

Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										



General Certificate of Secondary Education
Foundation Tier
June 2011

Applications of Mathematics (Linked Pair Pilot)

93701F

Unit 1 Finance and Statistics

F

Monday 13 June 2011 1.30 pm to 3.00 pm

For this paper you must have: mathematical instruments. You may use a calculator.	
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For Examiner's Use	
Examiner's Initials	
Pages	Mark
2 – 3	
4 – 5	
6 – 7	
8 – 9	
10 – 11	
12 – 13	
14 – 15	
16 – 17	
TOTAL	

Time allowed

- 1 hour 30 minutes

Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the space provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book. Cross through any work that you do not want to be marked.
- If your calculator does not have a π button, take the value of π to be 3.14 unless another value is given in the question.

Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 80.
- The quality of your written communication is specifically assessed in Questions 5 and 12.
Those questions are indicated with an asterisk (*)
- You may ask for more answer paper, graph paper and tracing paper.
These must be tagged securely to this answer booklet.
- You are expected to use a calculator where appropriate.

Advice

- In all calculations, show clearly how you work out your answer.



J U N 1 1 9 3 7 0 1 F 0 1

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Answer **all** questions in the spaces provided.

1 Carl and Lia go shopping.

1 (a) Carl buys

2 jars of coffee at £3.25 each

1 packet of tea at £2.79

3 packets of biscuits at £1.12 each

1 (a) (i) How much does he spend?

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Answer £ (3 marks)

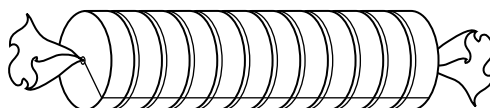
1 (a) (ii) Carl pays with a £20 note.

How much change does he receive?

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Answer £ (1 mark)

1 (b) (i) Lia buys a packet of 12 sweets.



She gives $\frac{1}{3}$ of the packet of sweets to Carl.

She eats $\frac{1}{2}$ of the packet of sweets.

How many sweets does she have left?

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Answer (3 marks)



- 1 (b) (ii)** The packet of sweets costs 80 pence.
Lia uses four coins to pay the exact amount for the sweets.

Write down **two** possible combinations of coins Lia could have used.

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Combination 1

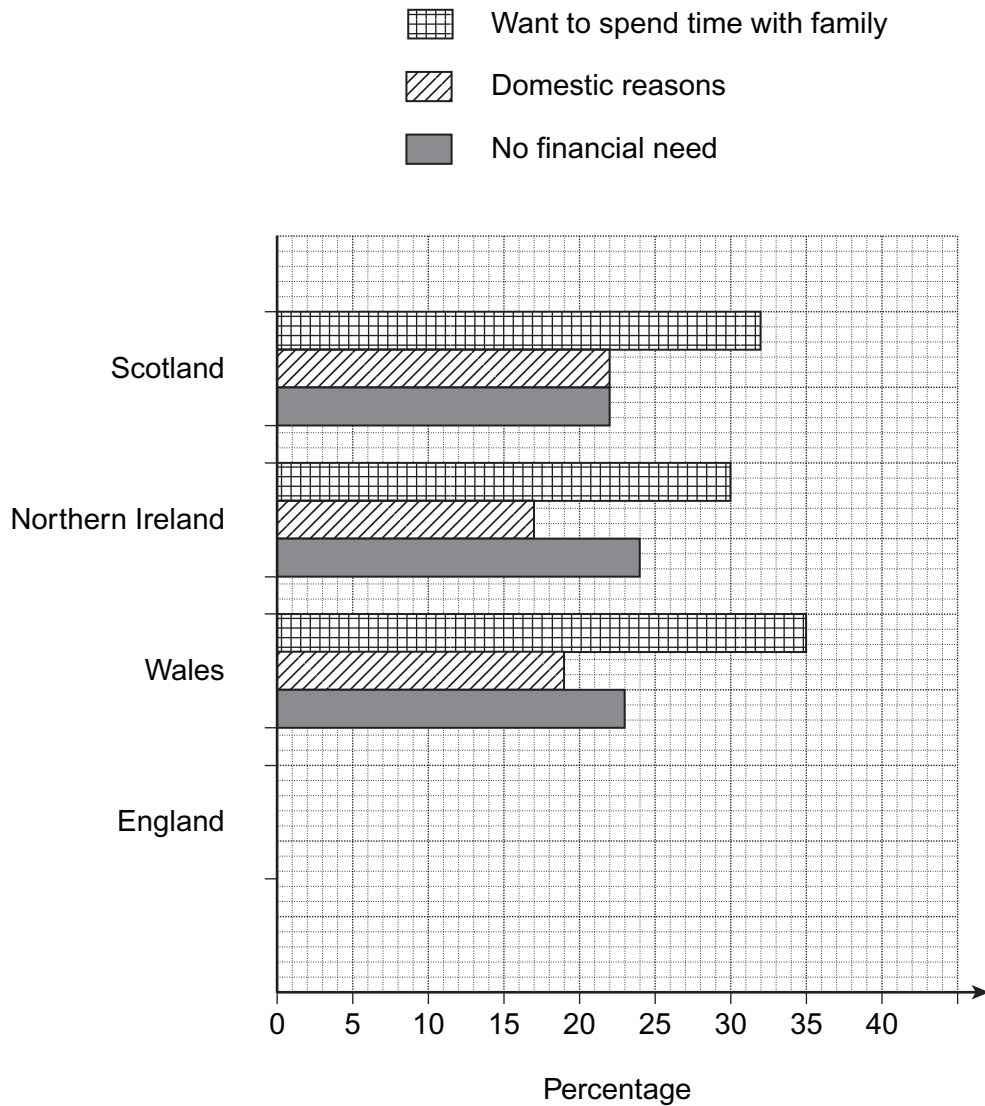
Combination 2

(2 marks)

Turn over for the next question



- 2** Women do not always want to work full-time.
The bar chart shows some of the reasons why.



- 2 (a)** What percentage of women in Scotland 'Want to spend time with family'?

Answer % (1 mark)

- 2 (b)** Which country has the smallest percentage for 'No financial need'?

Answer (1 mark)



- 2 (c)** Write down one similarity in the data shown for Scotland, Northern Ireland and Wales.

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(1 mark)

- 2 (d)** The figures for England are shown.

Want to spend time with family	26%
Domestic reasons	23%
No financial need	30%

Use these figures to complete the diagram.

(3 marks)

Turn over for the next question



- 3** A group of nine people are weighed.
The results, in kilograms, are shown.

67 58 62 71 59 83 74 84 90

- 3 (a)** Work out the mean weight.

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Answer kg (3 marks)

- 3 (b)** Another person joins the group.
She weighs 69 kilograms.

Tick a box to show what happens to the mean weight of the group.
Give a reason for your answer.

Decreases

Stays the same

Increases

☐
☐
☐

Reason

..... (2 marks)



- 4 (a)** Steve cleans windows.
He takes 12 minutes to clean the windows of each house in a street.
He takes 4 minutes to move from one house to the next house.

One afternoon he works from 1 pm until 5 pm.

How many houses does he complete?

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Answer (3 marks)

- 4 (b)** Steve uses this formula to work out his charge.

$$\text{Charge} = \text{£}1.25 + 40 \text{ pence per window}$$

A house has eight windows.

How much does he charge?

.....

Answer (2 marks)

Turn over for the next question



***5**

Faraj works in a factory.
His normal working week is 40 hours.
He is paid £5.78 per hour.

If he works for more than 40 hours he is paid a higher amount for each extra hour he works.

Here is his time sheet for one week.

Day	Monday	Tuesday	Wednesday	Thursday	Friday
Number of hours worked	8	9	9	10	7

Faraj is paid £257.21 for this week.

Work out the amount per hour he is paid for the extra hours.

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Answer £ (6 marks)



- 6 (a) Mel lives in London.
She is going to visit New York.
Times in London and New York are connected by this formula.

$$\text{Time in New York} = \text{Time in London} - 5 \text{ hours}$$

Mel's plane leaves London at 9 am.
It takes 7 hours to fly to New York.

What is the time in New York when she lands?

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Answer (2 marks)

- 6 (b) Mel wants a travel card for travelling around New York.
In London this travel card costs £52
In New York it costs \$70.

$$£1 = \$1.45$$

Should Mel buy her travel card in London or New York?
You **must** show your working.

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(3 marks)

Turn over for the next question



7 A road outside a school is very busy.

Sophie and Katie count the number of cars passing the school every minute, for 15 minutes.

7 (a) Sophie starts at 10.00 am on Monday.

Her results are

4 3 5 3 4 5 2 3 2 5 4 4 3 4 4

7 (a) (i) Use these results to complete the table below.

Number of cars	Tally	Frequency
2		
3		
4		
5		

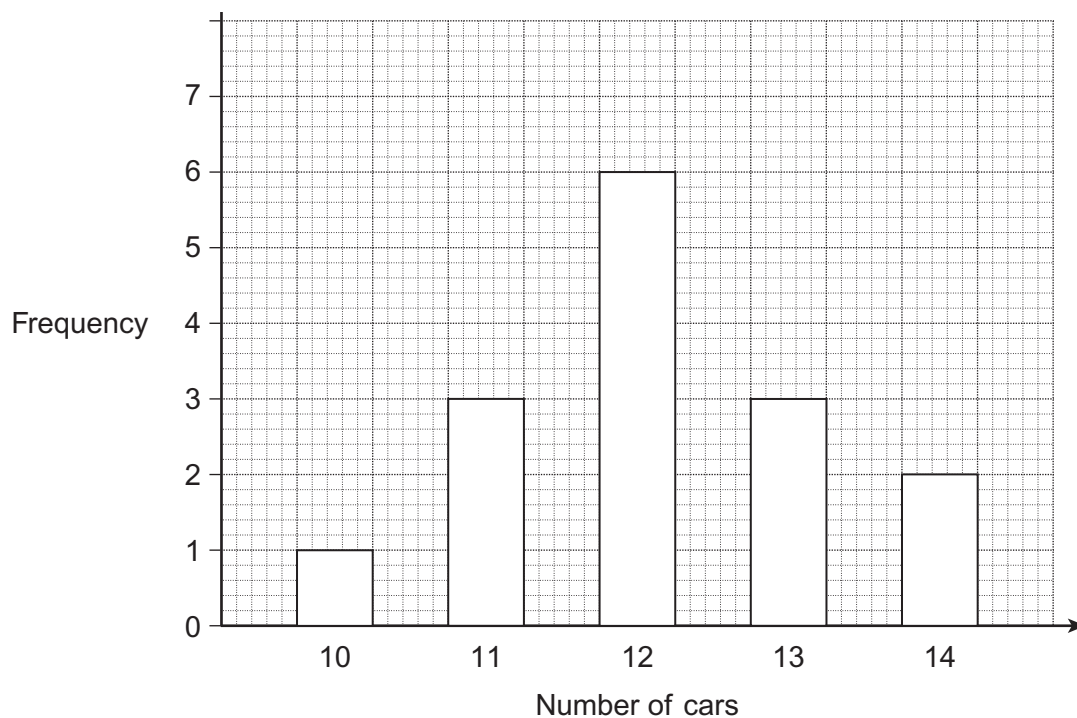
(2 marks)

7 (a) (ii) Write down the mode of this data.

Answer cars (1 mark)

7 (b) Katie starts at 3.30 pm on Wednesday.

Her results are shown in the bar chart



How many cars did Katie count in total?

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Answer (3 marks)

7 (c) Katie says "I think the data shows that we need a pedestrian crossing on this road."

Sophie says "I agree, but I don't think we have enough evidence to show this."

Suggest **two** ways that Katie and Sophie can provide better evidence for a pedestrian crossing.

(i)

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(ii)

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(2 marks)

Turn over for the next question



8 Jack carries out a survey of people using two different bus companies.
He records the number of people waiting at bus stops for the red bus.

12	16	26	9	14	19	24	7
30	17	13	15	20	5	14	

8 (a) Complete the ordered stem-and-leaf diagram for Jack's results.

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Key..... |represents.....people

0	
1	
2	
3	

(3 marks)

8 (b) Jack also records the number of people waiting at bus stops for the blue bus.
He uses his data to work out these results.

Median = 10 people
Range = 20 people

Comment on the differences between the number of people waiting for the red and blue buses.

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(4 marks)



- 9 (a)** Tariq wants to save £270 to buy a guitar.
He saves £15 each week.
How many weeks does it take him to save enough money for the guitar?

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Answer (2 marks)

- 9 (b)** Rachel invests £2500 in a savings plan for 4 years.
The plan pays 3% per year simple interest.
Work out the total value of her investment after 4 years.

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Answer £ (3 marks)

Turn over for the next question



- 10** The spreadsheet gives details of the cost price and selling price of three kitchen appliances sold in a shop.

	A	B	C	D	E
1	Appliance	Cost price (£)	Store profit (£)	Selling price (£)	Percentage profit (%)
2	Washing machine	190	57	247	30
3	Dishwasher	160	56		
4	Fridge	100			40

- 10 (a)** This formula is used for column D row 2 (D2) = B2 + C2
What formula is used for D3?

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Answer (1 mark)

- 10 (b)** The formula for E2 is = C2 / B2 * 100

Use this information to complete row 3 of the spreadsheet.

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(2 marks)

- 10 (c)** Complete row 4 of the spreadsheet.

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(2 marks)



- 11** The table shows some information about the number of holidays taken by 60 people.

		Holidays abroad			
		0	1	2	3
Holidays in Great Britain	0	1	12	3	1
	1	6	8	6	2
	2	4	3	5	1
	3	2	4	2	0

- 11 (a)** How many people did **not** have a holiday?

Answer (1 mark)

- 11 (b)** How many people had two holidays in Great Britain?

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Answer (2 marks)

- 11 (c)** Work out the percentage of the 60 people who had **more** holidays abroad than holidays in Great Britain.

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Answer % (3 marks)

Turn over for the next question



- *12(a)** Jake is exactly 160 centimetres tall.
Sam is exactly 135 centimetres tall.
Reanne is shorter than Jake but taller than Sam.

Write an inequality for Reanne's height, h .
You **must** use all the information given.

Answer (2 marks)

- 12 (b)** Sita's mum is twice as tall as Sita.
Sita's dad is eight centimetres taller than her mum.
The total of their three heights is 423 centimetres.

How tall is Sita?

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Answer cm (3 marks)



13 A box of mixed grass seed contains Rye seed and Fescue seed in the ratio

Rye : Fescue = 1 : 3

13 (a) Rye seed is £3.80 per kg.
Fescue seed is £5.20 per kg.

Work out the cost of a 5 kg box of mixed grass seed.

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Answer £ (5 marks)

13 (b) A small bag of grass seed costs £4.80 plus VAT.
VAT is charged at 20%.

Work out the total cost of a small bag of grass seed.

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Answer £ (3 marks)

END OF QUESTIONS



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