Centre No.						Paper Reference							Surname	Initial(s)
Candidate No.						1	3	8	9	/	1	F	Signature	

Paper Reference(s)

1389/1F

Edexcel GCSE

Statistics

Paper 1F

Foundation Tier

Wednesday 18 June 2008 – Morning

Time: 2 hours

Materials required for examination	Items included with question papers
Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser, electronic calculator.	Nil

Examiner's use only

Team Leader's use only

Instructions to Candidates

In the boxes above, write your centre number, candidate number, your surname, initials and signature.
Check that you have the correct question paper.
Answer ALL the questions. Write your answers in the spaces provided in this question paper.
Some questions must be answered with a cross in a box (☒).
If you change your mind about an answer, put a line through the box (~~☒~~) and then mark your new answer with a cross (☒).
You must NOT write on the formulae page or any blank pages. Anything you write on these pages will gain NO credit.
If you need more space to complete your answer to any question, use additional answer sheets.

Information for Candidates

The marks for individual questions and the parts of questions are shown in round brackets: e.g. **(2)**.
This question paper has 7 questions in Section A and 6 questions in Section B. The total mark for this paper is 80.
There are 24 pages in this question paper. Any blank pages are indicated.

Advice to Candidates

Show all stages in any calculations.
Work steadily through the paper. Do not spend too long on one question.
If you cannot answer a question, leave it and attempt the next one.
Return at the end to those you have left out.

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Turn over

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GCSE Statistics 1389

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.

Leave blank

SECTION A

Answer ALL the questions. Write your answers in the spaces provided.

You must write down all stages in your working.

1. Molly is going to spin a coin 50 times.
The coin can land on a Head or it can land on a Tail.

Design a suitable data capture sheet for Molly.

Q1

(Total 2 marks)

Leave blank

2. A shop sells umbrellas.

(a) Use the best word from the list to complete the sentences below.

sample **qualitative** **discrete** **continuous** **bias**

(i) The number of umbrellas sold by the shop is ..... data.

(ii) The colour of an umbrella is ..... data.

(iii) The weight of an umbrella is ..... data.

(3)

The table gives the number of umbrellas sold by the shop in each month last year.

Month	**Number sold**
January	31
February	34
March	38
April	28
May	17
June	5
July	4
August	6
September	13
October	18
November	21
December	25

(b) Work out the mean number of umbrellas sold per month.

.....

(2)

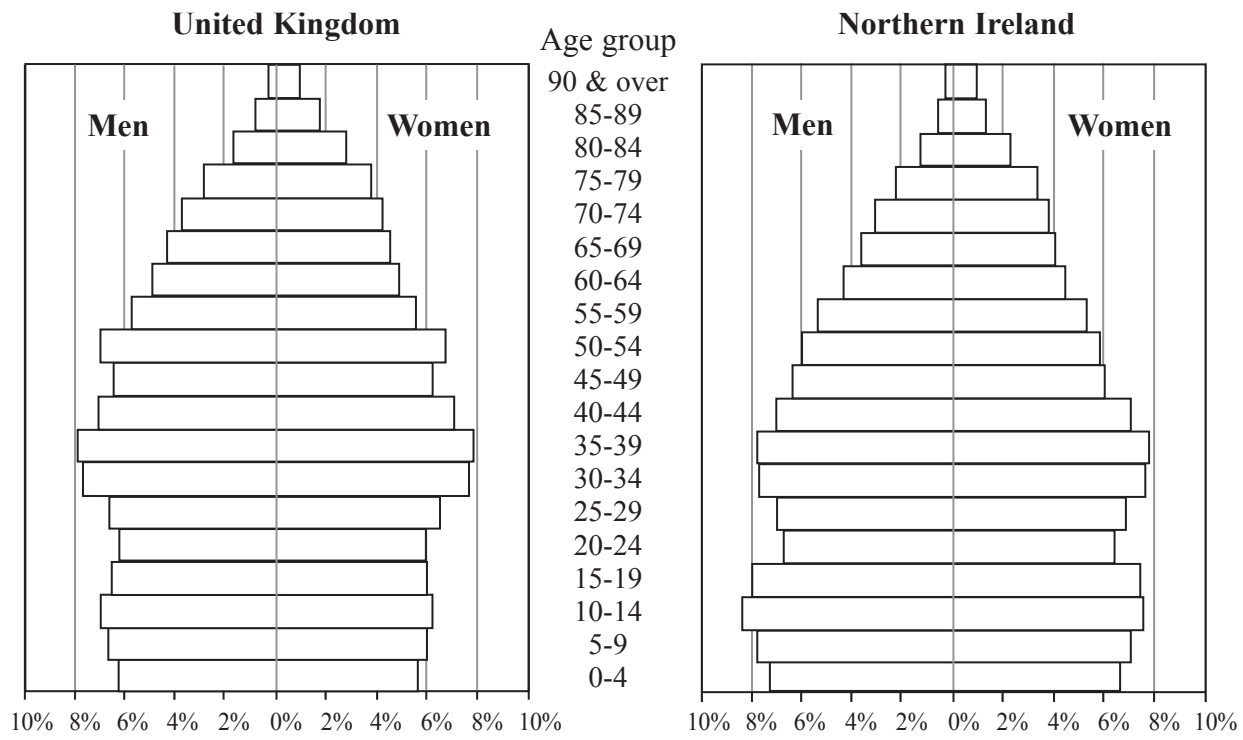
(Total 5 marks)

Q2

Leave blank

3. The two population pyramids show the percentages of men and women in each age group in the United Kingdom and in Northern Ireland.

The percentages of men and women in each age group



(Source: Gov.uk/census 2001)

Reproduced under the terms of the click-use licence C2006010031.

(a) Write down the age group which has the greatest percentage of women in the United Kingdom.

.....

(1)

6% of the men in Northern Ireland are in one age group.

(b) Write down this age group.

.....

(1)

(c) Compare the percentage of people up to the age of 19 in the United Kingdom with the percentage of people up to the age of 19 in Northern Ireland.

.....

.....

.....

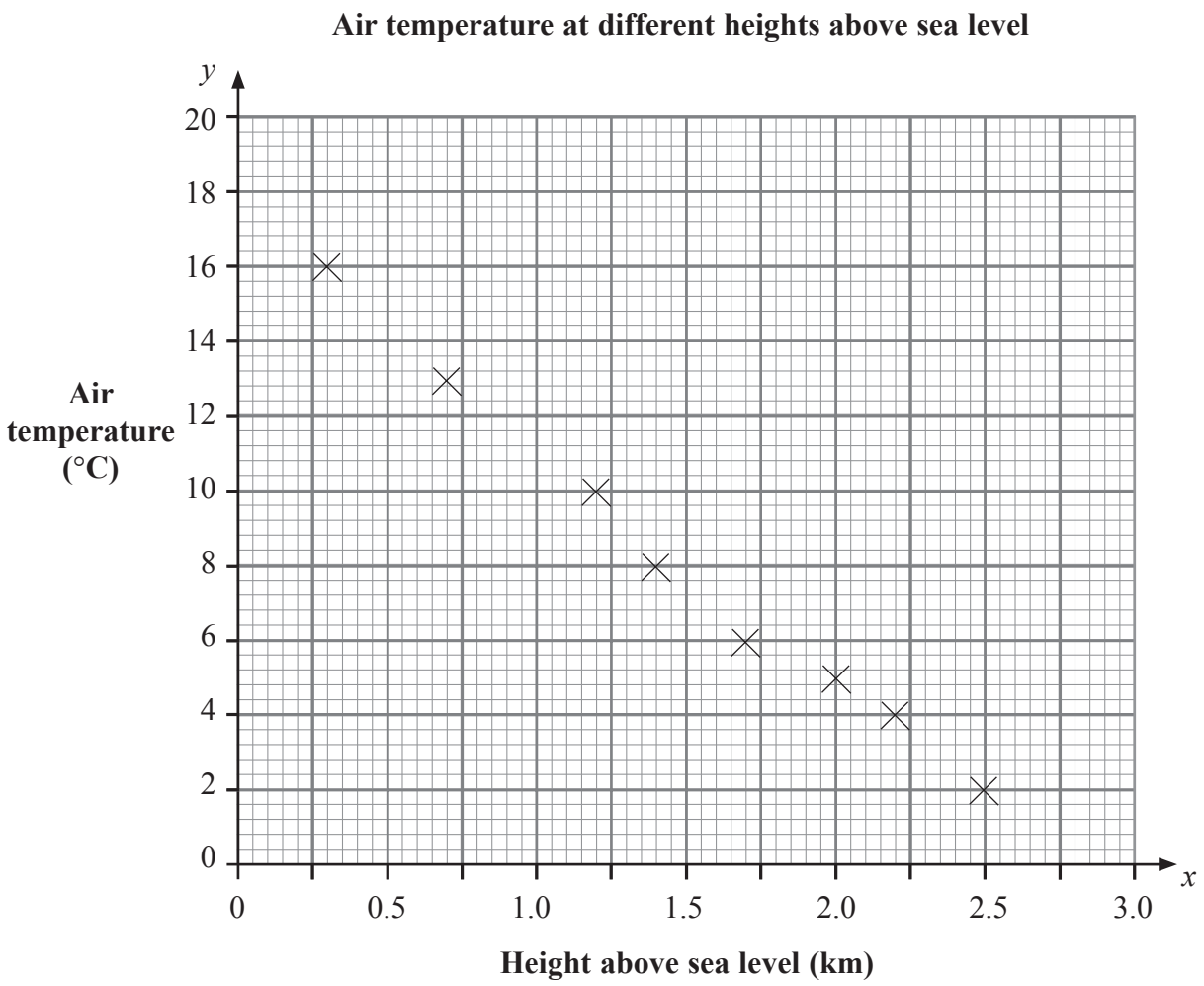
(1)

(Total 3 marks)

Q3

Leave blank

4. On a particular day, a scientist recorded the air temperature at 8 different heights above sea level.
The scatter diagram shows the air temperature, y °C, at each of these heights, x km, above sea level.



(a) Using the scatter diagram, write down the air temperature recorded at a height of 2.5 km above sea level.

..... °C
(1)

(b) Describe the correlation between the air temperature and the height above sea level.

.....
(1)

Leave blank

The mean point of the data $(\bar{x}, \bar{y})$ is (1.5, 8).

(c) On the scatter diagram,

(i) plot the point (1.5, 8),

(ii) draw a line of best fit through (1.5, 8).

(2)

(d) Using your line of best fit, find an estimate of the height above sea level when the air temperature is 0°C.

..... km

(1)

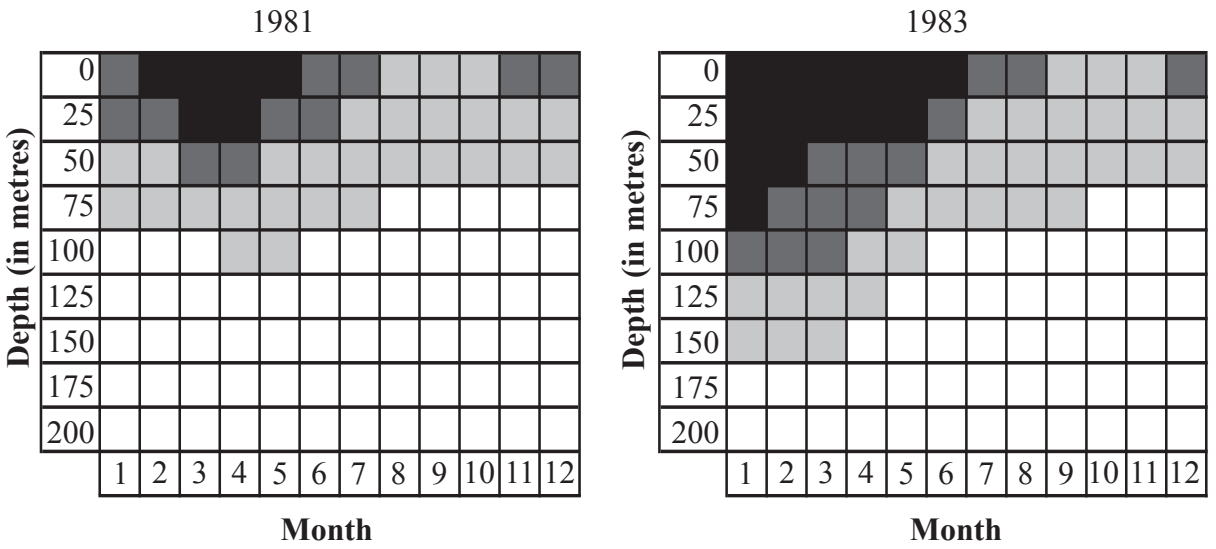
Q4

(Total 5 marks)

Leave blank

5. The diagrams show information about the sea temperatures for Peru in 1981 and in 1983.

Sea temperatures for Peru in 1981 and in 1983



(Source: www.pmel.noaa.gov/)

Key

	more than 25°C
	between 20°C and 25°C
	between 15°C and less than 20°C
	less than 15°C

(a) Put a cross in the box below that gives the sea temperature for Peru in month 3 of 1983 at a depth of 50 metres.

more than 25°C	☒
between 20°C and 25°C	☒
between 15°C and less than 20°C	☒
less than 15°C	☒

(1)

Leave blank

For two months in 1981 the sea temperature for Peru was between 15°C and less than 20°C at a depth of 100 metres.

(b) Write down these two months.

..... and .....

(1)

(c) Use the diagrams to compare the sea temperatures for Peru in 1981 and in 1983.

.....

.....

.....

.....

.....

.....

.....

.....

(2)

Q5

(Total 4 marks)

M 3 1 0 9 0 A 0 9 2 4

Leave blank

6. The table shows information about births in England and Wales for the years 1995 to 2002.

Births in England and Wales

Year	Number of births	Births per 1000 women 15 - 44	Male births per 1000 female births	Mean age of mothers at childbirth (years)	Percentage of births outside marriage	Percentage of births to mothers not born in the UK
1995	648 138	60.5	1051	28.5	33.9	12.6
1996	649 485	60.6	1055	28.6	35.8	12.8
1997	643 095	60.0	1051	28.8	37.0	13.1
1998	635 901	59.2	1051	28.9	37.8	13.6
1999	621 872	57.8	1055	29.0	38.9	14.3
2000	604 441	55.9	1050	29.1	39.5	15.5
2001	594 634	54.7	1050	29.2	40.0	16.5
2002	596 122	54.7	1055	29.3	40.6	17.7

(Source: National Statistics - Live births)

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(a) How many births were there in the year 2000?

.....

(1)

(b) Describe the trend in the mean age of mothers at childbirth between the years 1995 and 2002.

.....

.....

.....

(1)

For every year between 1995 and 2002 there were more male births than female births.

(c) How does the table show this?

.....

.....

.....

(1)

Leave blank

(d) From the table, what can you infer about the trend in the percentage of births to mothers born in the UK?
Give a reason for your answer.

.....

.....

.....

.....

.....

(2)

(Total 5 marks)

Q6

7. David applies for two jobs.
The probability that he will get an interview for the first job is 0.4
The probability that he will get an interview for the second job is 0.3

(a) Work out the probability that he will **not** get an interview for the first job.

.....

(2)

(b) Work out the probability that he will **not** get an interview for the first job and that he will **not** get an interview for the second job.

.....

(2)

Q7

(Total 4 marks)

TOTAL FOR SECTION A: 28 MARKS

Leave blank

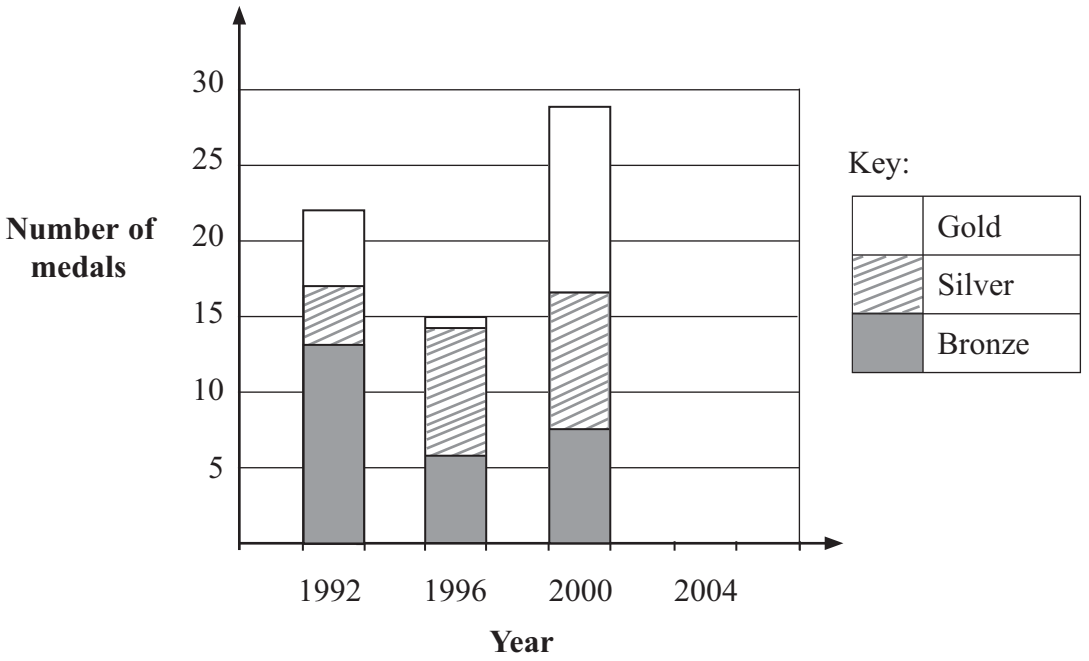
SECTION B

Answer ALL the questions. Write your answers in the spaces provided.

You must write down all stages in your working.

1. The composite bar chart shows information about the numbers of Gold, Silver and Bronze medals won by the UK in the Olympic Games in 1992, 1996 and 2000.

Medals won by the UK in the Olympic Games



(Source: databaseolympics.com)

(a) Write down the total number of medals won by the UK in 1996.

.....

(1)

(b) Work out the number of Gold medals won by the UK in 1992.

.....

(1)

.....

(1)

The table shows the numbers of Gold, Silver and Bronze medals won by the UK in 2004.

	Gold	**Silver**	**Bronze**
Number of medals	9	9	12

(c) Complete the composite bar chart.

(3)

Leave blank

Medals won by Canada in the Paralympic Games in 2004

(Data source: www.paralympics.org)

The pie chart shows information about the numbers of Gold, Silver and Bronze medals won by Canada in the Paralympic Games in 2004.

Canada won a total of 72 medals.
19 of these medals were Silver.

(d) Calculate the angle used for Silver in the pie chart.
You must show your working.

°

.....

(2)

The size of the angle used for Gold in the pie chart is 140°.

(e) Work out the number of Gold medals.

.....

(2)

(f) Complete the table for the numbers of Gold and Bronze medals won by Canada in the Paralympic Games in 2004.

	Gold	**Silver**	**Bronze**
Number of medals		19	

(1)

(Total 10 marks)

Q1

Leave blank

2. 40 people applied for a job.
The incomplete table gives information about the age group and gender for 30 of these people.

Age group (years)	**Under 20**	**21 – 30**	**Over 30**
Male	7	9	1
Female	4	3	3

The ages and genders of the other 10 people are given below.

22, male 35, male 22, female 28, male 23, female

41, male 26, male 33, female 39, female 32, male

(a) Use this information to complete the table for all 40 people.

(3)

One of the 40 people is to be chosen at random.

(b) (i) Write down the most likely age group and gender of the person chosen.

.....

(1)

(ii) Work out the probability that the person will be female.

.....

(2)

(c) Use your table to compare and contrast the different age groups of these people and their gender.

.....

.....

.....

.....

.....

.....

(2) **Q2**

(Total 8 marks)

Leave blank

3. A survey was done to count the number of eggs in blue-tit nests.
The data is recorded in the table.

Numbers of eggs in blue-tit nests

Number of eggs (x)	**Frequency (f)**	fx
7	2	14
8	8	64
9	12	108
10	15	150
11	16	
12	9	
Total		

(Source: Internet Survey)

(a) Complete the table.

(1)

(b) Write down the modal number of eggs.

.....

(1)

(c) Work out the mean number of eggs.

.....

(2)

(d) Find the median number of eggs.

.....

(1)

(e) Which average would **best** describe the number of eggs in a blue-tit nest?
Give a reason for your answer.

.....

.....

(1)

Q3

(Total 6 marks)

Leave blank

4. A town council plans to build a swimming pool.
It is going to carry out a survey to find out what people think of the plan.

The council should take a sample rather than a census.

(a) Write down **one** reason why.

.....

(1)

(b) Write down a sampling frame that the council could use.

.....

(1)

(c) Describe how the council could take a random sample.

.....

.....

.....

.....

(2)

(d) (i) Design a suitable question for a questionnaire to find out what people think about the plan to build the swimming pool.
You should include some response boxes.

(ii) What type of **statistical** diagram could the council use to show the results of the survey?
Give a reason for your answer.

.....

.....

.....

.....

(4)

Leave blank

The council should carry out a pilot study (pre-test).

(e) Give **two** reasons why.

1 .....

.....

.....

.....

2 .....

.....

.....

.....

(2)

(Total 10 marks)

Q4

Leave blank

5. The table gives information about the numbers of cars made in the UK for each four-month period from 2003 to 2005, to the nearest ten thousand.

Year	Period		Number of cars made (nearest ten thousand)	Three-point moving average
2003	1	Jan – Apr	57	
	2	May – Aug	53	55.3
	3	Sep – Dec	56	55.7
2004	1	Jan – Apr	58	55.3
	2	May – Aug	52	55.0
	3	Sep – Dec	55	54.7
2005	1	Jan – Apr	57	
	2	May – Aug	50	
	3	Sep – Dec	52	

(Source: www.statistics.gov.uk)

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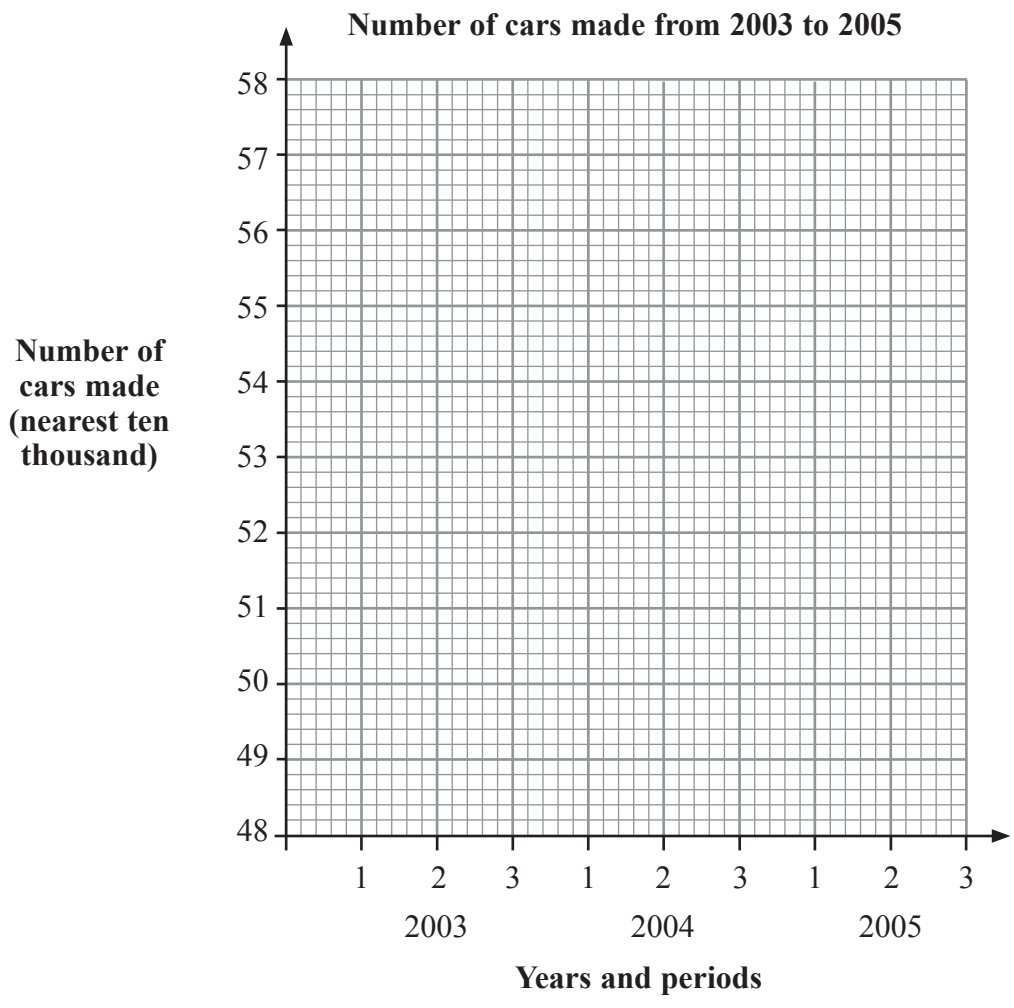
(a) (i) Complete the table to show the two missing three-point moving averages.

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



(4)

Leave blank

(b) What do the moving averages show about the trend in the number of cars made in the UK from 2004 to 2005?

.....

.....

(1)

The time series graph shows there are seasonal variations in the numbers of cars made.

(c) (i) Write down the period when there are fewer cars made than the general trend.

.....

.....

(ii) Suggest a reason why.

.....

.....

.....

(2)

The table shows the total number of cars made in the UK in 2003 and in 2005, to the nearest ten thousand.

Year	**2003**	**2005**
Number of cars made (nearest ten thousand)	166	159

(d) Taking 2003 as the base year, work out the index number for the number of cars made in 2005.

.....

(2) **Q5**

(Total 9 marks)

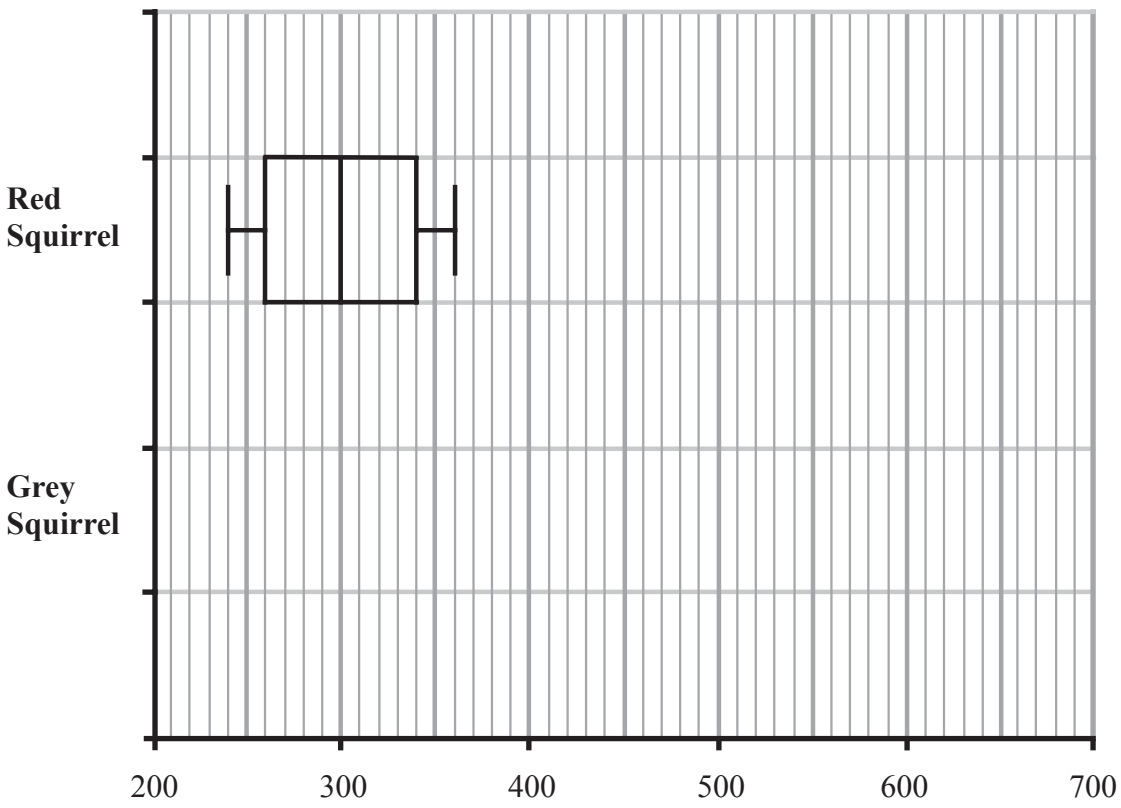
Leave blank

6. There has been research into the survival of Red Squirrels.
A large number of adult Red Squirrels and a large number of adult Grey Squirrels were weighed.
The summary statistics of body weights are shown in the table.

Weight in grams	Minimum weight (g)	Lower quartile (g)	Median weight (g)	Upper quartile (g)	Maximum weight (g)
Red Squirrel	240	260	300	340	360
Grey Squirrel	300	450	500	570	620

A box plot has been drawn on the grid to show the distribution of the weights of Red Squirrels.

Distributions of the weights of squirrels



(Source: Wildlife Trust's Squirrel Survey)

(a) On the grid, draw a box plot to show the distribution of the weights of Grey Squirrels.

(3)

Leave blank

(b) Describe the skewness of each of the distributions.

.....

.....

.....

(2)

(c) Compare the distributions of the weights of the Red Squirrels and the weights of the Grey Squirrels.

.....

.....

.....

.....

.....

(2)

Some Grey Squirrels have a lot of red fur.
Some Red Squirrels have some grey fur.
This means that it is not always possible to tell if a squirrel is red or grey by looking at the colour of its fur.

There are Red Squirrels and Grey Squirrels in a wood.

(d) How could you use the box plots to help you find out whether a certain squirrel is a Red Squirrel or a Grey Squirrel?

.....

.....

.....

.....

.....

.....

(2) Q6

(Total 9 marks)

TOTAL FOR SECTION B: 52 MARKS
TOTAL FOR PAPER: 80 MARKS

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