

Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										

For Examiner's Use	
Examiner's Initials	
Question	Mark
1	
2	
3	
4	
5	
6	
7	
TOTAL	



General Certificate of Education  
Advanced Subsidiary Examination  
June 2015

# Statistics

# SS1B

## Unit Statistics 1B

Wednesday 20 May 2015 9.00 am to 10.30 am

**For this paper you must have:**

- the blue AQA booklet of formulae and statistical tables.

You may use a graphics calculator.

### Time allowed

- 1 hour 30 minutes

### Instructions

- Use black ink or black ball-point pen. Pencil should only be used for drawing.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- Write the question part reference (eg (a), (b)(i) etc) in the left-hand margin.
- You must answer each question in the space provided for that question. If you require extra space, use an AQA supplementary answer book; do **not** use the space provided for a different question.
- Do not write outside the box around each page.
- Show all necessary working; otherwise marks for method may be lost.
- Do all rough work in this book. Cross through any work that you do not want to be marked.
- The **final** answer to questions requiring the use of tables or calculators should normally be given to three significant figures.

### Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 75.
- Unit Statistics 1B has a **written paper only**.

### Advice

- Unless stated otherwise, you may quote formulae, without proof, from the booklet.
- You do not necessarily need to use all the space provided.



J U N 1 5 S S 1 B 0 1











QUESTION  
PART  
REFERENCE

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QUESTION  
PART  
REFERENCE

**Answer space for question 3**

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**4 (a)** Chris shops at his local store on his way to and from work every Friday.

The event that he buys a morning newspaper is denoted by  $M$ , and the event that he buys an evening newspaper is denoted by  $E$ .

On any one Friday, Chris may buy neither, exactly one or both of these newspapers.

**(i)** Complete the table of probabilities, printed on the opposite page, where  $M'$  and  $E'$  denote the events 'not  $M$ ' and 'not  $E$ ' respectively.

[3 marks]

**(ii)** Hence, or otherwise, find the probability that, on any given Friday, Chris buys exactly one newspaper.

[2 marks]

**(iii)** Give a numerical justification for the following statement.

'The events  $M$  and  $E$  are **not** mutually exclusive.'

[2 marks]

**(b)** The event that Chris buys a morning newspaper on Saturday is denoted by  $S$ , and the event that he buys a morning newspaper on the following day, Sunday, is denoted by  $T$ . The event that he buys a morning newspaper on both Saturday and Sunday is denoted by  $S \cap T$ .

Each combination of the events  $S$  and  $T$  is independent of any combination of the events  $M$  and  $E$ . However, the events  $S$  and  $T$  are **not** independent, with

$$P(S) = 0.85, \quad P(T|S) = 0.20 \quad \text{and} \quad P(T|S') = 0.75$$

Find the probability that, on a particular Friday, Saturday and Sunday, Chris buys:

**(i)** all four newspapers;

[2 marks]

**(ii)** none of the four newspapers.

[2 marks]

**(c) (i)** State, as briefly as possible, in the context of the question, the event that is denoted by  $M \cap E' \cap S \cap T'$ .

[2 marks]

**(ii)** Calculate the value of  $P(M \cap E' \cap S \cap T')$ .

[2 marks]



QUESTION  
PART  
REFERENCE

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**(a)(i)**

	<i>M</i>	<i>M'</i>	<b>Total</b>
<i>E</i>	0.16		0.28
<i>E'</i>			
<b>Total</b>		0.60	1.00

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QUESTION  
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QUESTION  
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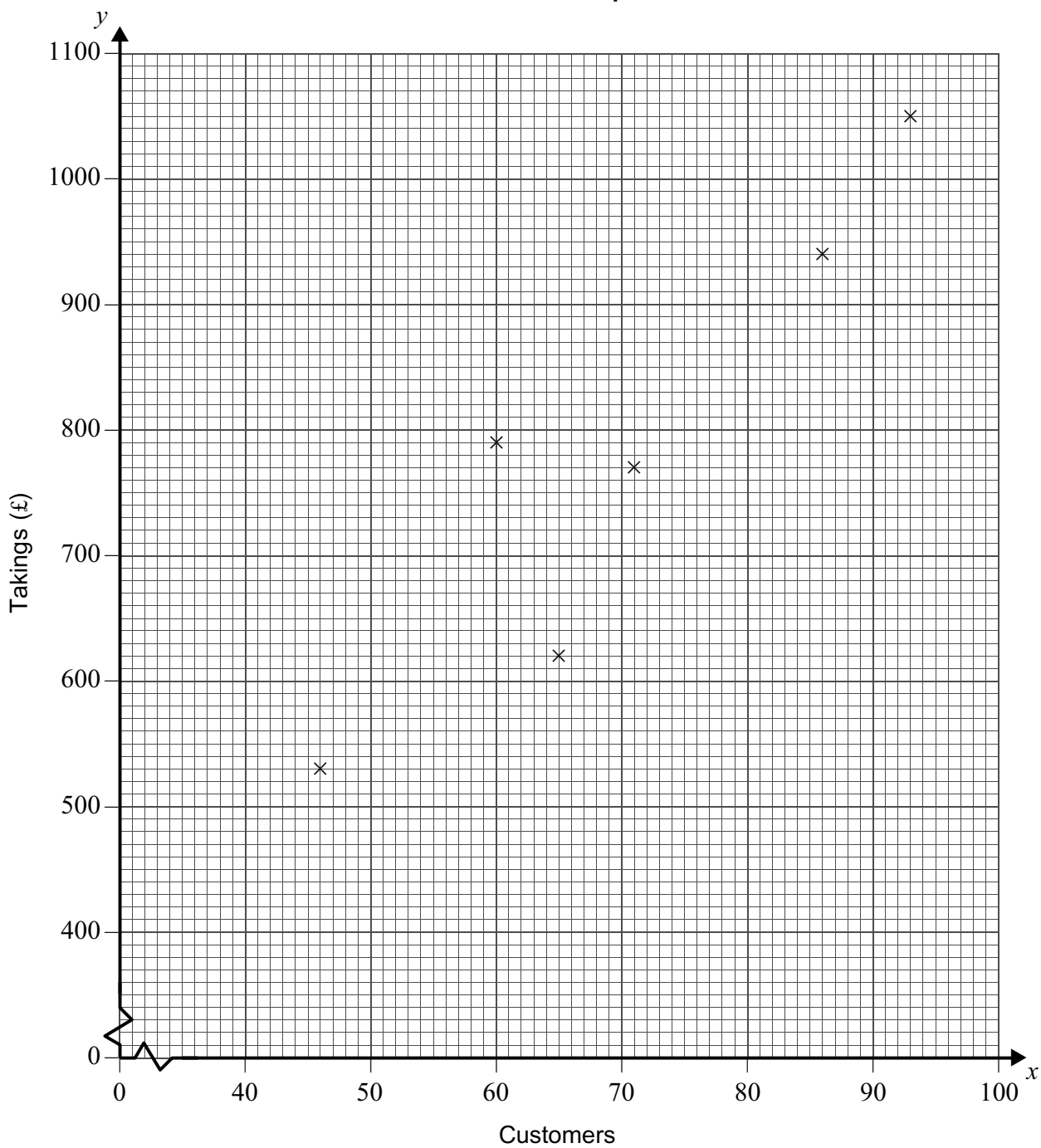
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Answer space for question 5

Butcher's shop



QUESTION  
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QUESTION  
PART  
REFERENCE

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QUESTION  
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QUESTION  
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QUESTION  
PART  
REFERENCE

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**END OF QUESTIONS**

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