Write your name here

Surname	Other names

Centre Number | Candidate Number

Edexcel GCSE

Statistics

Paper 1F

Foundation Tier

Monday 24 June 2013 – Afternoon
Time: 1 hour 30 minutes

Paper Reference
5ST1F/01

You must have:
Ruler graduated in centimetres and millimetres, protractor, pen, HB pencil, eraser, electronic calculator.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*

Information

- The total mark for this paper is 80.
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*
- Questions labelled with an **asterisk** (*) are ones where the quality of your written communication will be assessed
  – *you should take particular care on these questions with your spelling, punctuation and grammar, as well as the clarity of expression.*

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ▶

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6/7/8/5/

P 4 2 0 7 3 A 0 1 2 4

PEARSON

Foundation Tier Formulae

You must not write on this page.
Anything you write on this page will gain NO credit.

Mean of a frequency distribution $= \dfrac{\sum fx}{\sum f}$

Mean of a grouped frequency distribution $= \dfrac{\sum fx}{\sum f}$, where x is the mid-interval value.

Answer ALL the questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

1 The colours of the cars in a car park are red, black, white, blue and silver.
Janice is going to count the number of cars of each colour.

(a) Draw a table Janice could use to record the data she collects.

(3)

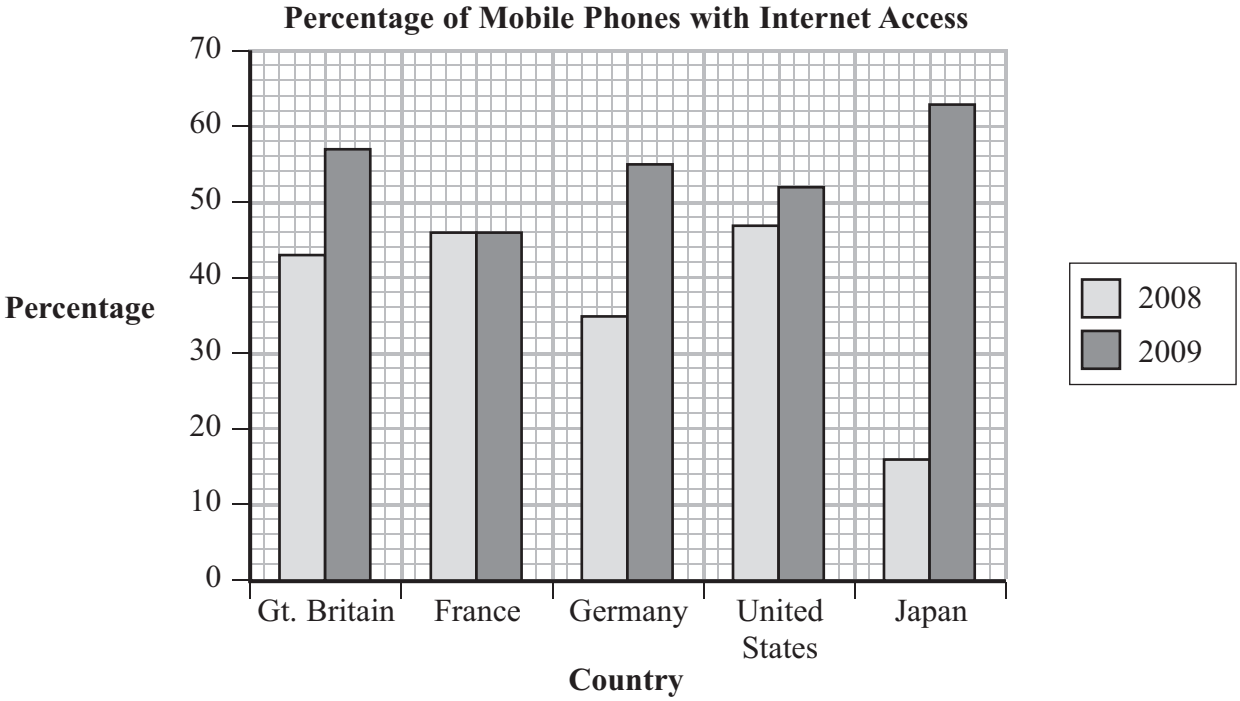
(b) Suggest a suitable diagram Janice could use to represent her data.

.....

(1)

(Total for Question 1 is 4 marks)

2 The multiple bar chart shows the percentages of mobile phones with Internet access in five countries at the end of 2008 and at the end of 2009



Adapted from Research Data - Ofcom

There was no change in the percentage of mobile phones with Internet access in one of these countries.

(a) Write down the name of this country.

.....

(1)

One of these countries had the greatest increase in the percentage of mobile phones with Internet access.

(b) Write down the name of this country.

.....

(1)

(c) Comment on the overall change in the percentage of mobile phones with Internet access in these five countries.

.....

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.....

(1)

(Total for Question 2 is 3 marks)

3

impossible	certain	evens	unlikely	likely

(a) Use the best word from the list above to describe the likelihood of each of the following events happening.

Event A: Jack will win first prize in a lottery.

.....

Event B: A fair coin will land head up when thrown.

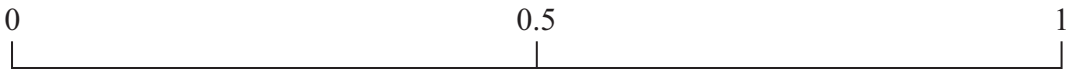
.....

Event C: A person chosen at random was **not** born on a Saturday or a Sunday.

.....

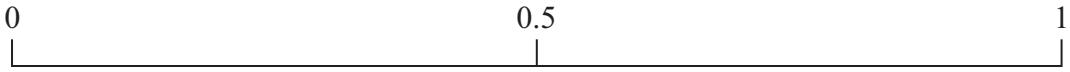
(3)

(b) On the probability scale below, mark with a cross (×) the probability of event A.



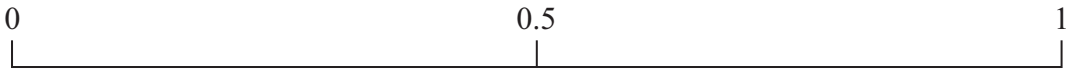
(1)

(c) On the probability scale below, mark with a cross (×) the probability of event B.



(1)

(d) On the probability scale below, mark with a cross (×) the probability of event C.



(1)

(Total for Question 3 is 6 marks)

4 At the end of a party each child chose two gifts to take home.
Each child chose either a kite or a yoyo as their first gift.
Each child chose either a jigsaw or a ball as their second gift.

The two-way table gives information about the choices the children made.

	kite	**yoyo**	**Total**
jigsaw	7	12	
ball	5	6	
Total			30

(a) Complete the two-way table.

(2)

One of these children was chosen at random.

(b) Find the probability that this child chose

(i) a kite and a jigsaw,

.....

(ii) a ball.

.....

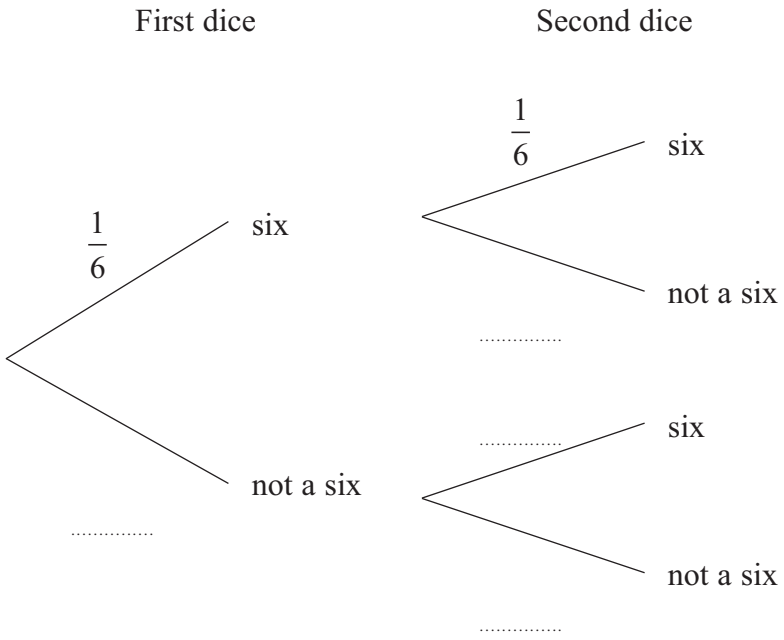
(2)

(Total for Question 4 is 4 marks)

5 Janet has two fair six-sided dice.

To start a game Janet needs to throw two sixes.

(a) Complete the tree diagram to show the outcomes.



(2)

Janet says

"I am not likely to get two sixes on my first throw".

(b) Is Janet right?
Give a reason for your answer.

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(2)

(Total for Question 5 is 4 marks)

6 The table shows some information about the total money spent in British supermarkets in the 12 weeks up to 22 February for 2009 and for 2010

It also shows the market share for each supermarket.

Great Britain Consumer Spend

Supermarket	12 Weeks to 22 February 2009		12 Weeks to 22 February 2010	
	Money Spent (£ thousands)	Market Share (%)	Money Spent (£ thousands)	Market Share (%)
Tesco	6,709,669	30.1%	7,102,289	30.4%
Asda	3,827,675	17.2%	3,973,853	17.0%
Sainsbury's	3,596,800	16.2%	3,799,974	16.3%
Morrisons	2,609,140	11.7%	2,865,051	12.3%
Co-operative	1,137,972	5.1%	1,323,593	5.7%
Somerfield	724,733	3.3%	396,223	1.7%
Waitrose	861,835	3.9%	995,300	4.3%
Iceland	432,914	1.9%	458,996	2.0%
Aldi	641,166	2.9%	657,366	2.8%
Lidl	513,291	2.3%	520,455	2.2%
Netto	159,452	0.7%	161,342	0.7%
Farm Foods	111,104	0.5%	119,472	0.5%

Data source: adapted from Kantar Worldpanel

More money was spent in one of these supermarkets in 2009 than in 2010 for these 12 weeks.

(a) Write down the name of this supermarket.

.....

(1)

More money was spent in Netto in 2010 than in 2009 for these 12 weeks.

(b) Work out how much more money.

£.....

(1)

(c) Work out the total **Market Share (%)** for the first four supermarkets in the table for the 12 weeks in each year.

2009.....%

2010.....%

(3)

(d) Comment on your answers to part (c).

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.....

.....

(1)

(Total for Question 6 is 6 marks)

7 A trap is used to catch beetles in a flour mill.
The number of beetles caught in the trap was recorded every day for 11 days.

The numbers recorded for the first nine days were

12 0 3 6 12 22 14 3 3

Source: Adapted from research ftic info

The stem and leaf diagram shows this information.

0	0 3 3 3 6
1	2 2 4
2	2
3	

Key:

1 | 2 = 12 beetles

15 beetles were caught on day ten.
31 beetles were caught on day eleven.

(a) Complete the stem and leaf diagram for these data.

(1)

(b) Write down the mode.

.....

(1)

(c) Write down the median.

.....

(1)

(d) Work out the mean.

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(2)

You want to estimate the number of beetles likely to be caught in the trap the next day.

(e) Which one of the mode, the median or the mean would you use?
Give a reason for your answer.

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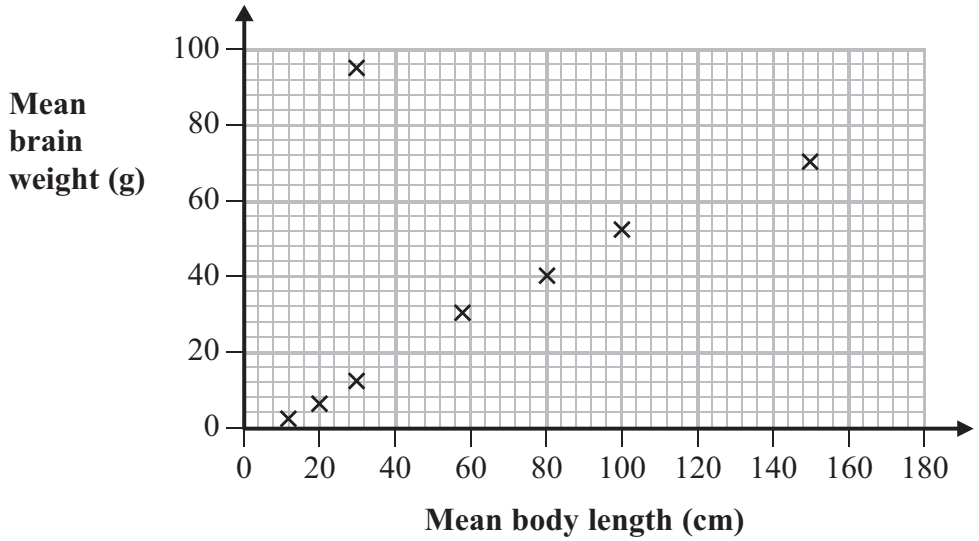
(2)

(Total for Question 7 is 7 marks)

8 The scatter diagram shows the mean body length and the mean brain weight for eight mammals.

Mean body length and mean brain weight of mammals



Data Source: Adapted from serendip.brynmawr.edu/

One point on the scatter diagram represents a mammal that does **not** fit the general pattern.

(a) Draw a circle round this point.

(1)

(b) Using the other seven points, draw a line of best fit.

(1)

(c) Describe and interpret the correlation.

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(2)

A mammal has a body length of 120 cm.

(d) (i) Estimate the brain weight of this mammal.

..... g

(ii) Is this estimate likely to be reliable?
Give a reason for your answer.

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(3)

A mammal has a body length of 180 cm.

(e) (i) Estimate the brain weight of this mammal.

..... g

(ii) Is this estimate likely to be reliable?
Give a reason for your answer.

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(4)

(Total for Question 8 is 11 marks)

9 A researcher recorded the weights, in kg, of a random sample of adult wild deer and the weights of a random sample of similar deer in a zoo.

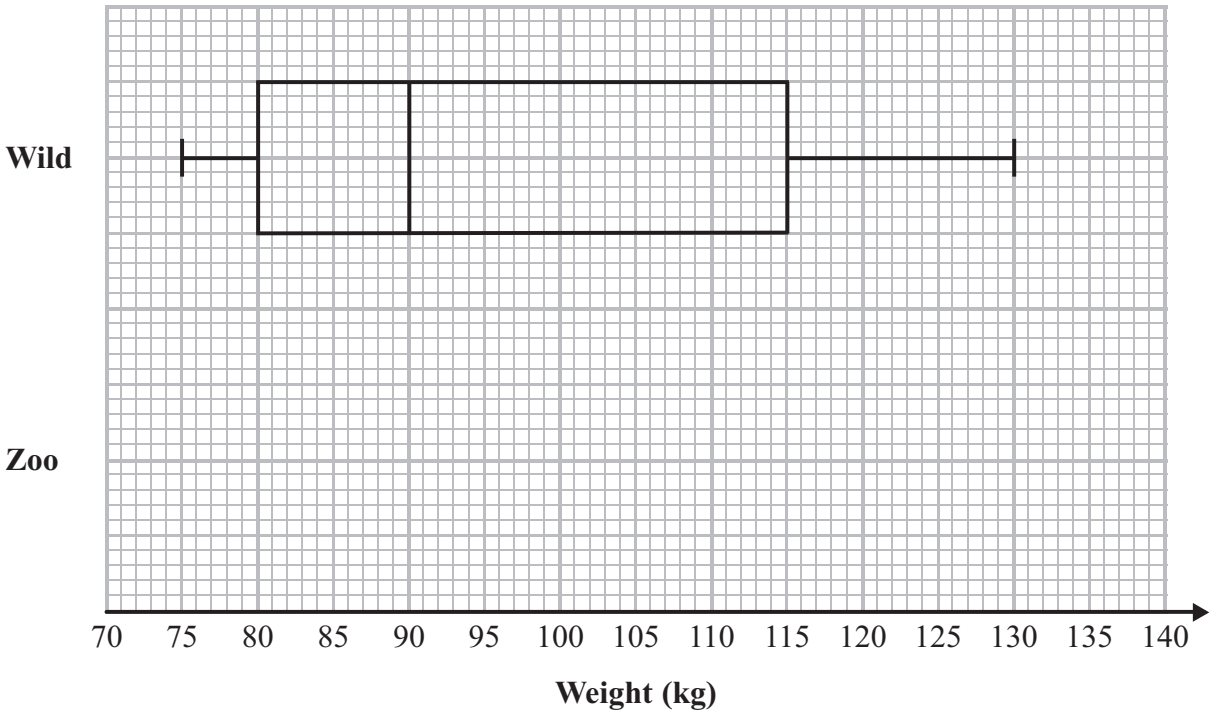
The table gives some information about the weights, in kg, of the deer in the zoo.

Lowest value	Lower quartile	median	Upper quartile	Highest value
110	115	125	130	135

Datasource: adapted from books.google.co.uk

The box plot gives information about the distribution of the weights of the wild deer.

(a) On the grid, draw the box plot for the distribution of the weights of the deer in the zoo.



(3)

*(b) Use the box plots to compare the distribution of the weights of the wild deer with the distribution of the weights of the deer in the zoo.

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(4)

(Total for Question 9 is 7 marks)

10 The table gives some information about the numbers of overseas visitors to the United Kingdom each quarter for the years 2007 to 2009

Year	Quarter	Number of overseas visitors (100 000s)	4-point moving average (100 000s)
2007	1	8.6	
	2	13.0	11.9
	3	15.7	11.7
	4	10.3	11.5
2008	1	7.8	11.2
	2	12.2	10.9
	3	14.5	10.9
	4	9.1	10.725
2009	1	7.8	10.1
	2	11.5	
	3	12.0	
	4	6.7	

Data source: Adapted from Government Statistics website

The last 4-point moving average is missing from the table.

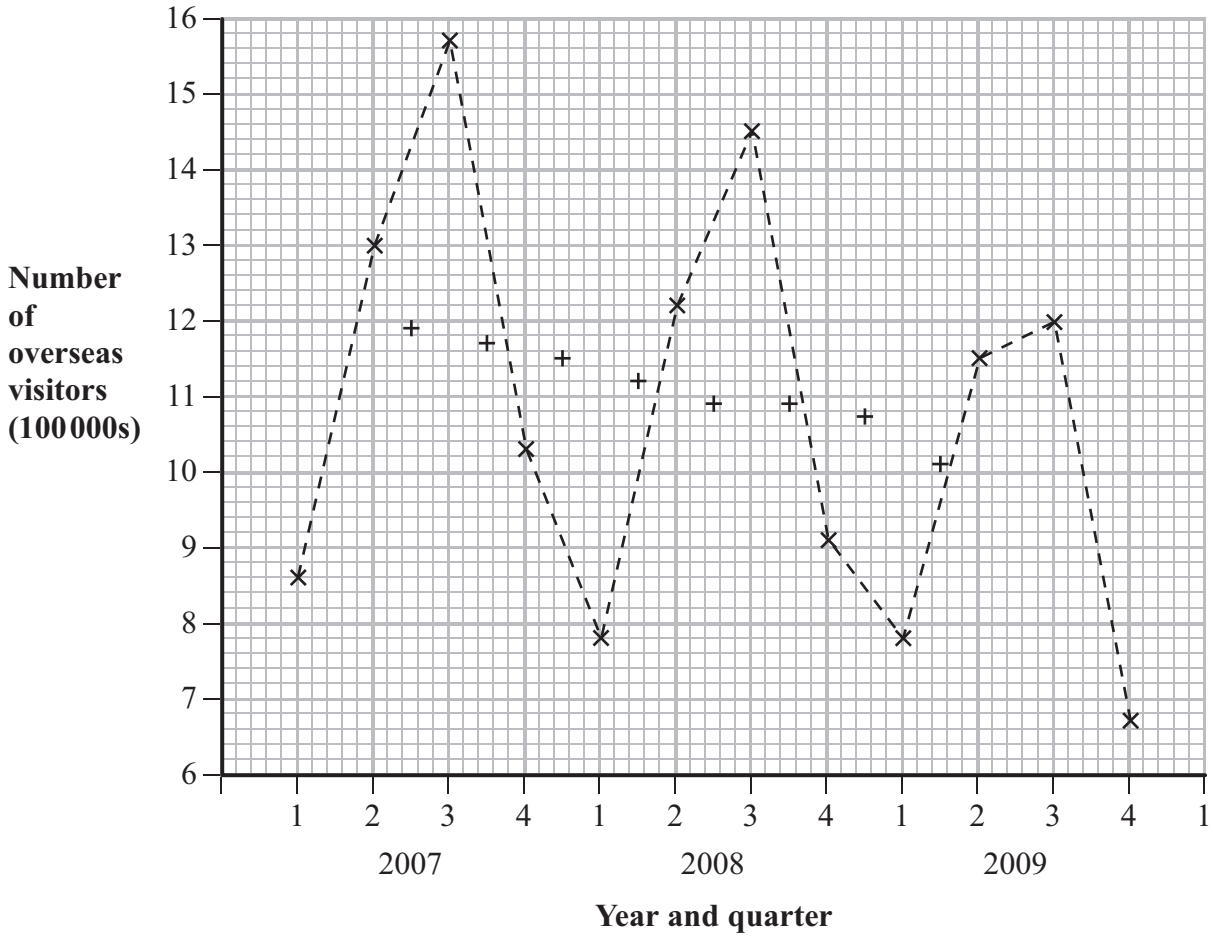
(a) (i) Calculate this 4-point moving average.

.....

(ii) Plot this moving average on the time series graph.

(4)

Number of overseas visitors to the UK for 2007 to 2009



(b) Write down the quarter with the greatest number of overseas visitors each year.

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(1)

(c) Describe and interpret the trend in the number of overseas visitors over the years 2007 to 2009

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(2)

(Total for Question 10 is 7 marks)

11 A new theatre was built in Appleyard.
Appleyard council wants to find out what people think of the new theatre.
The council decides to collect information using a questionnaire.

(a) State one advantage and one disadvantage of using a questionnaire rather than a face to face interview.

Advantage .....

.....

.....

Disadvantage .....

.....

.....

(2)

Councillor Flowers wants this question on the questionnaire.

'Do you agree that the new theatre was a good use of council money?'

This is **not** a good question.

(b) Give two reasons why.

Reason 1 .....

.....

.....

.....

Reason 2 .....

.....

.....

.....

(2)

The council also wants to know how much people would pay to use the car park at the new theatre.

(c) Design a suitable question for the questionnaire.

(2)

The council decides to send the questionnaire to a sample of people.

(d) Give two advantages of taking a sample.

Advantage 1 .....

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.....

Advantage 2 .....

.....

.....

(2)

The questionnaire is to be sent to 20 people chosen at random from the local telephone directory.

(e) Discuss whether or not this would give a good sample.

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(2)

(Total for Question 11 is 10 marks)

***12** There are 160 boys in Year 11 at Baystoke School.

Eight of these boys are going to represent the school at an event.

The head teacher decides to use simple random sampling to choose the eight boys.

Describe how he could do this.

(Total for Question 12 is 3 marks)

13 A farmer is going to do an experiment to find out if using a new fertiliser will produce more wheat.

(a) Write down a hypothesis he could use.

(1)

The farmer should use a control group.

(b) (i) Explain why.

(ii) Describe how he would do this.

(3)

(Total for Question 13 is 4 marks)

Turn over for Question 14

14 The table shows the simple index numbers for mean annual earnings in manufacturing for the years 2004 to 2006

The base year is 2000

Year	**2004**	**2005**	**2006**
Index number	112	116	123

Data Source: Adapted from www.fsmq.org

(a) Describe the mean annual earnings in 2004 compared with the mean annual earnings in 2000

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(2)

The mean annual earnings in manufacturing in the year 2000 was £14 000

(b) Work out the mean annual earnings in 2006

£.....

(2)

(Total for Question 14 is 4 marks)

TOTAL FOR PAPER IS 80 MARKS

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