

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**

Thursday 21 June 2007 – 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 8 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  $= \frac{\sum fx}{\sum f}$

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.** Northend hospital has an equal number of male and female employees.

One of these employees is to be chosen at random.

- (a) On the probability scale below, use  $A$  to mark the probability that the employee chosen is male.

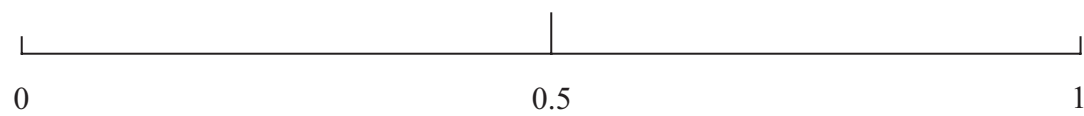
**(1)**

Employees are equally likely to be born on any day of the week.

- (b) On the probability scale below:

- (i) use  $B$  to mark the probability that the employee chosen was born on a Monday,  
(ii) use  $C$  to mark the probability that the employee chosen was **not** born on a Saturday or a Sunday.

**(2)**



**Probability Scale**

**Q1**

**(Total 3 marks)**

3

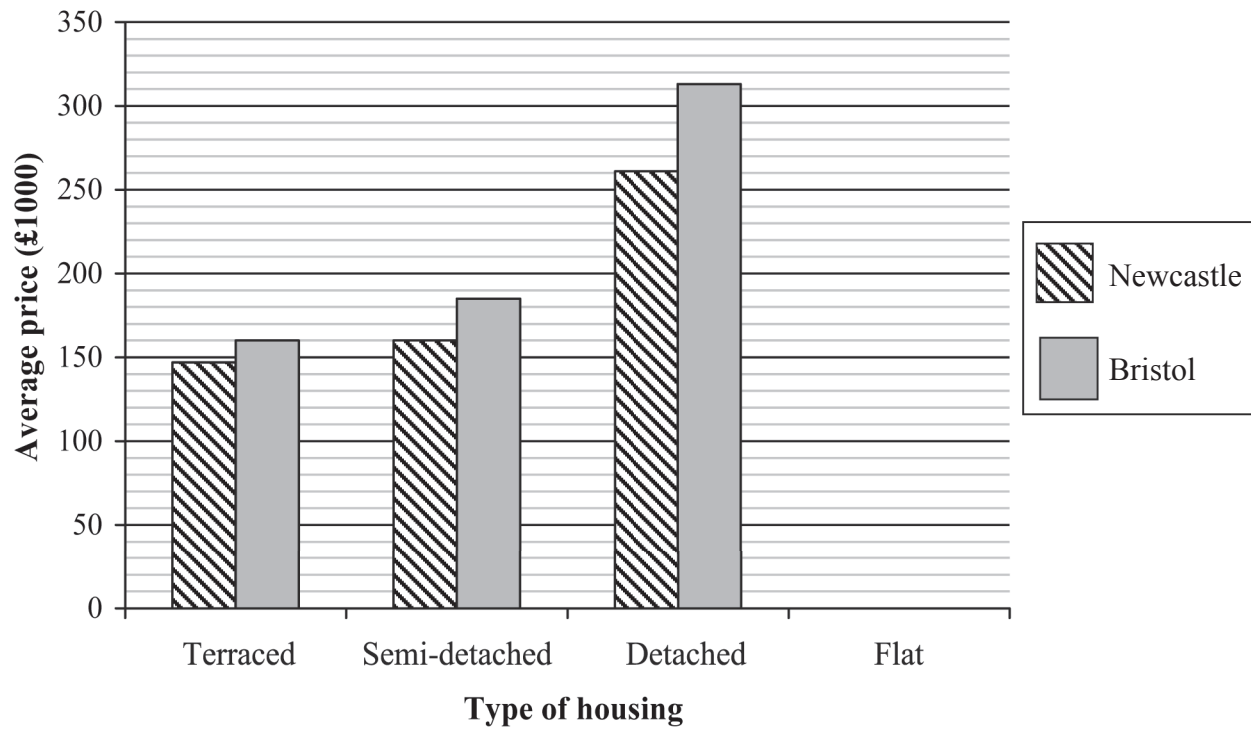
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2. The multiple bar chart shows information about the average price, to the nearest £1000, of three different types of housing in Newcastle and Bristol in August 2005.

**Average price of housing in August 2005**



The average price of a flat in Newcastle in August 2005 was £130 000.

The average price of a flat in Bristol in August 2005 was £160 000.

- (a) Complete the multiple bar chart to show the information for flats. (2)

- (b) What does the multiple bar chart show you about the average price of detached houses?

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

If you had £150 000 to spend on housing in Newcastle in August 2005,

- (c) which type of housing were you most likely to be able to buy?  
.....  
(1)

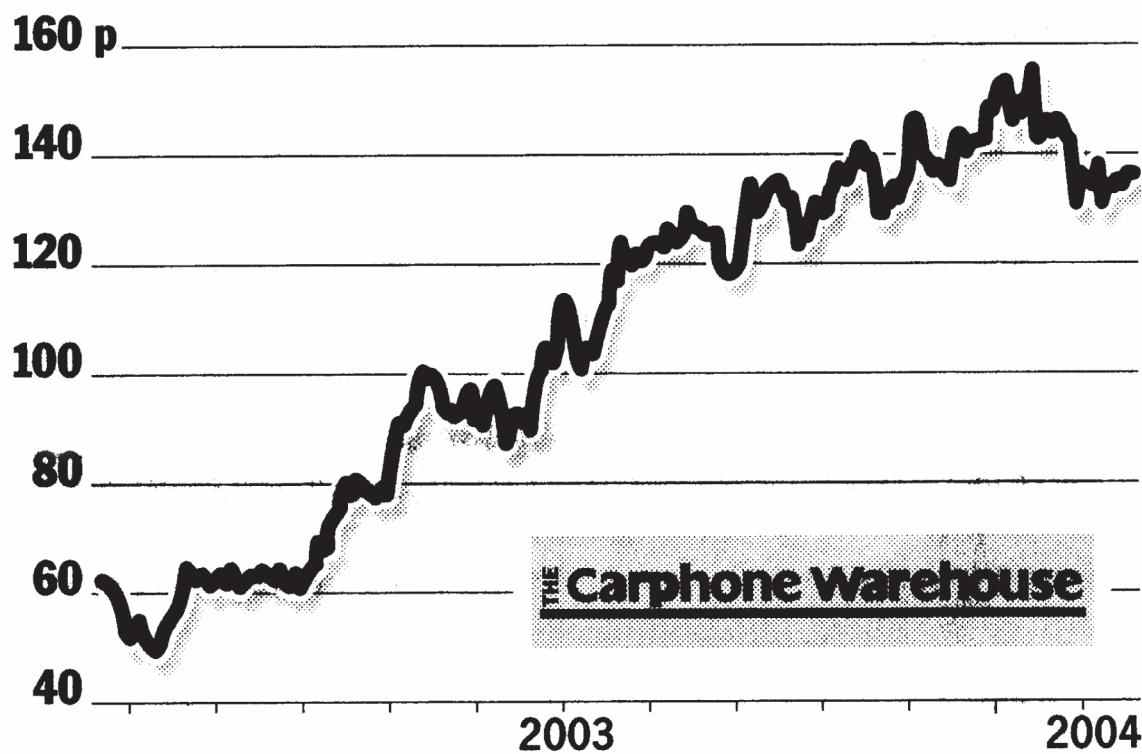
**(Total 4 marks)**

**Q2**



Leave blank

3. This graph appeared in a national newspaper.  
The graph is supposed to give information about the price, in pence, of buying a share in The Carphone Warehouse.



(Data source: *Digital Look*)

(Source: *The Times Newspaper*)

The paper said 'Shares in The Carphone Warehouse have increased a lot over the year 2003'.

- (a) Write down **one** feature of the graph that makes the increase look greater than it was.

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

(1)

- (b) Write down **one** other misleading feature of this graph.

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

(1)

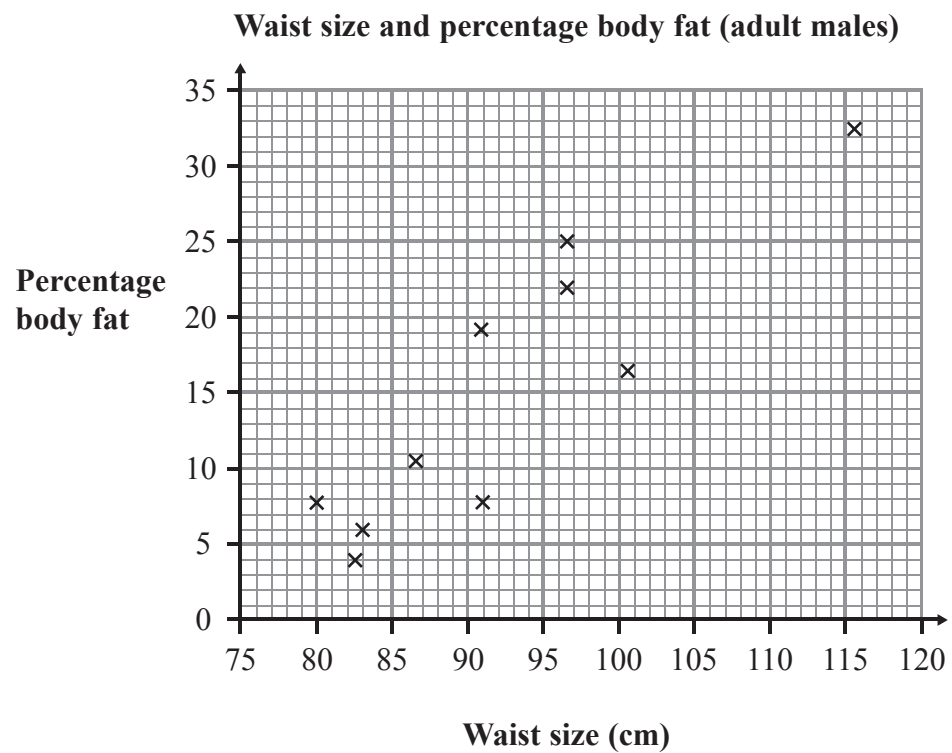
(Total 2 marks)

Q3



4. Measuring a person's waist size has been suggested as a way of estimating their percentage body fat.

The scatter diagram below shows information about the percentage body fat and waist size for a sample of adult males.



(Data source: *South Dakota School of Mines & Tech*)

- (a) Describe the correlation between percentage body fat and waist size.  
 .....  
**(1)**
- (b) Draw a line of best fit on the scatter diagram.  
**(1)**
- (c) Use your line of best fit to estimate the percentage body fat for an adult male whose waist size is 100 cm.  
 .....%  
**(1)**



(d) Do you think that waist size could be used as a way of estimating the percentage body fat of adult males? Give a reason for your answer.

.....

.....

.....

.....

.....

.....

(2)

(Total 5 marks)

Leave blank

Q4



5. Storm Engineering employs 200 workers.

Storm Engineering wish to consult their workers about a new pension scheme.

(a) Give **one** advantage of taking a census of the workers rather than a sample.

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

Storm Engineering will use a questionnaire.

They will use closed questions.

(b) Give **one** advantage of using closed questions on a questionnaire.

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

Before Storm Engineering gives the questionnaire to all their workers they are advised to do something to check that the questionnaire is suitable.

(c) Write down what Storm Engineering need to do.

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

One question suggested for the questionnaire was

‘Do you agree that the proposed pension scheme should be compulsory?’

This question is leading.

(d) Rewrite this question so that it is not leading. You should include response boxes.

.....  
.....  
.....  
.....  
.....  
(2)

(Total 5 marks)

Q5





Leave blank

6. Waterside garage is doing a survey on the colours of vans.

An employee is going to count how many vans of each colour pass the garage.

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

**qualitative    quantitative    continuous    secondary**

(i) The colours of the vans are ..... data.

(ii) The number of vans is ..... data. **(2)**

The manager has three suggestions for when the employee should do the survey.

*A*: between 8.00 am and 10.00 am on a weekday

*B*: between 10.00 am and midday on a Saturday

*C*: at a randomly selected 1 hour period between 8.00 am and 5.00 pm every day for a week

(b) Which suggestion is best? Give a reason for your answer.

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

**(1)**

The manager has three suggestions for how the data could be recorded.

*X*: to write down the colour of each van as it passes, e.g. red, white, blue

*Y*: to write down just the first letter of the colour e.g. R, W, B

*Z*: to fill in a tally chart

(c) Which suggestion is best? Give a reason for your answer.

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

**(1)**

**Q6**

**(Total 4 marks)**



Leave blank

7. The two-way table shows information about the gender and smoking habits of 100 people.

	Smoker	Non-smoker	Total
Male	14	36	
Female	13	37	
Total			100

(Data source: *Office for National Statistics*)

(a) Complete the two-way table.

(2)

A person is to be picked at random from these 100 people.

(b) What is the probability that this person will be,

(i) female and a smoker,

.....

(ii) male and a non-smoker,

.....

(iii) a non-smoker?

.....

(3)

(Total 5 marks)

Q7

**TOTAL FOR SECTION A: 28 MARKS**



**SECTION B**

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

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

1. The table shows information about the number of energy units supplied in Great Britain.

**Number of energy units and their source**

Year	Total	Coal	Petroleum	Natural gas	Nuclear	Natural flow hydro	Net imports
1995	223.5	51.4	76.6	72.3	21.28	0.47	1.40
1996	227.0	46.9	75.6	80.6	22.10	0.32	1.44
1997	229.2	43.3	74.7	87.3	22.02	0.41	1.43
1998	235.2	43.3	76.5	90.4	23.39	0.52	1.07
1999	235.7	38.1	77.7	95.8	22.24	0.54	1.22
2000	238.0	40.0	77.8	98.8	19.66	0.51	1.22
2001	238.1	43.0	76.0	96.9	20.84	0.44	0.89
2002	234.2	39.8	73.5	99.5	20.09	0.56	0.72
2003	237.3	42.3	75.7	98.2	20.49	0.40	0.19

(Data source: *Department of Trade and Industry*)

- (a) How many units of energy did Nuclear supply in 1998?

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

- (b) Which source supplied the greatest number of energy units

(i) in 1995,

.....

(ii) in 2003?

.....

**(2)**

- (c) Describe the trend in the Net imports of energy units between the years 2000 and 2003.

.....

.....

**(1)**

**(Total 4 marks)**

**Q1**



Leave blank

2. The table gives information about the mean price, to the nearest £1000, of terraced houses in the East Midlands in 1997 and in 2000.

Year	1997	2000
Price (£)	70 000	86 000

(Data source: *Nationwide*)

- (a) Using 1997 as the base year, work out the index number for the mean price of terraced houses in the East Midlands in 2000. Give your answer to the nearest whole number.

.....  
(2)

- (b) Using 1997 as the base year, the index number of the mean price of terraced houses for 2003 was 214.

- (i) By what percentage has the mean price of terraced houses changed between 1997 and 2003?

.....%

- (ii) Work out the mean price of terraced houses in 2003.

£.....  
(3)

(Total 5 marks)

Q2



Leave blank

3. The table shows the monthly rainfall in mm, for Braemar in Scotland, in 2005.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rainfall	93	59	59	51	65	55	58	76	73	87	86	96

(Data source: Braemar Weather Station)

(a) Write down the mode of the monthly rainfall.

.....mm  
(1)

(b) Work out the median of the monthly rainfall.

.....mm  
(2)

(c) Work out the mean of the monthly rainfall.

.....mm  
(2)

Braemar Weather Station wishes to compare the rainfall for 2005 with the rainfall for each of the previous 25 years.

(d) Which average, mean, mode or median, should they use to see if the amount of rainfall shows a pattern of increase?

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

(e) What other statistical measure could be used to give a more complete picture of the changes in the pattern of rainfall?

.....  
(1)

(Total 7 marks)

Q3



4. For 100 days Saleem kept a record of the arrival times of the train he took to work.

The table shows information about the amount of time the train was late.

Time late ( $t$ minutes)	Frequency
$0 \leq t \leq 1$	23
$1 < t \leq 2$	35
$2 < t \leq 3$	24
$3 < t \leq 4$	12
$4 < t \leq 5$	5
$5 < t \leq 6$	1

(a) Complete the cumulative frequency table.

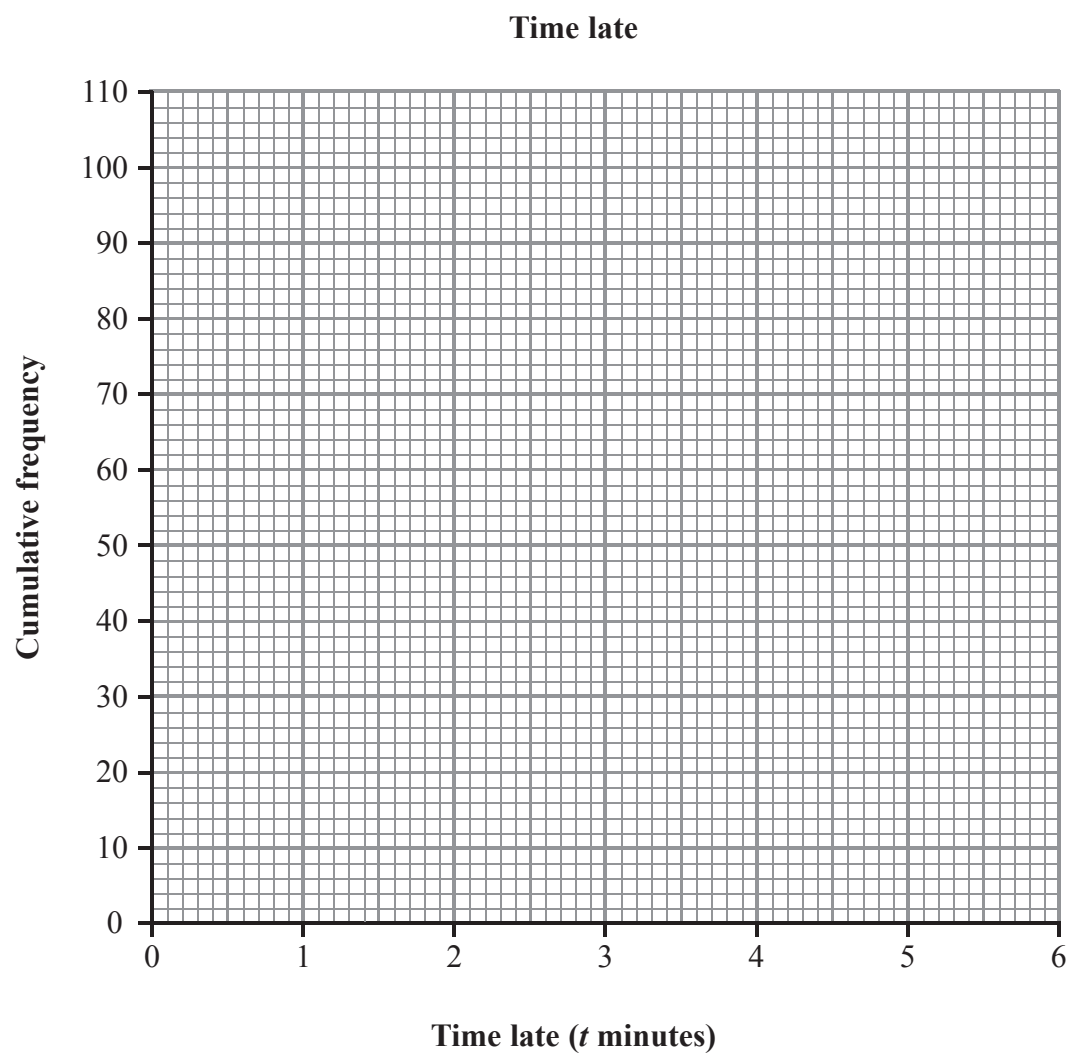
Time late ( $t$ minutes)	Cumulative frequency
$0 \leq t \leq 1$	
$0 \leq t \leq 2$	
$0 \leq t \leq 3$	
$0 \leq t \leq 4$	
$0 \leq t \leq 5$	
$0 \leq t \leq 6$	

(2)



Leave blank

(b) Using the information in your table, draw a cumulative frequency diagram.



(2)

(c) Use your cumulative frequency diagram to find an estimate for the median time the train was late.

..... minutes  
(2)

A train is officially late if it arrives more than 12 minutes late.

(d) How did the train that Saleem took to work perform over this period with regards to official lateness?

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

(1)

Q4

(Total 7 marks)



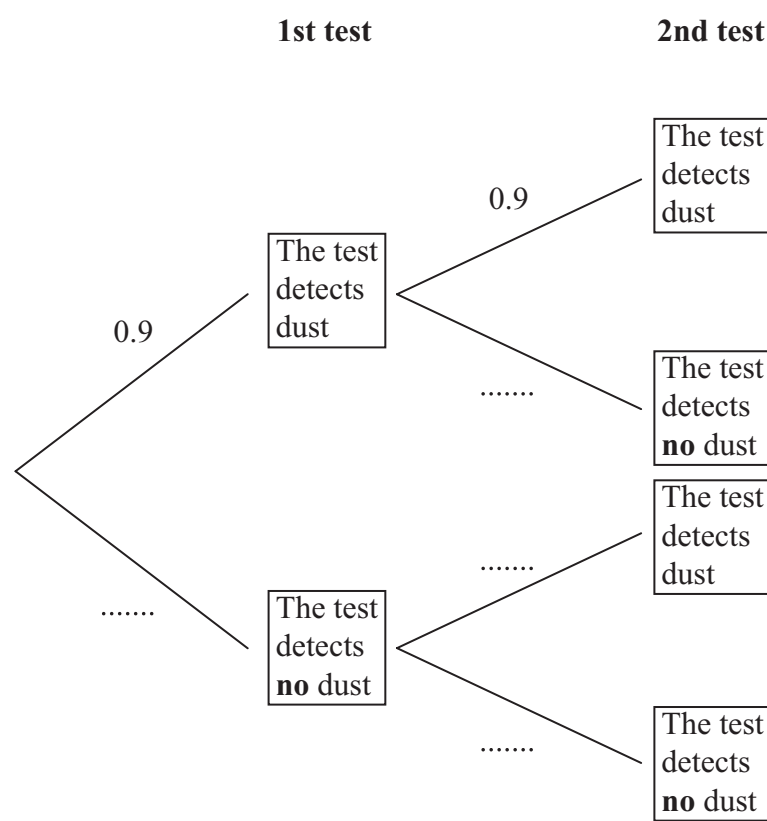
5. Equipment is used to detect a certain type of dust in the air.

The equipment is tested in a mine that is known to have this type of dust in the air.

The probability that the equipment will successfully detect this type of dust is 0.9

The test is performed twice in succession. The tests are independent.

(a) Complete the probability tree diagram.



(2)







<p>(b) Using your tree diagram, work out the probability that both tests will detect that this type of dust is present.</p> <p>..... (2)</p> <p>(c) Using your tree diagram, work out the probability that one of the tests <b>will</b> detect this type of dust and that the other test <b>will not</b> detect this type of dust.</p> <p>..... (3)</p> <p>(Total 7 marks)</p>	Leave blank
	Q5 <input type="text"/>



N 2 5 8 3 8 A 0 1 7 2 4



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6. Eleven 10 g portions of dried egg were taken from a large, well-mixed tin and sent to a laboratory to be tested for their percentage fat content.

The percentages were

0.27 0.37 0.37 0.38 0.39 0.40 0.42 0.43 0.45 0.46 0.54

- (a) For these data, find

(i) the lower quartile,

.....%

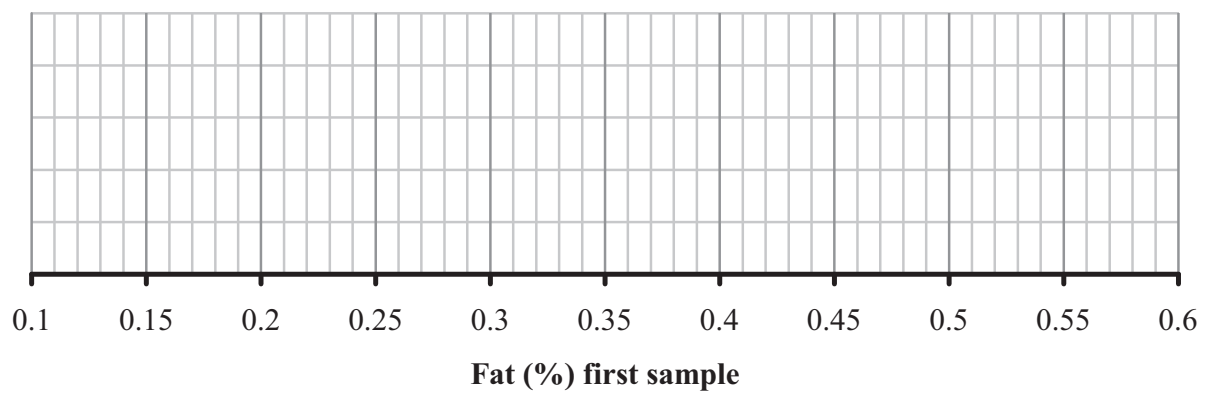
(ii) the upper quartile.

.....%  
**(2)**



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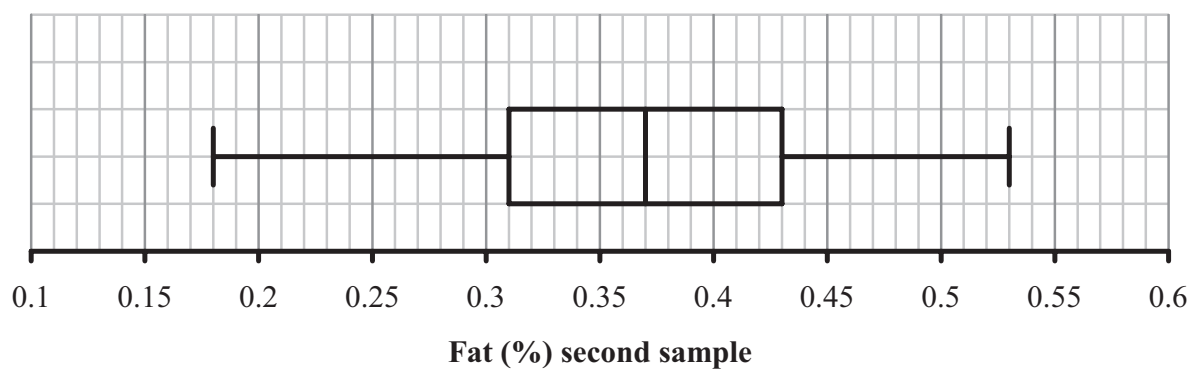
(b) Draw a box plot for these data given that the median percentage fat content was 0.40 per cent.



(3)

A second sample of eleven 10 g portions, from the same tin, was sent to a different laboratory.

The box plot gives information about the percentage fat content of this second sample.



(c) Use the two box plots to compare the distributions of the results from the two laboratories.

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

(2)

(Total 7 marks)

Q6



7. Burnstown Council decides to carry out a survey into the amount of traffic on one of its roads.

They decide to take a sample of the traffic.

(a) Give **two** advantages of taking a sample.

1 .....

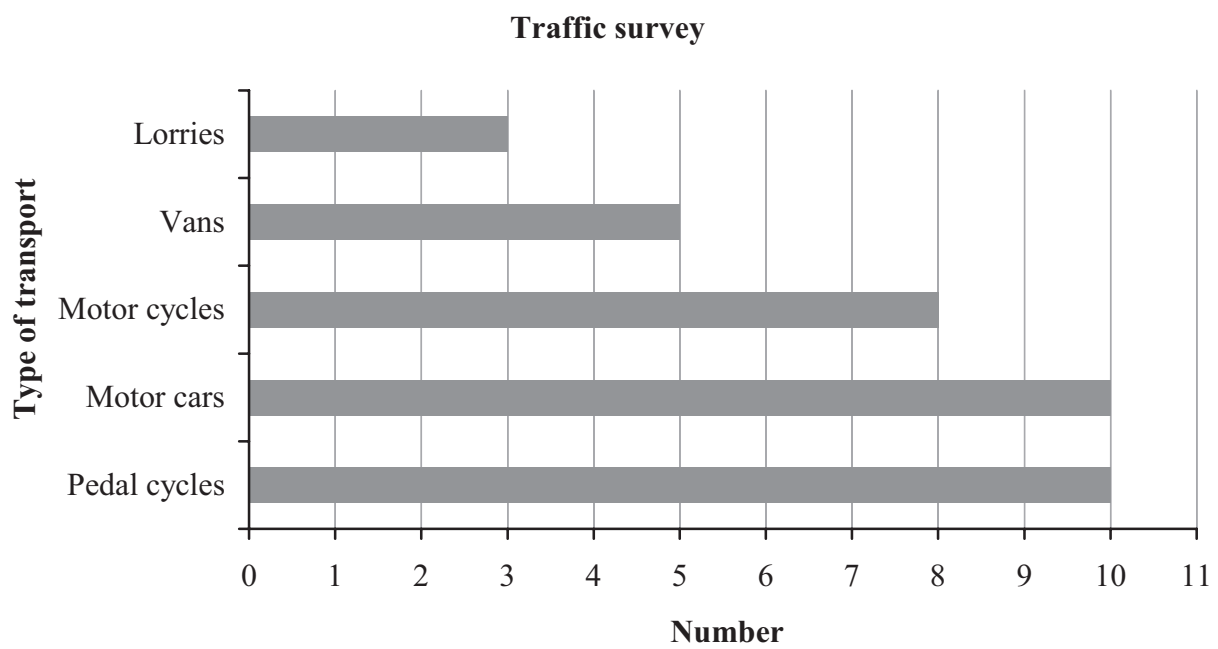
.....

2 .....

.....

(2)

The bar chart below shows the number of each type of transport using the road during one period of fifteen minutes.



(b) Complete the table below.

Type of transport	Lorries	Vans	Motor cycles	Motor cars	Pedal cycles
Number					

(1)



Burnstown Council wishes to show this information on a pie chart.

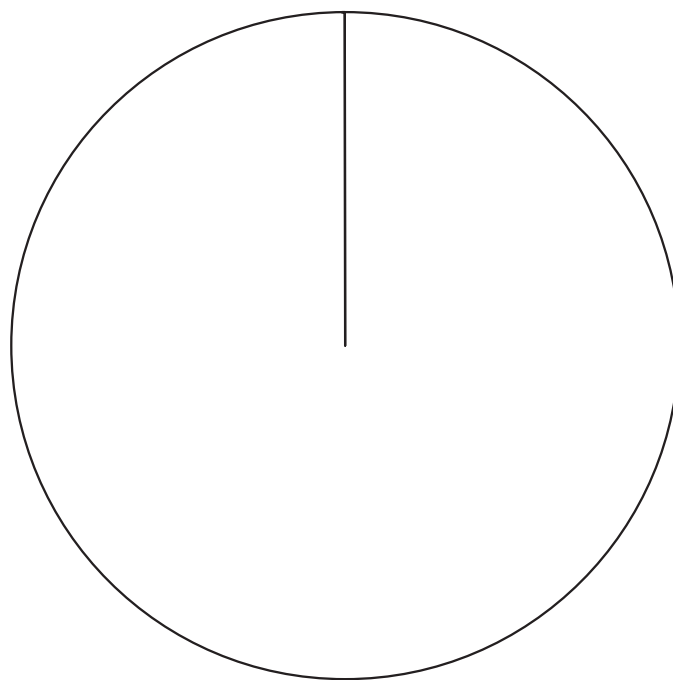
(c) Complete the table below.

Transport	Angle
Lorries	30°
Vans	50°
Motor cycles	80°
Motor cars	
Pedal cycles	

Put your working in this box.

(2)

(d) Draw the pie chart for these data.



(3)

Burnstown Council is considering putting in a cycle lane on this road.

(e) Using the results of the survey decide whether or not this is a good idea. Give a reason for your answer.

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

(1)

(Total 9 marks)

Q7



Leave blank

8. The time series graph shows the values, to the nearest £1000 million, of the Total Exports from the United Kingdom between 1997 and 2003.



(Data source: Office for National Statistics)

- (a) Draw a trend line on the time series graph. (1)
- (b) What does the trend line show about the Total United Kingdom Exports between 1997 and 2003?  
.....  
..... (1)
- (c) Use your trend line to predict the Total United Kingdom Exports in 2004.  
..... (1)



Leave  
blank

(d) Why might this prediction for the Total United Kingdom Exports in 2004 be unreliable?

.....  
.....

(1)

In 2005 the Total United Kingdom Exports was 273 thousand million pounds.

(e) Does this figure follow the overall trend shown by the trend line on the time series graph?

Give a reason for your answer.

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

(2)

Q8

(Total 6 marks)

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

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