



**Coimisiún na Scrúduithe Stáit
State Examinations Commission**

Leaving Certificate Applied 2018

Mathematical Applications

(200 marks)

Friday 8 June
Morning 9:30 to 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 all necessary work in the space provided.
4. Calculators may be used.
5. Answers involving money should be given correct to the nearest cent, unless otherwise indicated.

ANSWER QUESTION ONE AND THREE OTHER QUESTIONS.

ALL QUESTIONS CARRY EQUAL MARKS.

<i>For the superintendent only</i>
Centre stamp

<i>For the examiner only</i>			
		Question	Mark
		1	
		2	
<i>Cumulative check</i>		3	
Running Total		4	
– Disallowed		5	
= Total		Total	

Credit

Question 1

- (a) 2 people travel 6 kilometres in a taxi.

There is a charge of €1.50 per person, and €1.20 for each kilometre travelled.

Work out the **total** cost of the taxi.

	Answer:
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- (b) 1 inch is approximately 2.5 cm. A television has a diagonal of 120 cm.

Work out the length of this diagonal in inches.

	Answer:
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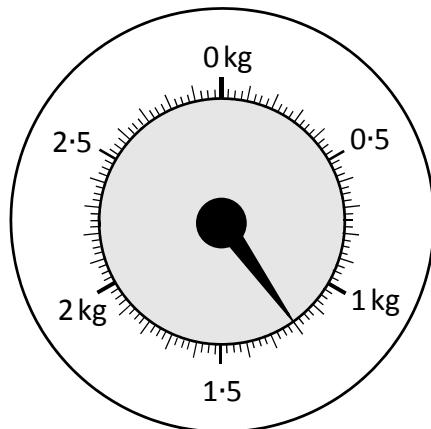
- (c) A train leaves Cork at 08:30 and arrives in Belfast at 15:10.

Work out the length of time the journey takes.

	Answer: <input type="text"/> hours and <input type="text"/> minutes
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- (d) Write down the weight shown on the scales on the right.

	Answer:
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- (e) Work out the value of $2 \cdot 1^3$.

Give your answer correct to one decimal place.

	Answer:
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- (f) The toll on a motorway is €1·80. John paid the exact amount of the toll using four coins. Write down the four coins that John used.

Answer:	<input type="text"/>	,	<input type="text"/>	,	<input type="text"/>	,	<input type="text"/>
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- (g) A shop sells apples for 50 cent each, with a special offer of 6 apples for €2·50. Aisling buys 10 apples. Work out the total cost of the 10 apples.

Answer:

- (h) Add together 4 km, 6 m, and 400 cm. Give your answer in metres.

Answer:

- (i) Work out the total cost of a holiday for one adult and one child, using the special offer below.

Sun Holiday Special Offer:
€880 per adult, 50% discount for children!

Answer:

- (j) The exchange rate is €1 = \$1·17. Which is worth more, €300 or \$300? Show your working out, or give a reason for your answer.

Amount that is worth more: €300 \$300
(tick (\checkmark) **one** box only)

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Question 2: Research Element Question on Budgets

Martin is making out a monthly budget. The following are the items in this budget.

Wages: €2100	TV & Broadband: €60	Child Benefit: €140	Bills: €200
Rent: €1150	Mobile Phone: €50	Groceries: €500	

- (a)** Write each of the numbers above into the correct place in the table below. One has been filled in already.

Item	Income (€)	Expenditure (€)
Wages		
Rent	-	1150
Mobile Phone		
TV & Broadband		
Child Benefit		
Bills		
Groceries		
Total		

- (b)** Work out Martin's **total monthly income** and **total monthly expenditure**. Write each answer into the correct place in the table above.

- (c) (i) Work out how much money Martin has left over at the end of each month.

- (ii) Work out the **percentage** of Martin's total income that is left over at the end of each month.

- (d) Martin's rent is currently €1150 per month. It is going to increase by 6% in July. Work out Martin's new rent after this increase.

- (e) Martin sees the following ad:

Mobile Phone, TV & Broadband

First 4 months free!

€140 per month after that. 12-month contract.

Work out if Martin would save money on his current mobile phone and TV & broadband bills by switching to this offer for 12 months. Show all of your working out.

Would Martin save money by switching?

Yes

No

(tick (✓) one box only)

1

1

- (f) Write each of the five numbers in the following list into the table below to show a typical amount of money for each item. Use each number only once.

€2·49

€24 950

€2 495 000

€249.50

€2495

Item	Typical amount of money (€)
The cost of a packet of biscuits	
The cost of the weekly grocery shopping for a family of 6	
The National Lottery Jackpot	
The cost of a new mid-range car	
The annual cost of health insurance for a family of 4	

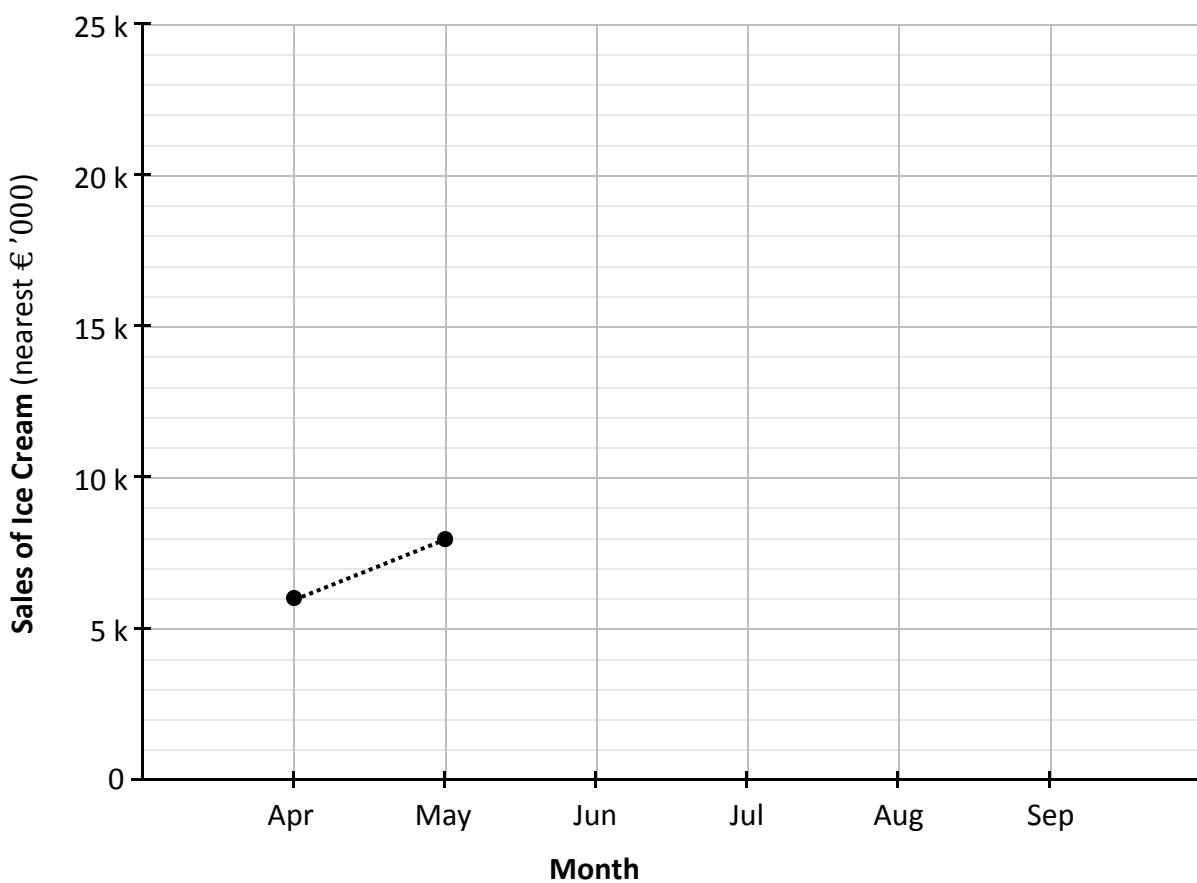
Question 3

Orla runs a business selling ice creams.

The table below shows her actual monthly sales and her rounded monthly sales for part of 2017.

Month	Apr	May	Jun	Jul	Aug	Sep
Actual Sales (€)	6152	7980	18 100	23 875	19 942	14 356
Rounded Sales (€) (nearest '000)	6k	8k				

- (a) Complete the table by **rounding** each monthly sales figure to the nearest thousand.
Write each answer in the same form as the rounded sales for April (Apr) and May.
- (b) Use the **rounded** sales figures to complete the trend graph below.



- (c) Use your graph to predict the monthly sales for October 2017, the next month in the series.
Show your work on the graph, or give a reason for your answer.

	Answer:
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- (d) (i) Use the **rounded** sales figures to work out Orla's **total** sales for the **6 months** in the table.

Answer:

- (ii) Hence, or otherwise, work out Orla's **mean** (average) monthly sales for these **6 months**.

Answer:

- (e) Orla sells ice creams for €2·00 each. This gives her a profit of 25%. Work out how much each ice cream **costs** Orla.

Answer:

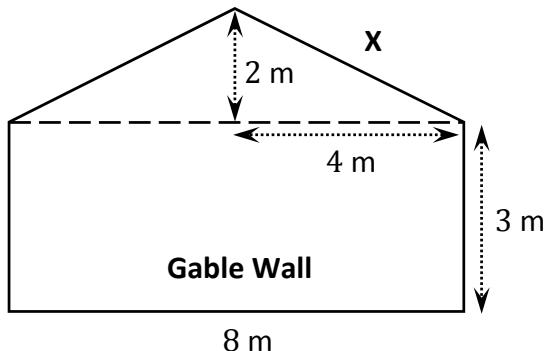
- (f) Joe sells furniture. His basic working week is 38 hours. He is paid €20·20 per hour for this. He is paid **time and a half** for any overtime he works in a week, beyond 38 hours.

One week, Joe worked **44 hours** in total. Fill in the four missing values marked **A**, **B**, **C**, and **D** in the table below to show Joe's pay for that week.

	Time worked (hours)	Rate per hour (€)	Pay (€)
Basic week	38	20·20	A.
Overtime	B.	C.	D.

Question 4

The diagram below shows the gable wall of Anita's house. It is made up of a triangle on top of a rectangle.



- (a) Find the total height of the house.

Answer:

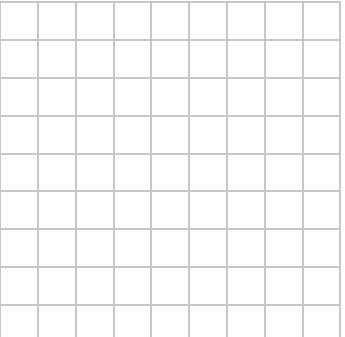
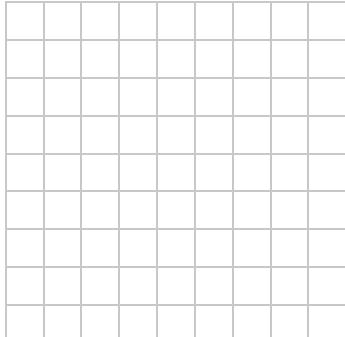
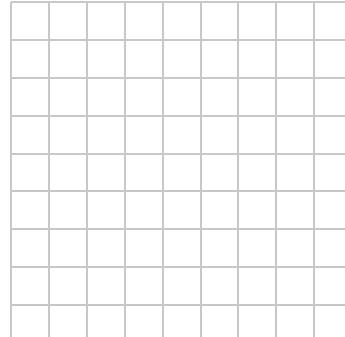
- (b) Construct a scaled diagram of the gable wall of Anita's house, using a scale of 1 : 100.

As a result, the *labeled* version of the model is able to learn the underlying structure of the data, while the *unlabeled* version is able to learn the specific features of the data. This allows the model to make accurate predictions even when it has never seen a particular input before.

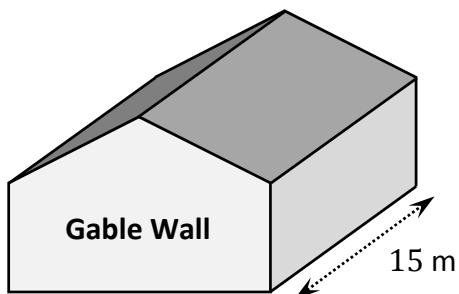
- (c) Use the theorem of Pythagoras to find the length of the side marked X on the diagram above. Give your answer in metres, correct to one decimal place.

A large grid of squares for drawing or writing, with a smaller box labeled "Answer" in the bottom right corner.

- (d) Fill in the table below to work out the **total area** of the gable wall of the house.

Area of the rectangle (m^2)	Area of the triangle (m^2)	Total area (m^2)
		

- (e) The diagram below shows Anita's house.
The length of the house is 15 m. It is in the shape of a prism.

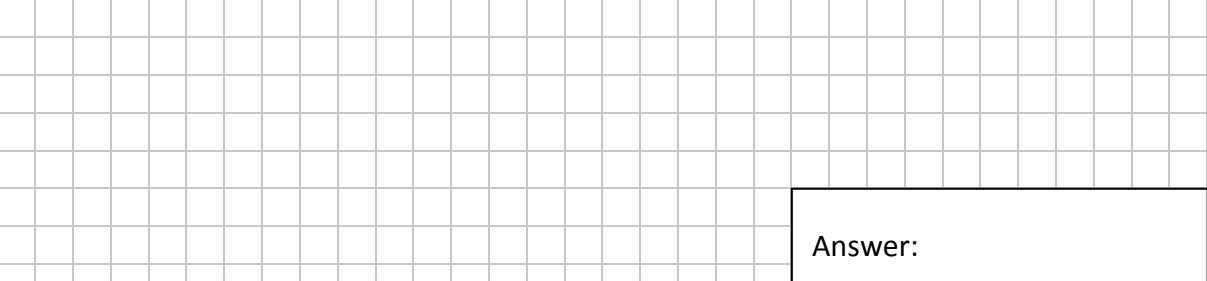


Use your answer from part (d) above to work out the **volume** of Anita's house.

	Answer:
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- (f) On Anita's road, the numbers of the houses on the left start at 1 and go up by 2 each time, while the numbers of the houses on the right start at 2 and go up by 2 each time.

Anita lives in the 10th house on the left.
Work out the number on Anita's house.

	Answer:
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Question 5

- (a) Leroy has the following boxes of cereal in his cupboard:

3 boxes of *Wheat Bisks*

1 box of *Corn Flakes*

2 boxes of *Fruit & Fibre*.

He picks one box at random. Find the **probability** that Leroy picks a box of *Wheat Bisks*.

- (b) There is some nutritional information about *Fruit & Fibre* shown on the box.

- (i) There is 1 g of salt in 100 g of *Fruit & Fibre*.

Work out how many grams of salt are in 40 g of *Fruit & Fibre*.

- (ii) There are 9 g of sugar in 40 g of *Fruit & Fibre*.

Work out how many grams of sugar are in 100 g of *Fruit & Fibre*.

- (iii) Leroy's doctor recommends a daily allowance of 60 g of fat.

Use the table below to work out what **percentage** of this daily allowance is in 40 g of *Fruit & Fibre*.

Typical values for <i>Fruit & Fibre</i>	100 g contains	40 g contains
Fat	8.25 g	3.3 g

- (c) There are 18 g of sugar in 100 g of *Corn Flakes*.
There are 11 g of sugar in 40 g of *Wheat Bisks*.

Work out which of these cereals contains **less sugar** per gram. Show your working out.

The cereal with **less sugar** per gram is: *Corn Flakes* *Wheat Bisks*
(tick (\checkmark) **one** box only)

<input type="checkbox"/>	<input type="checkbox"/>
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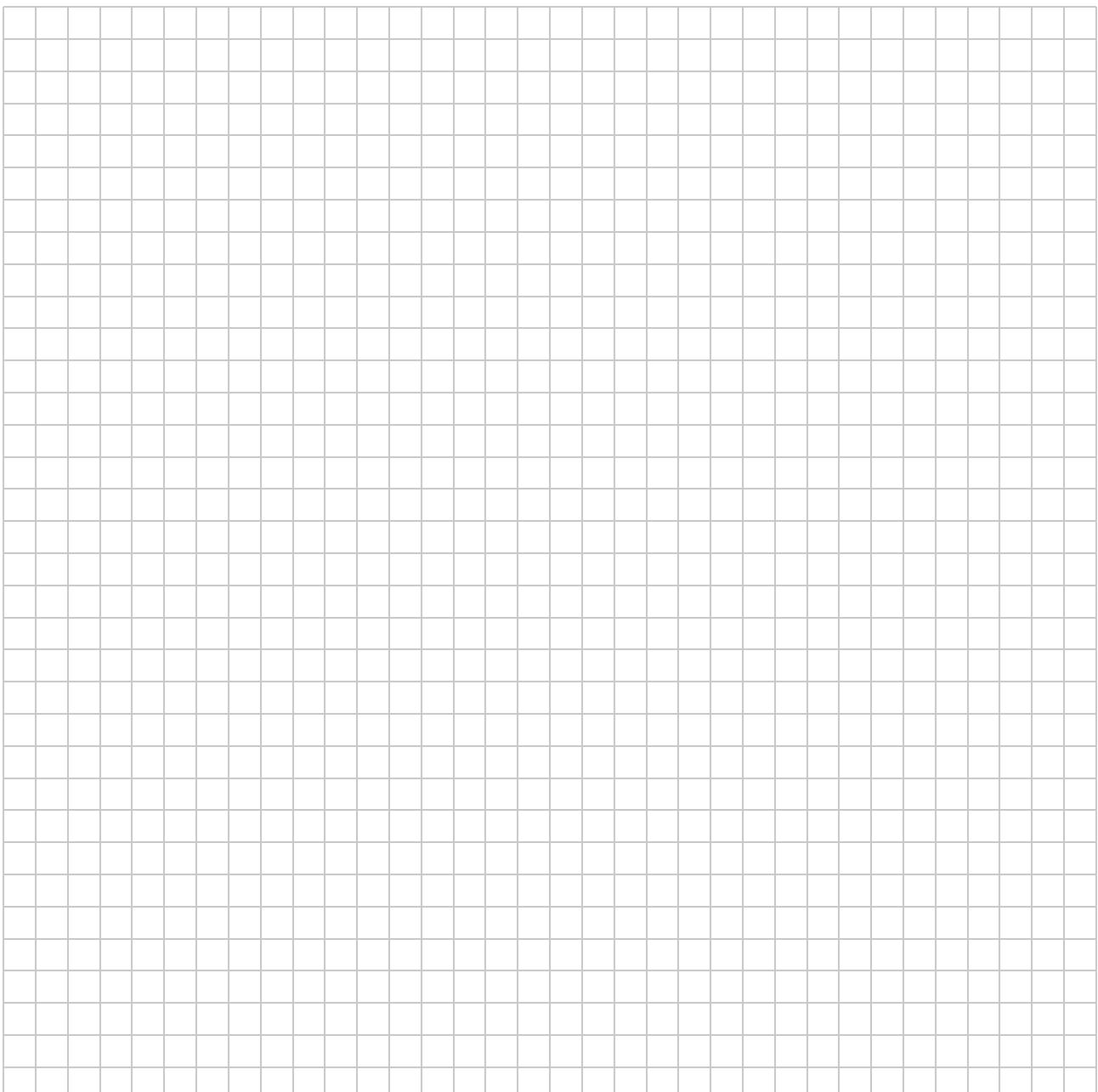
- (d) Dorothy has a gross income of €600 per week.
She pays tax at 20%. She has a tax credit of €32 per week.

Work out Dorothy's weekly take-home pay (i.e. net pay).

Answer:

- (e) Dorothy puts €3000 in the bank for 2 years at an interest rate of 5% per year, compound interest. Work out how much money she will have after the 2 years.

Answer:



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