

Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										



General Certificate of Secondary Education  
Foundation Tier  
June 2014

# Applications of Mathematics (Linked Pair Pilot)

93701F

**F**

## Unit 1 Finance and Statistics

Tuesday 17 June 2014 9.00 am to 10.30 am

<p><b>For this paper you must have:</b></p> <ul style="list-style-type: none"> <li>• a calculator</li> <li>• mathematical instruments.</li> </ul>	
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### 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 spaces 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  $\pi$  button, take the value of  $\pi$  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 1, 10 and 16  
These questions are indicated with an asterisk (\*).
- You may ask for more answer paper, tracing paper and graph paper.  
These must be tagged securely to this answer book.
- You are expected to use a calculator where appropriate.

### Advice

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

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	
18 – 19	
20	
TOTAL	



J U N 1 4 9 3 7 0 1 F 0 1

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

- 1** A group of friends went on an activity weekend.  
They each chose their favourite activity.

Their choices are

Biking	Archery	Karting	Horse riding	Biking
Biking	Biking	Archery	Horse riding	Archery
Karting	Karting	Archery	Biking	Biking

- \*1 (a)** Complete the tally and frequency columns in the table.

**[2 marks]**

Activity	Tally	Frequency
Archery		
Biking		
Horse riding		
Karting		



1 (b) Draw a pictogram to show the results.

Key:  represents 2 people.

[2 marks]

Archery	
Biking	
Horse riding	
Karting	

1 (c) Which activity is the mode?

[1 mark]

Answer .....

1 (d) What fraction of the friends chose Horse riding?

[1 mark]

Answer .....



2 The rent for two different houses is shown.

<p>House A</p> <p>£580 per month</p>
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<p>House B</p> <p>£135 per week</p>
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2 (a) You are given that there are 12 months or 52 weeks in one year.

Which house is cheaper to rent for one year?

You **must** show your working.

[4 marks]

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Answer .....

2 (b) George rents House A.

He pays the rent of £580 from his bank account.

The balance left in his account is £476.39

What was his bank balance **before** he paid the rent?

[2 marks]

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£ .....



**3** A shop has two offers on a bike for sale.

<p><b>Offer 1</b></p> <p>Cash price £650</p>
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<p><b>Offer 2</b></p> <p>Deposit £100 plus 12 monthly payments of £55</p>
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Colin buys a bike using offer 1  
Barbara buys a bike using offer 2

**3 (a)** How much more does Barbara pay than Colin?

**[4 marks]**

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£ .....

**3 (b)** Give a reason why Barbara would choose offer 2 rather than offer 1

**[1 mark]**

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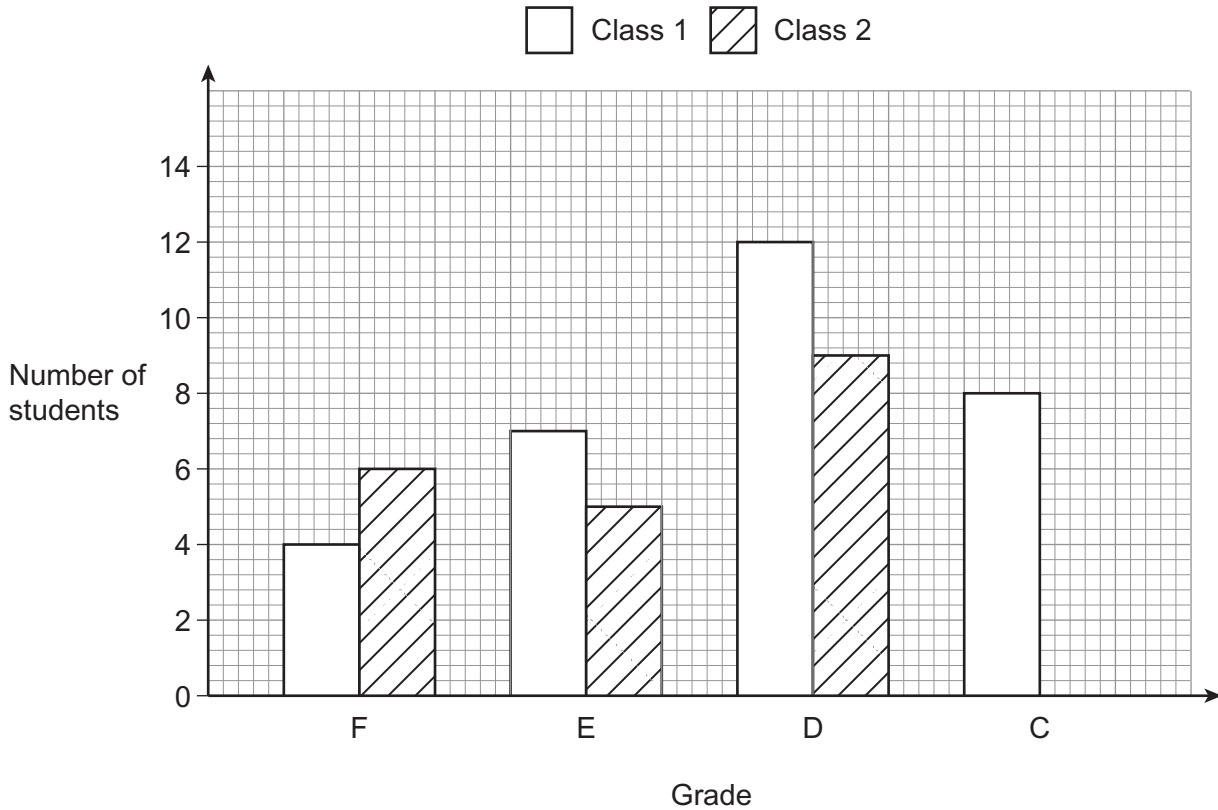
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4 A teacher records the grades gained in a test by students in two classes. The dual bar chart shows the results.

The grade C results for Class 2 are not shown.



4 (a) How many students in Class 2 gained a grade D?

[1 mark]

Answer .....

4 (b) Work out how many students in **total** gained a grade F.

[1 mark]

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Answer .....



**4 (c)** How many **more** students gained a grade E in Class 1 than in Class 2?

**[1 mark]**

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Answer .....

**4 (d)** Class 2 has the same number of students as Class 1

Complete the dual bar chart for grade C.

**[4 marks]**

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**Turn over for the next question**



5 John is planning the journey to an airport.  
He needs to be at the check-in desk at the airport by 10.30 am

After he wakes up he needs to allow these times:

Get dressed	30 minutes
Eat breakfast	20 minutes
Travel to the airport	40 minutes
Find check-in desk	10 minutes

What is the latest time John can wake up to be at the check-in desk by 10.30 am?

**[3 marks]**

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Answer .....





**6** Don sells jewellery.  
He is paid 2% commission on the total price of the jewellery he sells each month.

**6 (a)** One month he sells jewellery with a total price of £63 500

How much commission is he paid?

**[2 marks]**

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£ .....

**6 (b)** The following month Don earns £780 commission.

Work out the total price of the jewellery he sold that month.

**[2 marks]**

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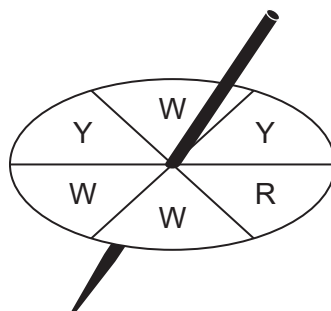
£ .....

**Turn over for the next question**

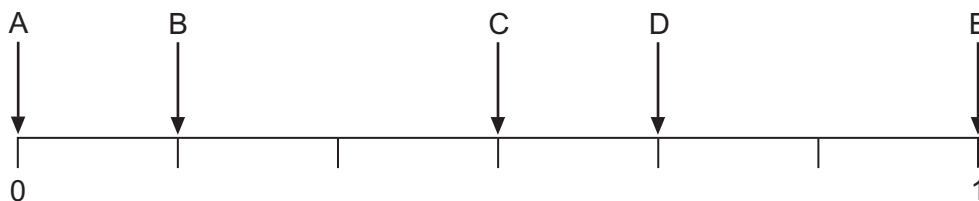


7 Here is a fair 6-sided spinner.

One section is red (R), two sections are yellow (Y), and three sections are white (W).



Five probabilities are shown on this probability scale.



7 (a) Circle the letter that matches each of these events.

7 (a) (i) The spinner lands on red.

[1 mark]

A                      B                      C                      D                      E

7 (a) (ii) The spinner lands on white.

[1 mark]

A                      B                      C                      D                      E

7 (a) (iii) The spinner does **not** land on yellow.

[1 mark]

A                      B                      C                      D                      E



7 (a) (iv) The spinner lands on purple.

[1 mark]

A                      B                      C                      D                      E

7 (b) The spinner is used in a game.

Red scores 5 points.  
Yellow scores 2 points.  
White scores 1 point.

Raj and Ben each have 10 spins.  
The person with the most points wins the game.

Raj scores 22 points.

The table shows the results for Ben.

Colour	Frequency
Red	3
Yellow	1
White	6

Who wins the game?  
You **must** show your working.

[3 marks]

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Answer .....

7
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Turn over ►



**8** Kelly charges for babysitting.  
She uses this formula.

$$\text{charge} = \text{£}6 \text{ per hour} + \text{cost of taxi fare home}$$

**8 (a)** One evening Kelly babysits from 6 pm to 11 pm  
Her taxi fare is £8

Work out the charge.

**[3 marks]**

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£ .....

**8 (b)** The next evening Kelly babysits for 3 hours.  
She charges £23.75

How much is her taxi fare?

**[2 marks]**

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£ .....



9 Paul and Sandra collect stamps.

The number of stamps Paul has is nearer to 40 than 45  
If he had 1 **more** stamp the number of stamps would be nearer to 45 than 40

The number of stamps Sandra has is nearer to 60 than 55  
If she has 1 **less** stamp the number of stamps would be nearer to 55 than 60

How many more stamps does Sandra have than Paul?  
You **must** show your working.

[3 marks]

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Answer .....

Turn over for the next question



**10** Jane joins a tenpin bowling club.

Here are the scores from her first 15 games.

131	123	112	146	103
120	134	122	118	147
131	125	107	114	139

**\*10 (a)** Complete the ordered stem-and-leaf diagram below to represent her scores.  
Remember to complete the key.

**[3 marks]**

Key .... | ..... represents a score of .....

10	
11	
12	
13	
14	



**10 (b)** Work out the median of her scores.

**[1 mark]**

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Answer .....

**10 (c)** Work out the range of her scores.

**[1 mark]**

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Answer .....

**10 (d)** Phil also joins the bowling club.  
Here are some data about his first 15 games.

<b>Median</b>	123
<b>Range</b>	26

Compare the performances of Phil and Jane in their first 15 games.

**[2 marks]**

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**Turn over ►**



- 11 (a)** In September 2009 Kerry bought a new car for £17 650  
 In September 2013 she sold it for £10 300

$$\text{Annual depreciation} = \frac{\text{Original price (£)} - \text{Final price (£)}}{\text{Number of years}}$$

Use the formula to work out the annual depreciation of the car.  
 Give your answer to the nearest £10

**[3 marks]**

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£ .....

- 11 (b)** A car dealer uses this spreadsheet to work out annual depreciation.

	A	B	C	D
1	Original price	Final price	Number of years	Annual depreciation
2				
3				

Write down the formula for cell D2

**[2 marks]**

Answer .....





**12** Vikki makes 150 cupcakes.  
She pays £20 to hire a stall to sell her cupcakes.  
Each cupcake costs 35p to make.  
She sells  $\frac{4}{5}$  of her cupcakes for £1.40 each.  
She sells the rest for £1 each.

Work out the profit she makes.

**[7 marks]**

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£ .....

12

Turn over ►



13 Lilly rolls four ordinary six-sided dice.

She records the numbers rolled.

The mode of the numbers is one more than the median.

Work out a possible set of four numbers she could have rolled.

[2 marks]

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Answer .....

14 John has 500 ml of apple juice.

He wants to mix apple juice with fizzy water in the ratio 1 : 10

Fizzy water is sold in 1500 ml bottles.

Work out the smallest number of bottles of fizzy water needed to mix all the apple juice.  
You **must** show your working.

[4 marks]

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Answer .....



15 Chocolate bars cost £ $x$  each.

15 (a) Mary buys 6 chocolate bars.  
She pays with a £10 note.

Write down an expression for the change she receives.

[1 mark]

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£ .....

15 (b) Ben buys 4 chocolate bars.  
He also pays with a £10 note.

Ben receives twice as much change as Mary.

Use an algebraic method to work out the value of  $x$ .

[4 marks]

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$x =$  .....

Turn over for the next question



**\*16** An insurance company provides cover for the cost of repairs for electrical items.

The company knows that

- the probability of a washing machine needing a repair is 0.269
- the average cost of repairing a washing machine is £54

The company also knows that

- the probability of a cooker needing a repair is 0.143
- the average cost of repairing a cooker is £86

Work out which item is the greater risk for the company to cover.  
You **must** show your working.

**[4 marks]**

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**END OF QUESTIONS**

