Surname			Other Names		
Centre Number				Candidate Number	
Candidate Signature					

Free-Standing Mathematics Qualification
June 2008
Intermediate Level

HANDLING AND INTERPRETING DATA   **6986/2**
Unit 6

AQA
ASSESSMENT and
QUALIFICATIONS
ALLIANCE

Wednesday 14 May 2008   1.30 pm to 2.45 pm

For this paper you must have:
- a calculator
- a clean copy of the Data Sheet (enclosed)
- a protractor
- a ruler.

Time allowed: 1 hour 15 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.
- You must answer the questions in the spaces provided. Answers written in margins or on blank pages will not be marked.
- Do all rough work in this book. Cross through any work you do not want to be marked.
- You may **not** refer to the copy of the Data Sheet that was available prior to this examination. A clean copy is enclosed for your use.

Information
- The maximum mark for this paper is 50.
- The marks for questions are shown in brackets.
- You are expected to use a calculator where appropriate.

Advice
- In all calculations, show clearly how you work out your answer.

*Areas outside
the box will
not be scanned
for marking*

SECTION A

Answer **all** questions in the spaces provided.

Use **Sales of singles** *on page 2 of the Data Sheet.*

1 (a) Find:

1 (a) (i) the mean of the four sales in 1996;

1 (a) (ii) the mean of the four sales in 2005.

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Answer: (i) The mean number of sales in 1996 was ....

(ii) The mean number of sales in 2005 was ....

(3 marks)

1 (b) Plot a scatter diagram of the data.

Number of
sales in 2005
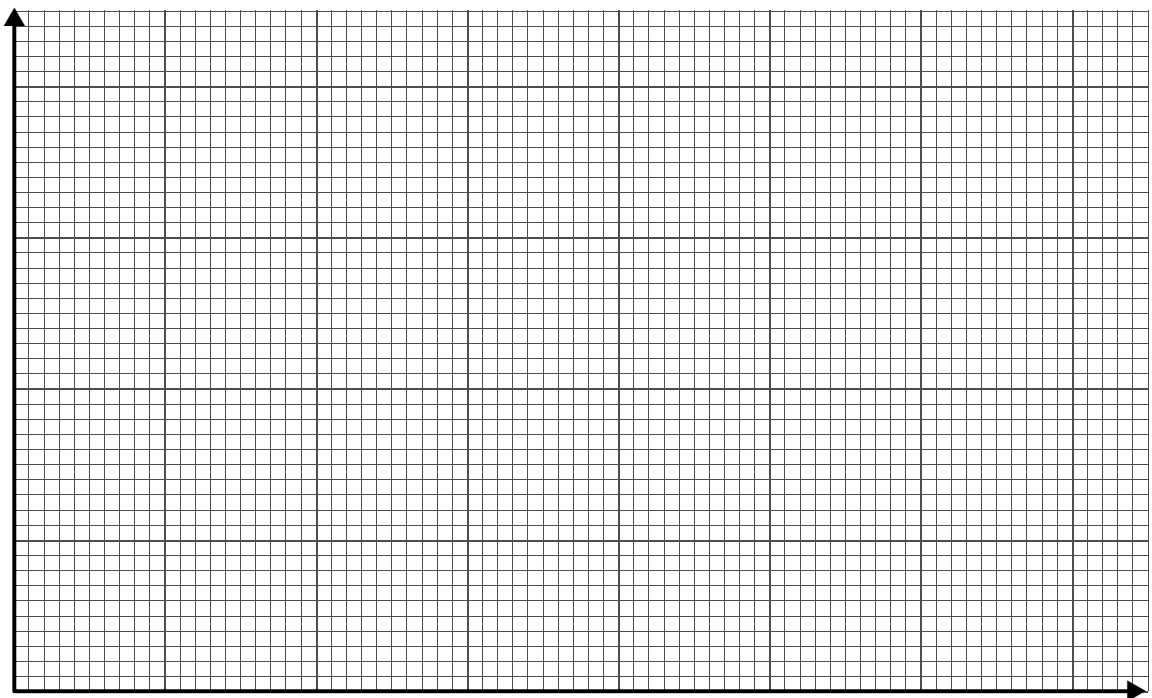
Number of sales in 1996

(3 marks)

1 (c) Draw a line of best fit through the mean point. *(2 marks)*

1 (d) In the 1996 charts, the number of sales of singles to achieve 20th position was 17 175.

Using your scatter diagram, estimate the number of sales of singles needed to achieve 20th position in the 2005 charts.

Answer...

(2 marks)

$\boxed{\mathbf{10}}$

Turn over for the next question

Turn over ▶

SECTION B

Answer **all** questions in the spaces provided.

Use **Staff in the NHS** *on page 2 of the Data Sheet.*

2 The data are reproduced below.

	A	**B**	**C**	**D**	**E**
1	**Staff**	**1997**	**2005**	**Increase from 1997 to 2005**	**Percentage increase from 1997 to 2005**
2	Consultant				
3	GPs		These data cannot be reproduced here due to third-party copyright		
4	Managers		restraints. A complete copy of the question paper in print form		
5	Nurses		can be obtained from AQA Publications. http://shop.aqa.org.uk		

2 (a) Complete the spreadsheet.

Give the percentage increases to the nearest integer.   *(5 marks)*

Space for working ....

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2 (b) Write down a formula which gives the value in cell D4.

....

Answer...

(1 mark)

2 (c) Using the original data and your calculated results in the spreadsheet, state one conclusion about the data.

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(1 mark)

7

Turn over for the next question

Turn over ▶

SECTION C

Answer **all** questions in the spaces provided.

*Use **Passengers on a plane** on page 3 of the Data Sheet.*

3 The data are reproduced below.

Number of passengers	Number of planes		
0 – 40	0		
41 – 60	4		
61 – 80	9		
81 – 100	21		
101 – 120	48		
121 – 140	24		
141 – 200	4		
200+	0		

3 (a) Write down the modal class.

....

Answer..

(1 mark)

3 (b) Calculate an estimate of the mean number of passengers on a plane. You may use the blank columns in the table above to help you to calculate necessary values.

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Answer..

(5 marks)

6

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DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED

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SECTION D

Answer **all** questions in the spaces provided.

Use **Ambulance turnaround times** *on page 3 of the Data Sheet.*

4 The data are reproduced below.

Turnaround time (in minutes)	Number of ambulances	
$0 < t \leqslant 15$	298	
$15 < t \leqslant 20$	273	
$20 < t \leqslant 25$	428	
$25 < t \leqslant 30$	544	
$30 < t \leqslant 35$	463	
$35 < t \leqslant 40$	346	
$40 < t \leqslant 50$	365	
$50 < t \leqslant 60$	148	
$60 < t \leqslant 90$	113	
$90 < t \leqslant 120$	22	
$120+$	0	

4 (a) Draw a cumulative frequency curve to show the data for Heartlands hospital.

Cumulative frequency

Time (minutes)
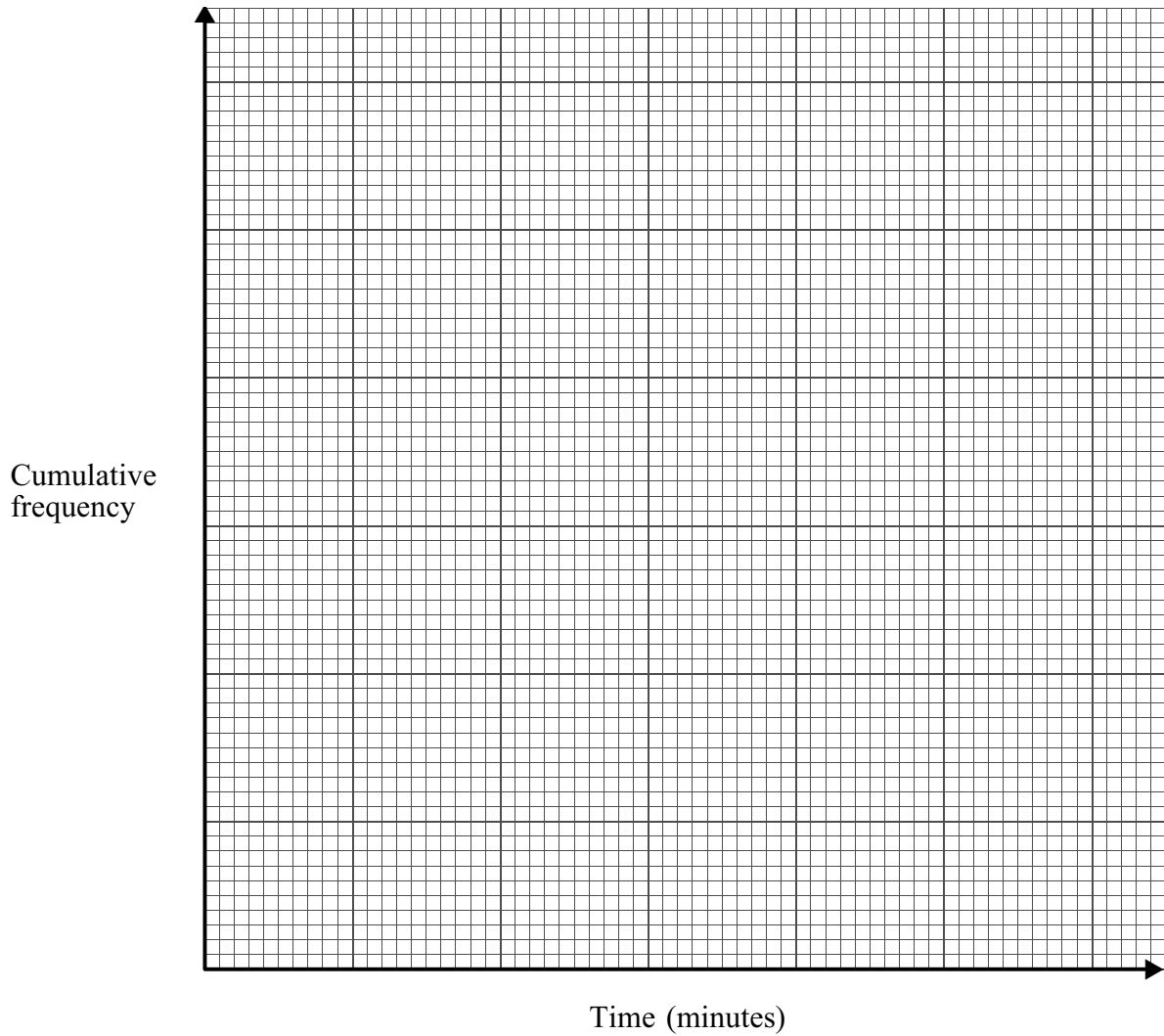
(4 marks)

Question 4 continues on the next page

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*Areas outside
the box will
not be scanned
for marking*

4 (b) Use your cumulative frequency curve to find for Heartlands hospital:

4 (b) (i) the median;

....

Answer..

(2 marks)

4 (b) (ii) the lower quartile;

....

Answer..

(1 mark)

4 (b) (iii) the upper quartile;

....

Answer..

(1 mark)

4 (b) (iv) the inter-quartile range.

....

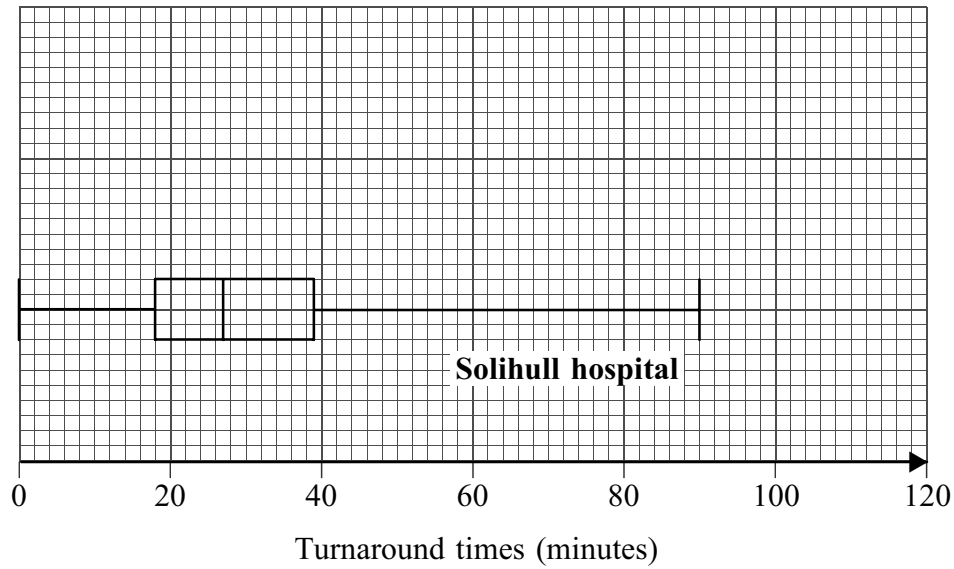Answer..

(1 mark)

4　(c)　Solihull hospital recorded its turnaround times for ambulances. The data for Solihull hospital are shown as a box and whisker diagram below.

Add to the graph below another box and whisker diagram representing the measures you have found in part (b) for Heartlands hospital.

(3 marks)

Turnaround times (minutes)

4　(d)　Use the box and whisker diagrams to make two comments about the turnaround times at the two hospitals.

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(2 marks)

14

Turn over ▶

SECTION E

Answer **all** questions in the spaces provided.

*Use **Aircraft sales** on page 4 of the Data Sheet.*

5 (a) Calculate the number of aircraft ordered from Airbus in 2002.

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Answer..

(3 marks)

As the price of oil rose considerably in 2005, airlines ordered more planes. This is because new aircraft are more economical. The comparative pie charts below show the total numbers of new aircraft ordered in 2002 and 2005.

The diagrams cannot be reproduced here due to third-party copyright restraints. A complete copy of the data sheet in print form can be obtained from AQA Publications. http://shop.aqa.org.uk

5 (b) Calculate the total number of aircraft ordered in 2005.

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Answer...

(4 marks)

5 (c) Calculate the number of aircraft ordered from Airbus in 2005.

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Answer...

(2 marks)

9

Turn over for the next question

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SECTION F

Answer **all** questions in the spaces provided.

6   A newspaper published a table of the typical extra costs involved when buying a house. These extra costs are calculated as a percentage of the value of the house.

The table is shown below.

TYPICAL HOMEBUYING COSTS			
	Legal fees and taxation %	Mortgage arrangement fee %	Total %
Belgium	14.7	2.5	17.1
Greece	11.7	1.4	13.0
Italy	9.0	2.8	11.8
Spain	8.0	1.7	9.7
France	6.8	1.0	7.8
Hungary	6.2	0.9	7.1
Germany	4.2	0.3	4.5
Poland	2.5	1.3	3.8
Denmark	1.2	2.1	3.3
Sweden	1.6	0.8	2.4
UK	1.6	0.3	1.9

6   (a)   How would you notice that the figures were not exact?

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(1 mark)

6 (b) Simon and Alice intend to buy a house in Italy. The house has a value of £88 000 and they will use a mortgage to buy it.

Calculate the total extra cost of buying this house.

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....

Answer..
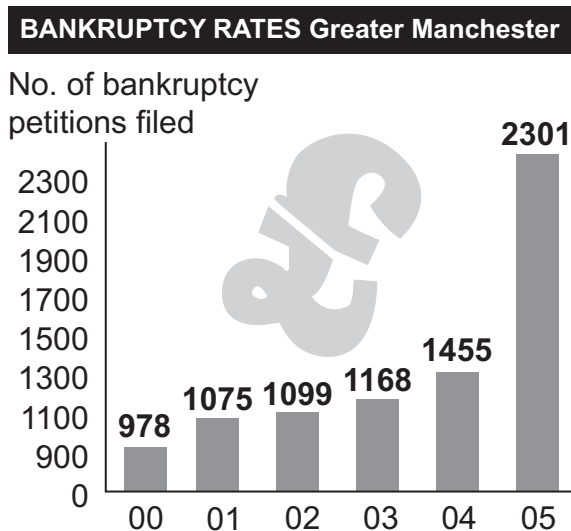
(2 marks)

3

Turn over for the next question

Turn over ▶

7 A newspaper article shows the bankruptcy rates in Greater Manchester between 2000 and 2005.

The newspaper illustrated the data by means of a bar graph.

BANKRUPTCY RATES Greater Manchester

No. of bankruptcy petitions filed

Make one criticism of the bar graph.

Criticism

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(1 mark)

1

END OF QUESTIONS