – 13:15	History	Religious Ed.	French	English	Art
13:15 – 14:00	<i>Lunch Break</i>				
14:00 – 14:40	Science	Home Ec.	Irish	French	C.S.P.E.
14:40 – 15:20	Science	Home Ec.	Science	P.E.	Irish
15:20 – 16:00	Geography	Geography	Science	P.E.	Home Ec.

(a) Calculate Mary's total class time on Monday.

(b) How much more time is given to Mathematics classes than to History classes in the week?

(c) Because of a staff meeting on Wednesday, all classes are shortened by 5 minutes.

At what time will the students finish school on that day?

(d) Áine, Liam and Eoin take part in a quiz. To decide the order in which they answer questions, their names are drawn from a bag one at a time.

List all the ways the names could be drawn.

(e) Write down the probability that Eoin is last.

**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	