

Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										

For Examiner's Use	
Examiner's Initials	
Pages	Mark
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16 – 17	
TOTAL	



General Certificate of Secondary Education
Foundation Tier
January 2012

Applications of Mathematics (Linked Pair Pilot)

93701F

Unit 1 Finance and Statistics

F

Monday 16 January 2012 9.00 am to 10.30 am

<p>For this paper you must have:</p> <ul style="list-style-type: none"> • a calculator • mathematical instruments. 	
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A

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 2, 9 and 10.
These 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 A N 1 2 9 3 7 0 1 F 0 1

WMP/Jan12/93701F

93701F

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

- 1 (a)** The cost of carpet is £20 per square metre.
Mia wants 12 square metres of carpet.

How much will it cost?

.....

Answer £ (2 marks)

- 1 (b)** She also wants wood flooring for her kitchen.
A pack of flooring covers 2 square metres.
It costs £18.

Mia needs 10 square metres of flooring.

How much will it cost?

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.....

Answer £ (3 marks)

- 1 (c)** Here is Mia's bank statement.

Date	Description	Credits	Debits	Balance
	Starting balance			£142.90
16/01/12	Wages	£196.24	
17/01/12	Bill payment		£56.10

She wants to buy the carpet and the flooring on 18/01/12.

Does she have enough money?
You **must** show your working.

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(4 marks)



*2 This is what Dave puts into a packed lunch.

- | |
|---|
| 4 sandwiches
1 apple or 1 banana
2 cartons of juice |
|---|

Dave makes packed lunches for 27 people.

2 (a) How many sandwiches does he make?

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Answer (1 mark)

2 (b) A carton of juice costs 32p.
Dave buys the exact number of cartons he needs.
He pays with a £20 note.

How much change should he receive?

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.....

Answer £ (3 marks)

2 (c) A bag of five apples costs £1.15
Dave buys as many bags as he can with a £5 note.
He uses all these apples in the lunches.
He uses bananas in the rest of the lunches.

How many of the 27 people get a banana?
You **must** show your working.


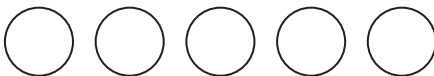


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Answer (4 marks)



3 The pictogram shows how long some students exercise for on one day.

Key  represents 10 students

Less than 30 minutes	
From 30 minutes to 60 minutes	
From 60 minutes to 90 minutes	
90 minutes or more	

3 (a) How many students, in total, are exercising?

.....

Answer (2 marks)

3 (b) (i) Work out the number of students who exercise for less than 30 minutes.

.....

Answer (2 marks)

3 (b) (ii) “To stay healthy you should exercise for at least 30 minutes each day.”

Work out the percentage of these students who exercise for at least 30 minutes.

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.....

Answer % (2 marks)



3 (c) There are two methods to pay for an exercise class.

Method 1 Pay £3 for each class

Method 2 Pay a membership fee of £5, then pay £2.25 for each class

After how many classes does Method 2 work out cheaper?

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Answer (4 marks)

Turn over for the next question

10

Turn over ►



4 Jenna buys a house for £ 160 000.
She pays a deposit of 15%.
She takes out a mortgage for the rest of the cost.

4 (a) (i) Work out the amount of her mortgage.

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Answer £ (3 marks)

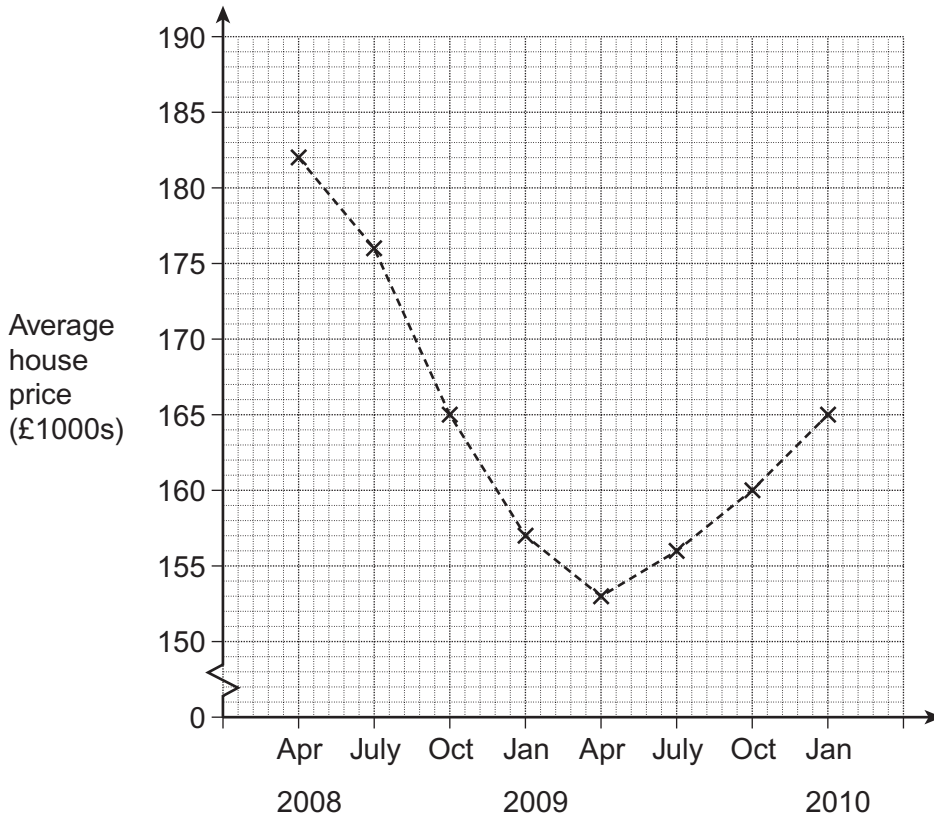
4 (a) (ii) For every £1000 of the mortgage, she has to repay £5.33 each month.
How much does she repay each month?

.....
.....

Answer £ (3 marks)



4 (b) The graph shows the average house price in England and Wales.
The data is shown every three months between April 2008 and January 2010.



4 (b) (i) What is the lowest average house price shown?

Answer £ (1 mark)

4 (b) (ii) How much does the average house price decrease between July 2008 and October 2008?

.....

Answer £ (1 mark)

4 (b) (iii) When does the average house price start to increase?

Answer (1 mark)

4 (b) (iv) Work out the range for the average house prices shown.

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Answer £ (2 marks)



5 A cinema sells 180 tickets for the 5 pm showing of a film.

Type of ticket	Number sold
Adult	55
Child	70
Student	15
Senior Citizen	40

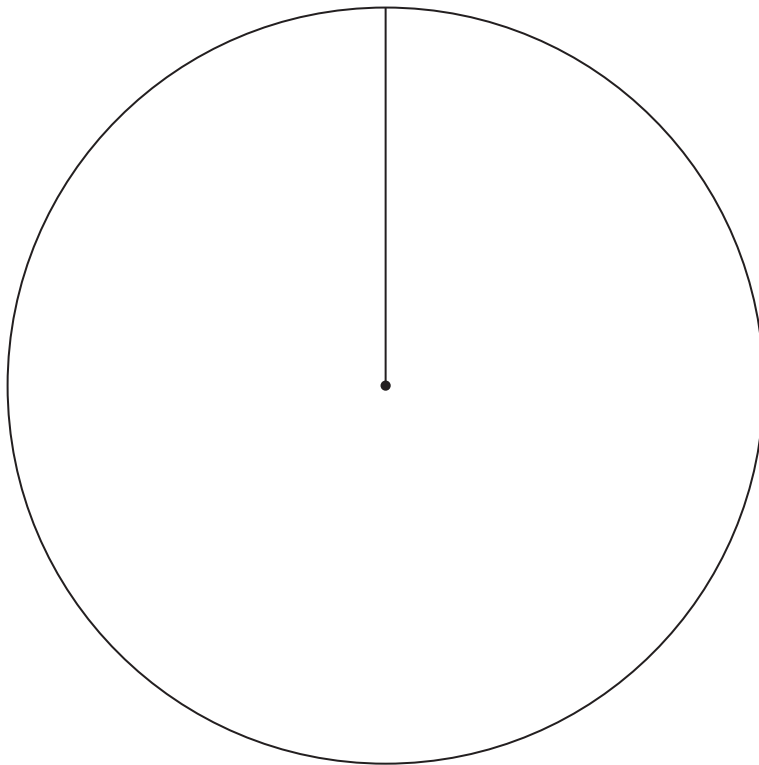
5 (a) Draw and label a pie chart to represent this information.

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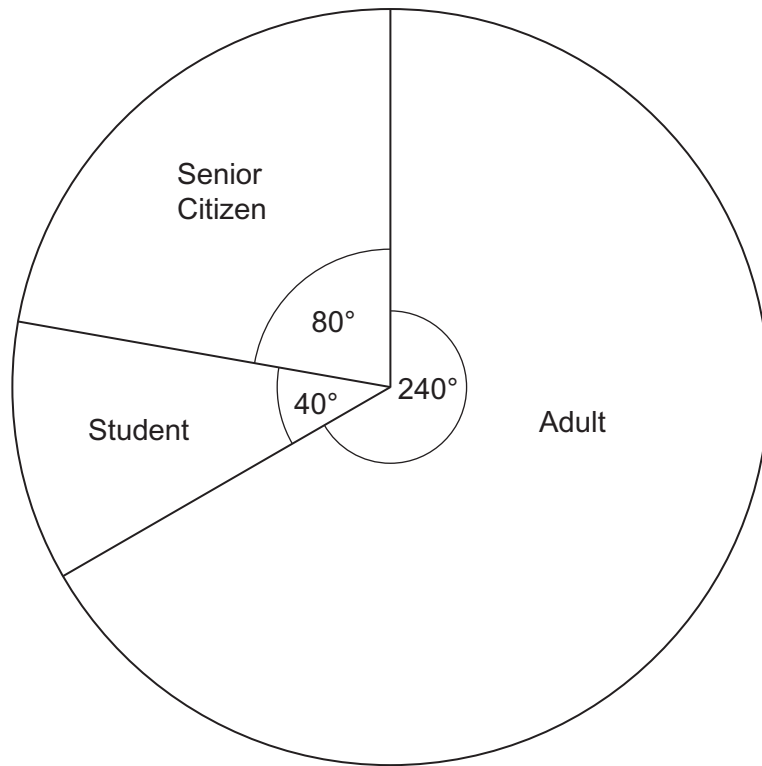
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(4 marks)



5 (b) 180 tickets are also sold for the 8 pm showing of the film. The pie chart represents the tickets sold.



How many more adult tickets are sold for the 8 pm showing than are sold for the 5 pm showing?

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Answer (3 marks)

7

Turn over ►



6 Ravi is a taxi driver.
He records the fares he takes one morning.

£3.20	£4.60	£3.90	£7.50	£5.20	£4.60	£5.10	£6.80
£5.50	£10.80	£4.80	£5.30	£4.50	£6.30	£6.00	

6 (a) Ravi makes more profit on fares over £5.

What fraction of his fares are greater than £5?
Give your answer in its simplest form.

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Answer (2 marks)

6 (b) Work out the median taxi fare.

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Answer £ (2 marks)

6 (c) The next fare Ravi takes is £5.70

How does this affect the median?
Tick a box.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Decreases	Stays the same	Increases

Show how you decide.

.....
.....

(2 marks)



7 The cost of season tickets for a football club are shown.

Adult £ 340

Child £ 120

Mr Moore buys some tickets.
He pays a total of £ 1260.

Work out the tickets he buys.

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Answer Number of Adult tickets

Number of Child tickets

(3 marks)

Turn over for the next question



8 Pavel travels x miles to college.

8 (a) Ruth travels seven miles further than Pavel.

Write down an expression, in terms of x , for the distance Ruth travels.

Answer miles (1 mark)

8 (b) Josh travels twice as far as Pavel.

Write down an expression, in terms of x , for the distance Josh travels.

Answer miles (1 mark)

8 (c) Pavel, Ruth and Josh travel 29 miles in total.

Work out the distance Pavel travels to college.

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Answer miles (4 marks)



***9** Bethany is raising money for charity.
She sells 300 raffle tickets numbered from 1 to 300.
Tickets ending in a 5 or a 0 win a £1 prize.

What price should each ticket be to make £90 profit?

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Answer (4 marks)

Turn over for the next question

10

Turn over ►



***10** It is recommended that children eat $\frac{1}{4}$ kg of fruit a day.

Jenny buys

2 kg of apples

$1\frac{1}{2}$ kg of cherries

$\frac{3}{4}$ kg of plums

$\frac{1}{2}$ kg of grapes

Jenny has three children.

Has she bought enough fruit for her children for one week?
You **must** show your working.

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(5 marks)



11 Kylie rolls a dice 20 times.
These are her results.

2 4 3 3 1 2 5 2 1 6
5 6 2 4 1 4 2 2 3 6

11 (a) Complete the table to show the relative frequency of each number.

Number on dice	1	2	3	4	5	6
Relative frequency						

(2 marks)

11 (b) Kylie thinks the dice is biased.

Do you agree?
Give a reason for your answer.

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(1 mark)

Turn over for the next question



12 John drives to work through town each day.
The table shows information about his journey times for 50 days.

Time, t (minutes)	Frequency
$5 \leq t < 10$	7
$10 \leq t < 15$	23
$15 \leq t < 20$	16
$20 \leq t < 25$	4

12 (a) Calculate an estimate of the mean time for driving to work through town.

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Answer minutes (4 marks)



12 (b) For the next 50 days John travels to work by an alternative route.
Here is some information about his journey times.

Quickest time	11 minutes
Slowest time	19 minutes
Mean time	16 minutes

Compare John's journey times through town and by the alternative route.

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(3 marks)

12 (c) Which route to work do you think is better for John?
Give a reason for your answer.

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(1 mark)

END OF QUESTIONS



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