

|               |  |  |  |  |  |                 |   |   |   |   |   |         |            |  |
|---------------|--|--|--|--|--|-----------------|---|---|---|---|---|---------|------------|--|
| 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**

Friday 25 June 2010 – Morning

Time: 2 hours

Examiner's use only

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|--|--|--|
|  |  |  |
|--|--|--|

Team Leader's use only

|  |  |  |
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|  |  |  |
|--|--|--|

**Materials required for examination**

Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser, electronic calculator.

**Items included with question papers**

Nil

**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.

**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 7 questions in Section B. The total mark for this paper is 80.

There are 28 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  $= \frac{\sum fx}{\sum f}$

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



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**SECTION A**

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

**You must write down all stages in your working.**

1. Tania does a survey.  
She writes down the ages of her school friends.  
Here are some of the ages she writes down.

15    15    16    14    116    15

Tania has made an error in writing down one of these ages.

- (a) Which age?

.....  
**(1)**

- (b) Suggest the age that Tania meant to write.

.....  
**(1)**

Tania wants to find out how many boys and how many girls use the school cafe.

- (c) Design a suitable data capture sheet for Tania to use.

**(2)**    **Q1**

**(Total 4 marks)**



|   |  |
|---|--|
| <p>2. The probability that a ticket bought for the National Lottery game will win a prize is <math>\frac{1}{53}</math>. Gary buys one ticket for the National Lottery game.</p> <p>(a) Circle the word in the list which best describes the probability that the ticket will win a prize.</p> <p><b>impossible      unlikely      evens      likely      certain</b></p> <p style="text-align: right;"><b>(1)</b></p> <p>(b) Work out the probability that the ticket will <b>not</b> win a prize.</p> <p style="text-align: right;">.....<br/><b>(2)</b></p> <p>Saldi and Carmen each buy one ticket for the next National Lottery game.</p> <p>(c) Work out the probability that <b>both</b> Saldi's ticket and Carmen's ticket will win a prize.</p> <p style="text-align: right;">.....<br/><b>(2)</b></p> <p style="text-align: right;"><b>(Total 5 marks)</b></p> | <p>Leave blank</p>   |
|   | <p><b>Q2</b></p> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 0 auto;"></div> |



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3. Here are the amounts of money 11 people gave to a charity.

£1   £1   £2   £2   £3   £3   £4   £5   £5   £10   £500

(a) Work out the range.

£ .....  
**(1)**

(b) Work out the interquartile range.

£ .....  
**(2)**

(c) Give **one** advantage and **one** disadvantage in using the range as a measure of spread.

Advantage .....

.....

Disadvantage .....

.....

**(2)**

**Q3**

**(Total 5 marks)**



4. The table shows the usual times taken for 9 different rail journeys in 1987 and in 2008

| Journey                      | 1987 Time (minutes) | 2008 Time (minutes) |
|------------------------------|---------------------|---------------------|
| Canterbury East to Victoria  | 81                  | 86                  |
| Chatham to Victoria          | 43                  | 44                  |
| Lewes to Victoria            | 61                  | 67                  |
| Lewes to Haywards Heath      | 15                  | 20                  |
| Southend to Fenchurch St     | 49                  | 54                  |
| Southend to Upminster        | 28                  | 30                  |
| Canterbury East to Faversham | 13                  | 17                  |
| Haywards Heath to Gatwick    | 13                  | 14                  |
| Barking to Fenchurch St      | 12                  | 16                  |

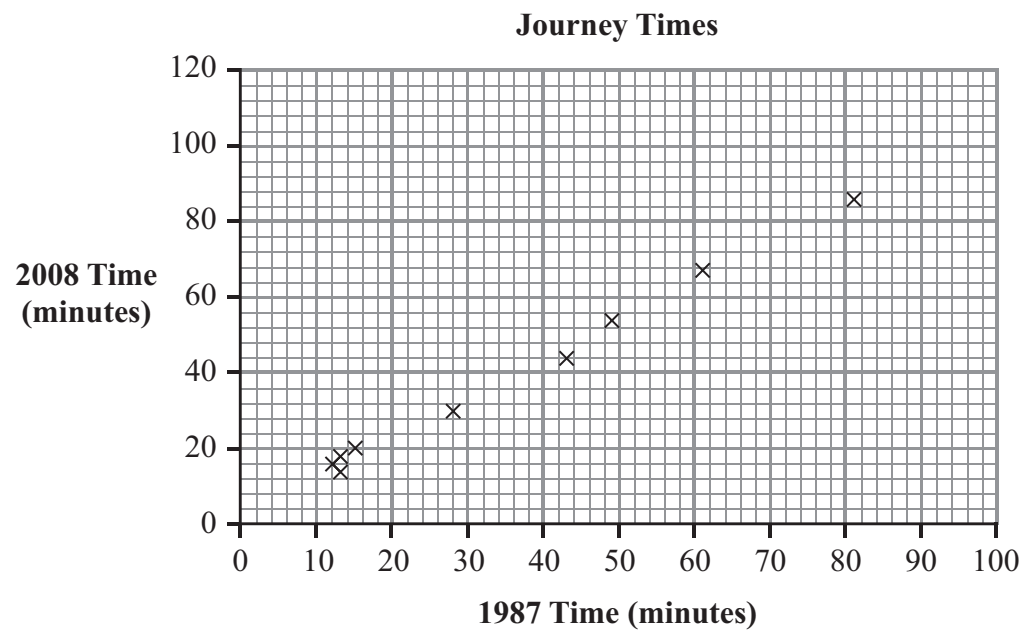
(Source: Passenger Focus)

(a) Write down what the table shows about journey times in 1987 compared to journey times in 2008

.....  
 .....

(1)

The scatter diagram shows these data.



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blank

(b) Draw a line of best fit on the scatter diagram. (1)

In 1987 a train took 70 minutes to complete a journey.

(c) Estimate the time a train took to complete the **same** journey in 2008  
..... minutes  
(1)

In 2008 a train took 40 minutes for a journey.

(d) Estimate the time a train took to complete the **same** journey in 1987  
..... minutes  
(1)

In 1987 a train took 100 minutes for a journey from Doncaster to London.

The line of best fit could be used to find an estimate of the time for the journey in 2008

(e) Would this be a reliable estimate?

Give a reason for your answer.

.....  
.....  
.....  
.....

(1)

Q4

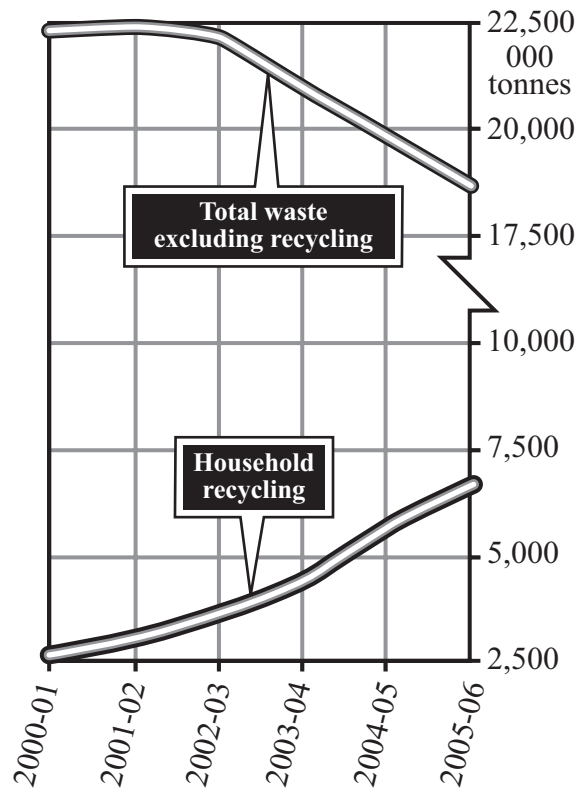
(Total 5 marks)



5. The graph gives information about regular household waste and recycling in England.

### RISE IN RECYCLING

Regular household waste and recycling in England



(Source: Dept. for Environment, Food and Rural Affairs 2008)

Describe **three** features of the graph that are misleading.

- 1 .....
- .....
- .....
- 2 .....
- .....
- .....
- 3 .....
- .....
- .....

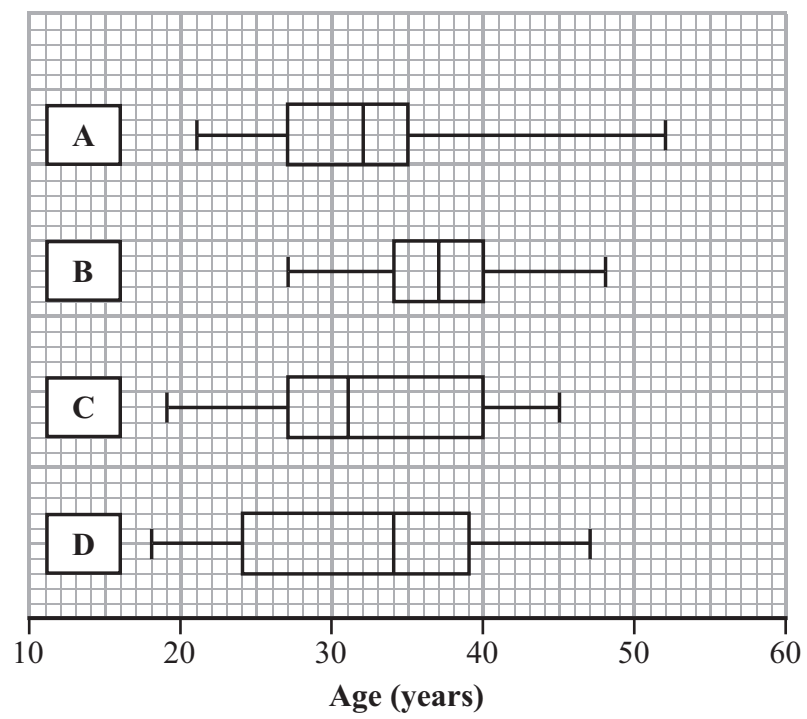
(Total 3 marks)

Q5





6. There are 4 teams in a netball competition.  
The box plots show some information about the ages of the players in each team.



(Source: Western League)

Write down the letter of the box plot for the team

- (a) with the oldest player in the competition,

.....  
(1)

- (b) whose distribution of ages has a positive skew.

.....  
(1)

(Total 2 marks)

Q6



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7. The table gives information about the number of sparrows using a bird feeder in each quarter of 2006 and 2007

| Year | Quarter | Number of sparrows |
|------|---------|--------------------|
| 2006 | 1       | 566                |
|      | 2       | 710                |
|      | 3       | 652                |
|      | 4       | 448                |
| 2007 | 1       | 530                |
|      | 2       | 678                |
|      | 3       | 516                |
|      | 4       | 432                |

(Source: www.bto.org)

The first four 4-point moving averages for these data are

594 585 577 543

(a) Work out the last 4-point moving average.

.....  
(2)

(b) Describe what the table shows and what the moving averages show about the numbers of sparrows using the bird feeder over this two year period.

.....  
.....  
.....  
.....  
.....

(2)

Q7

(Total 4 marks)

**TOTAL FOR SECTION A: 28 MARKS**



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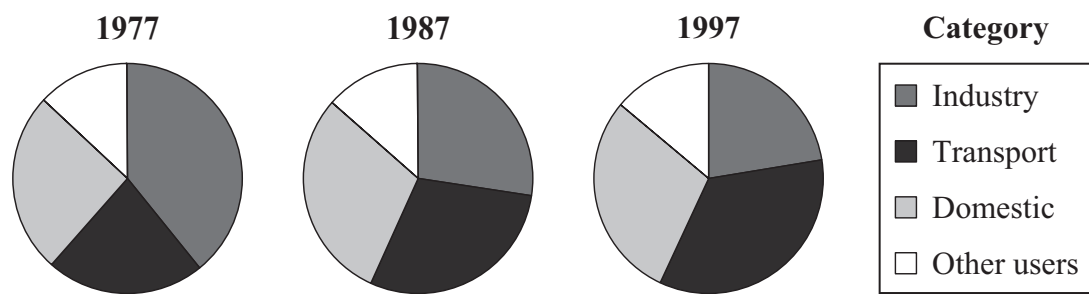


**SECTION B**

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

**You must write down all stages in your working.**

1. The pie charts give information about the proportions of energy used by Industry, Transport, Domestic and Other users in the UK in 1977, in 1987 and in 1997



(Source: www.berr.gov.uk)

- (a) Which category in 1977 has the greatest proportion of energy used?

.....  
**(1)**

- (b) Which category has approximately the same proportion of energy used in all three years?

.....  
**(1)**



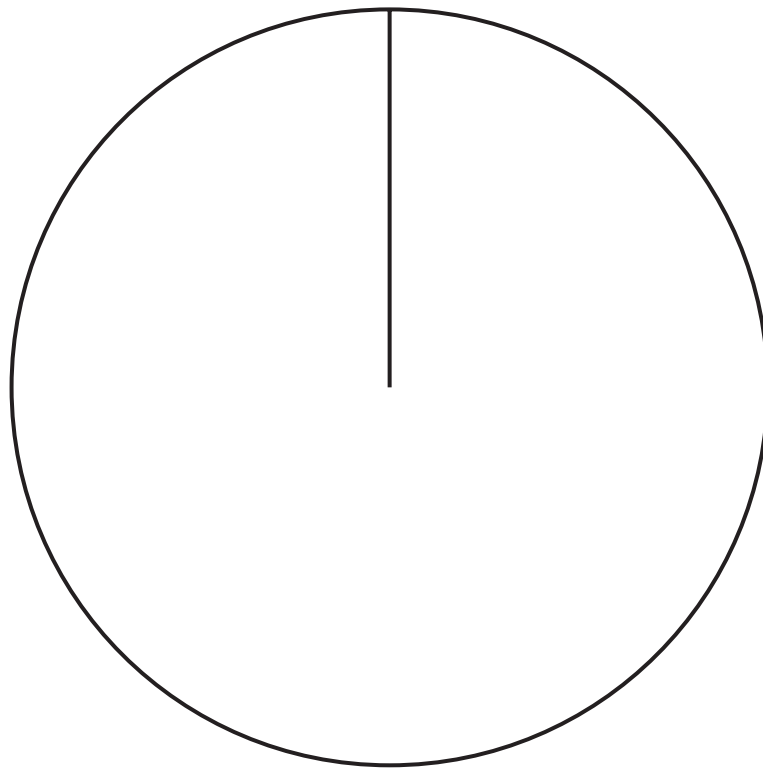
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The table gives information about the amounts of energy used by Industry, Transport, Domestic and Other users in the UK in 2007

| Industry | Transport | Domestic | Other users | Total |
|----------|-----------|----------|-------------|-------|
| 32       | 60        | 44       | 19          | 155   |

(million tonnes of oil equivalent)

(c) Draw a pie chart to show this information.



(3) Q1

(Total 5 marks)



2. A shop sells pairs of jeans.  
 The pairs of jeans have one of three lengths, L, M and S.  
 Here are the lengths of the 20 pairs of jeans in the shop one day.

L M S L L M S S M M  
 M M M S S S L L M S

(Source: Little Johns)

(a) Complete the frequency table for this information.

| Length | Tally | Frequency |
|--------|-------|-----------|
| L      |       |           |
| M      |       |           |
| S      |       |           |

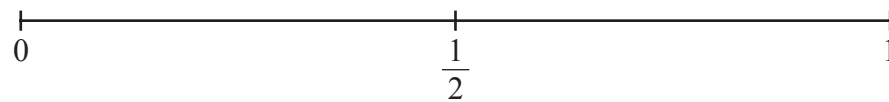
(2)

One of these 20 pairs of jeans is picked at random.

(b) (i) Write down the length that is most likely to be picked.

.....

(ii) On the number line, mark with a cross (x) the probability that the length will be L.



(iii) Write down the probability that the length will be S.

.....

(3)



Leave blank

The table gives information about the waist sizes, in inches, of these 20 pairs of jeans.

| Waist size (inches) | Frequency |  |
|---------------------|-----------|--|
| 28                  | 8         |  |
| 30                  | 7         |  |
| 32                  | 3         |  |
| 34                  | 2         |  |

(c) Write down the modal waist size.

..... inches  
(1)

(d) Find the median waist size.

..... inches  
(1)

(e) Work out the mean waist size.

..... inches  
(3)

(f) Which average would **best** describe the waist sizes of the 20 pairs of jeans?  
Give a reason for your answer.

.....  
.....  
(1)

(Total 11 marks)

Q2

|  |  |
|--|--|
|  |  |
|--|--|



3. The table shows information about the area of land used for some crops in June 2005, 2006 and 2007

**Land used for arable crops (thousand hectares)**

| <b>Arable Crops</b>          | <b>June 2005</b> | <b>June 2006</b> | <b>June 2007</b> |
|------------------------------|------------------|------------------|------------------|
| <b>Cereals (total)</b>       | 2429.4           | 2387.7           | 2393.1           |
| Wheat                        | 1748.4           | 1709.0           | 1691.0           |
| Winter Barley                | 321.3            | 322.3            | 318.8            |
| Spring Barley                | 274.2            | 242.8            | 258.1            |
| Oats                         | 65.5             | 93.0             | 102.5            |
| Rye                          | 5.9              | 6.7              | 6.0              |
| Mixed Corn                   | 2.8              | 2.4              | 1.7              |
| Triticale                    | 11.2             | 11.4             | 15.0             |
| <b>Oilseed Crops (total)</b> | 524.8            | 495.0            | 572.8            |
| Oilseed rape – winter        | 455.2            | 446.8            | 549.7            |
| Oilseed rape – spring        | 24.8             | 15.9             | 12.4             |
| Linseed                      | 44.8             | 32.3             | 10.7             |
| <b>Potatoes (total)</b>      | 102.4            | 105.3            | 103.9            |
| Early Potatoes               | 10.5             | 9.6              | 14.2             |
| Main Crop Potatoes           | 91.9             | 95.7             | 89.7             |

(Source: Defra Survey of Agriculture–June 2007)

(a) Write down the area of land used for Wheat in June 2005

..... thousand hectares  
(1)

(b) Work out the total area of land used for Barley in June 2007

..... thousand hectares  
(1)

(c) Discuss the trend between 2005 and 2007 in the area of land used for Oats.

.....  
 .....  
 .....  
 .....  
 (1)





Leave  
blank

In June 2005 the total area for Cereals is 2429.4 thousand hectares.

The areas of land used for the 7 types of Cereal add up to 2429.3 thousand hectares.

These two areas are not equal.

(d) Write down the reason why.

.....  
.....  
.....  
.....

**(1)**

(e) Work out the percentage decrease in the area of land used for Linseed between 2005 and 2007

..... %  
**(3)**

**Q3**

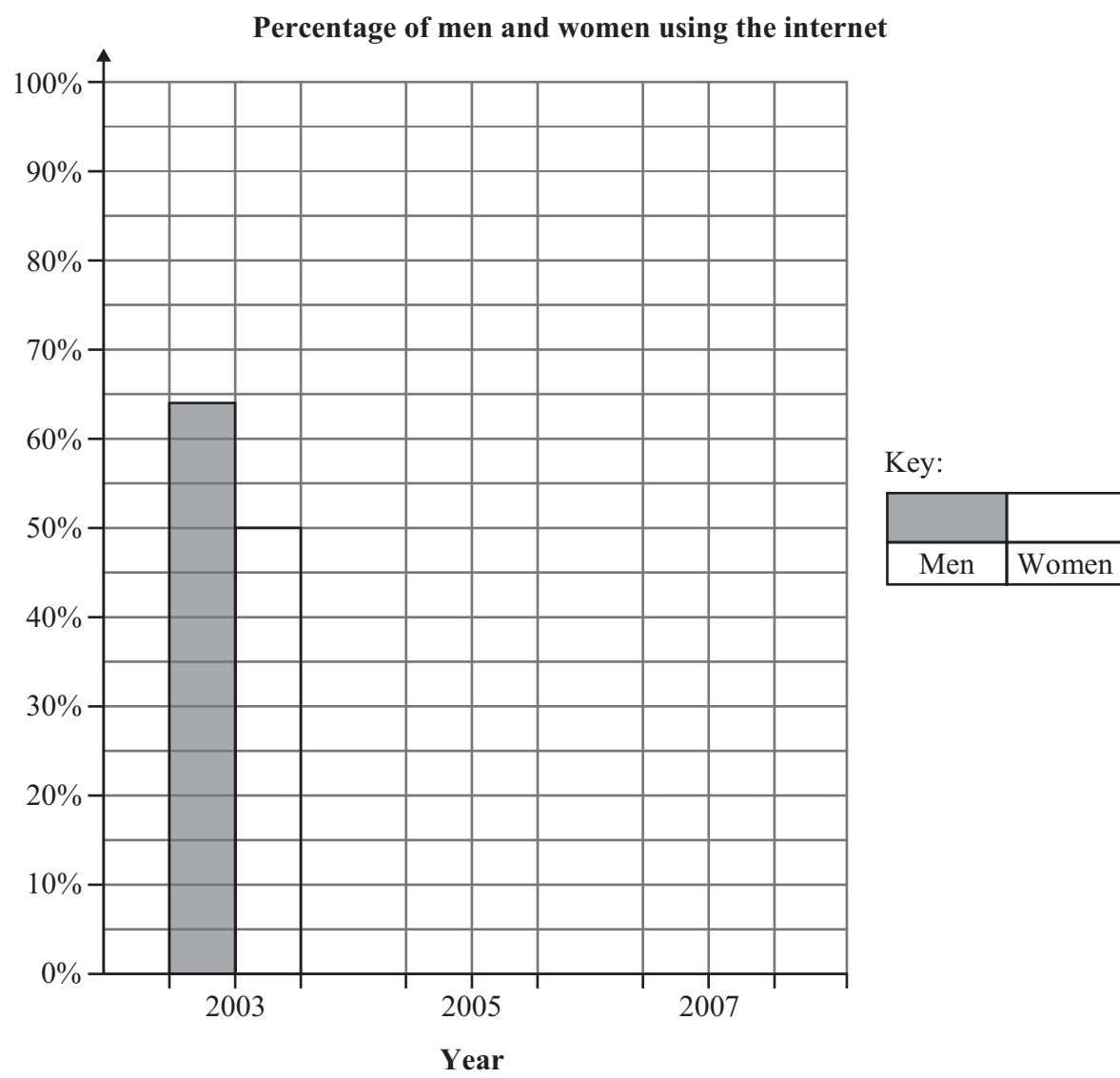
**(Total 7 marks)**



4. The table gives information about the percentages of men and the percentages of women using the internet in 2003, in 2005 and in 2007

| Gender | 2003 | 2005 | 2007 |
|--------|------|------|------|
| Men    | 64%  | 63%  | 70%  |
| Women  | 50%  | 57%  | 65%  |

- (a) Use the information in the table to complete the multiple bar chart.



(3)



Leave  
blank

(b) Compare and contrast the percentages of men and the percentages of women using the internet in each of the years 2003, 2005 and 2007

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(2)

Q4

(Total 5 marks)



5. The table shows information about the lengths and the widths of 8 beetles. This information is from a book about insects.

| Beetle | Length (mm) | Width (mm) |
|--------|-------------|------------|
| A      | 12.7        | 4.7        |
| B      | 16.0        | 6.0        |
| C      | 10.7        | 4.7        |
| D      | 11.3        | 5.3        |
| E      | 24.0        | 9.0        |
| F      | 6.3         | 2.3        |
| G      | 3.2         | 1.2        |
| H      | 8.3         | 3.3        |

(Source: Collins Field Guide)

This information is **not** primary data.

(a) Explain why.

.....  
.....  
(1)

Here is a list of words.

**continuous    discrete    categorical    qualitative    rank**

(b) Use the best word from the list to complete the sentence.

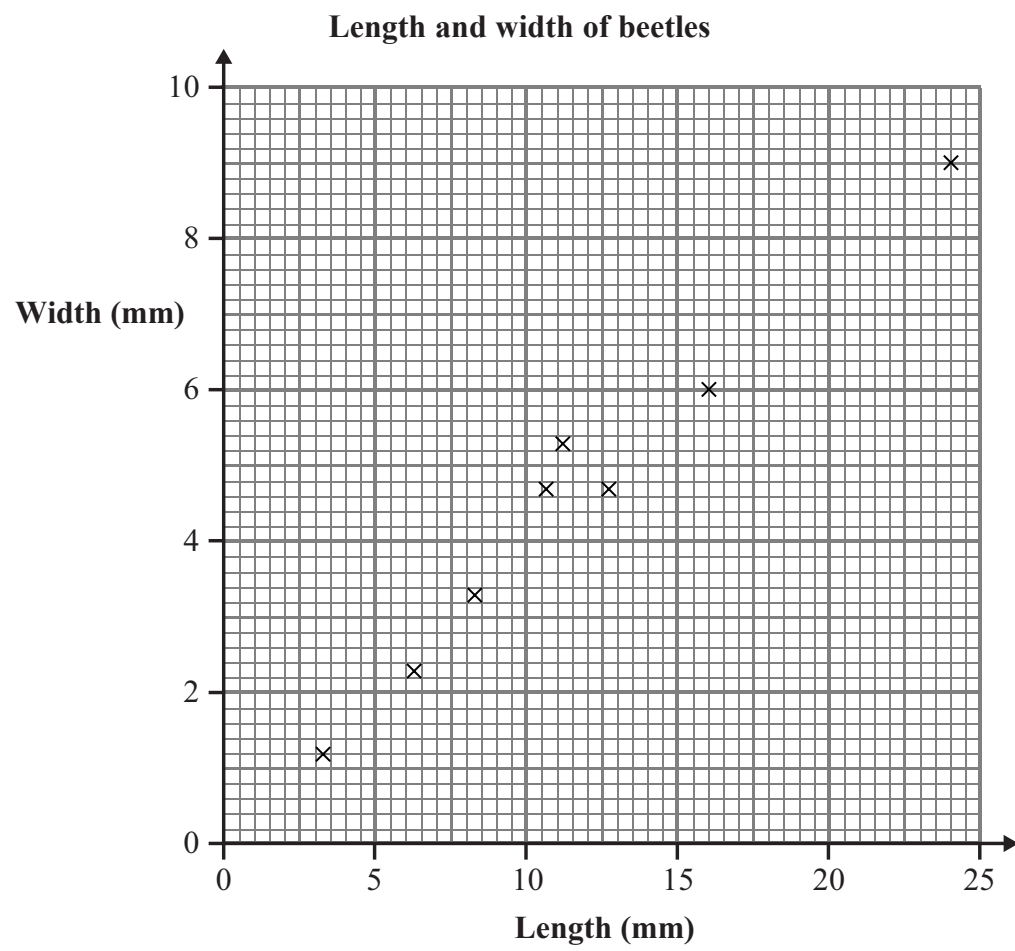
The length of a beetle is an example of ..... data.  
(1)

(c) Work out the mean width of the beetles.

..... mm  
(2)



Leave blank



A scatter diagram is drawn for the information in the table.

- (d) Describe and interpret the correlation between the length and the width of these beetles.

.....

.....

.....

.....

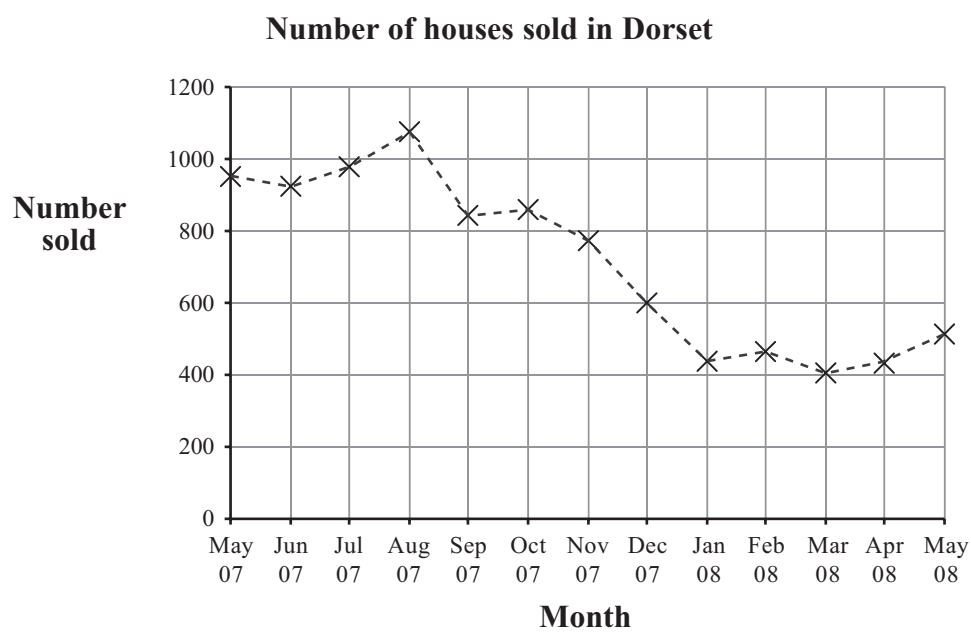
(2)

Q5

(Total 6 marks)



6. The time series graph gives information about the number of houses sold in Dorset in each month from May 07 to May 08



(Source: www.landregistry.gov.uk)

(a) Estimate the number of houses sold in May 07

.....  
(1)

More houses were sold in Dec 07 than in Mar 08

(b) How many more?

.....  
(1)

(c) (i) Describe the trend in the numbers of houses sold between Aug 07 and Jan 08

.....

(ii) Suggest a reason for this trend.

.....

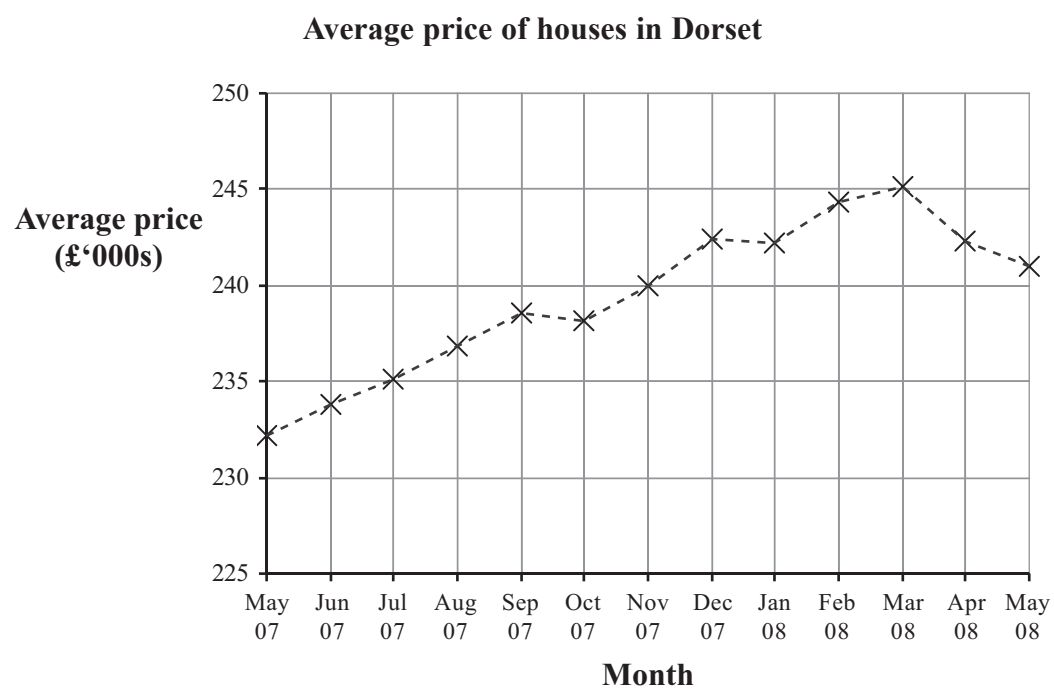
.....

(2)



Leave blank

This time series graph gives information about the average prices of houses in Dorset for each month from May 07 to May 08



(Source: www.landregistry.gov.uk)

(d) In which month was the average price £235 000?

.....  
(1)

(e) Between which two months was the decrease in the average price of houses the greatest?

.....  
(1)

The average price of houses in May 07 was £232 229

The average price of houses in May 08 was £241 332

(f) Using May 07 as the base year, work out the index number for the average price of houses in May 08

.....  
(2)

(Total 8 marks)

Q6



7. A researcher is going to investigate the age at which people in England get arthritis. He wants to find out if men get arthritis at a younger age than women.

(a) Suggest a hypothesis that the researcher could use.

.....  
.....  
.....

(1)

It would be difficult for a researcher to use a census.

(b) Write down a reason why.

.....  
.....  
.....

(1)

The researcher decides to use a sample.

(c) Describe the population he could use.

.....  
.....

(1)

(d) Write down **one** advantage and **one** disadvantage of using a sample.

Advantage .....

.....  
.....

Disadvantage .....

.....  
.....

(2)





Leave  
blank

The researcher uses a questionnaire.

He does a pilot study first.

(e) Write down **two** reasons for doing a pilot study.

- 1 .....
- .....
- 2 .....
- .....
- (2)**

One of the questions on the questionnaire for the pilot study was

‘How old were you when you started to have arthritis?’

This question did not work well.

(f) Suggest a reason why.

- .....
- .....
- .....
- .....
- (1)**

(g) Design a better question for the researcher to use.

- .....
- .....
- .....
- .....
- (2)**

**(Total 10 marks)**

**Q7**

**TOTAL FOR SECTION B: 52 MARKS**

**TOTAL FOR PAPER: 80 MARKS**

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