

Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										



Free-Standing Mathematics Qualification
Higher Level

Data Handling

4986

Specimen Question Paper

For this paper you must have:

- a clean copy of the Data Sheet (enclosed)
- a protractor
- a ruler
- a calculator.

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. Do not write outside the box around each page.
- Do all rough work in this book. Cross through any work that 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 marks for questions are shown in brackets.
- The maximum mark for this paper is 50.
- You are expected to use a calculator where appropriate.

Advice

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

For Examiner's Use	
Examiner's Initials	
Question	Mark
1	
2	
3	
4	
5	
6	
7	
8	
TOTAL	

Section A

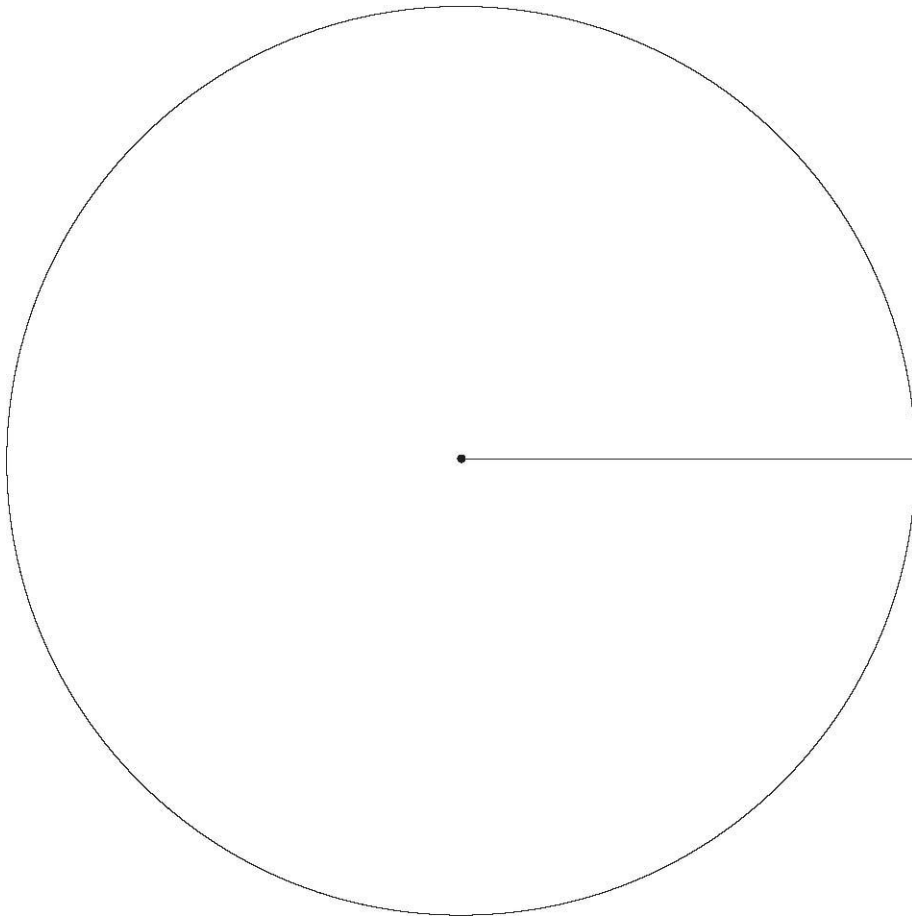
Answer **all** questions in the spaces provided.

Use **Electricity generation** from page 2 of the Data Sheet.

1 (a)

Complete the pie chart below to illustrate the sources of UK electricity used in the UK in the year 2005/2006.

(4 marks)



Space for working

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1 (b) Express the amount of electricity generated by coal as a fraction of the total UK electricity.

Give your fraction in its lowest terms.

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(1 mark)

Section B

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

Use **How cities compare** from page 2 of the Data Sheet.

2 (a) Find:

2 (a) (i) the mean of the monthly payments for the interest only mortgage;

2 (a) (ii) the mean of the monthly rents.

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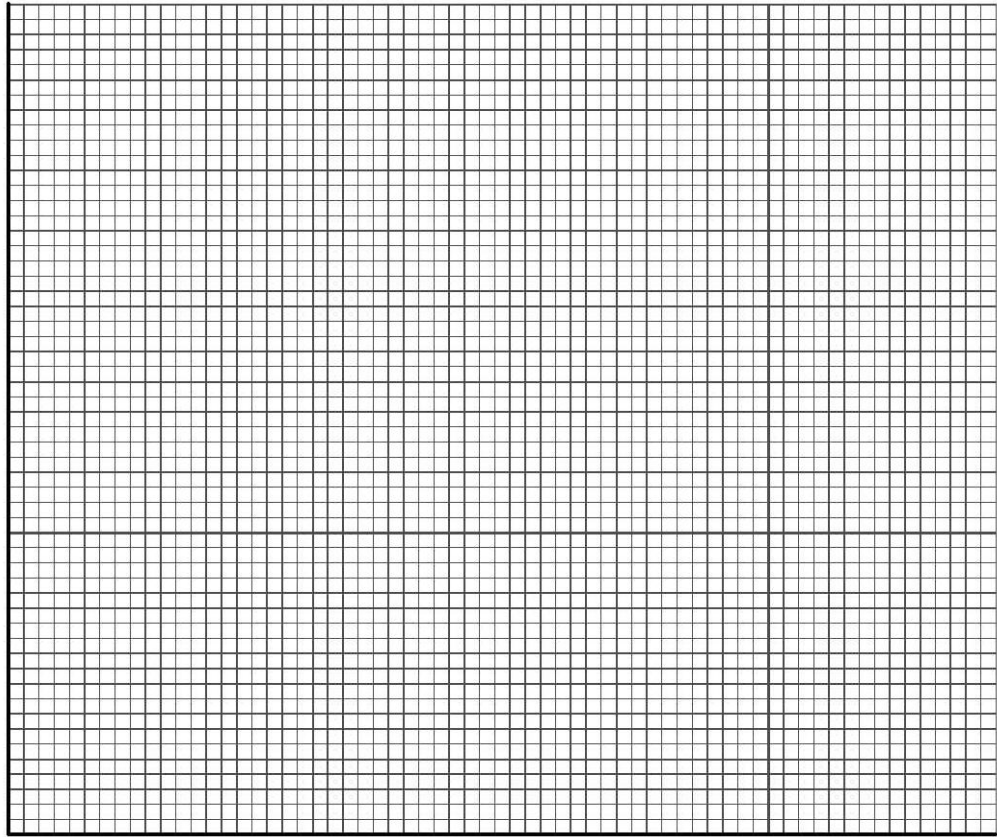
Answer The mean of the monthly mortgage payments

The mean of the monthly rents

(3 marks)

- 2 (b) Plot a scatter diagram of the data.

Monthly
rent (£)



Monthly mortgage (£)

(3 marks)

- 2 (c) Draw a line of best fit through the mean point.

(2 marks)

- 2 (d) In Bristol, the monthly rent was £628.

Using your scatter diagram, estimate the monthly interest-only mortgage payment.

.....

(2 marks)

Section C

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

Use **Newspaper circulation** from page 3 of the Data Sheet.

3

	A	B	C	D	E
1	Sunday newspaper	Sales in January 2006	Sales in January 2007	Change in sales	Change as a percentage of 2006 sales
2	Mail on Sunday	2 404 511	2 303 472		
3	News of the World	3 789 176	3 426 719		
4	People	895 275	761 595		
5	Sunday Mirror	1 574 054	1 460 328		
6	Sunday Times	1 357 153	1 288 421		

3 (a) Complete the spreadsheet to show:

3 (a) (i) the change in the sales for each newspaper;

(1 mark)

3 (a) (ii) The percentage change in the sales over this one year period.

Give these percentages to two decimal places.

(4 marks)

Space for working

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3 (b) Write down a formula which gives the value in cell E4.

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(1 mark)

Section D

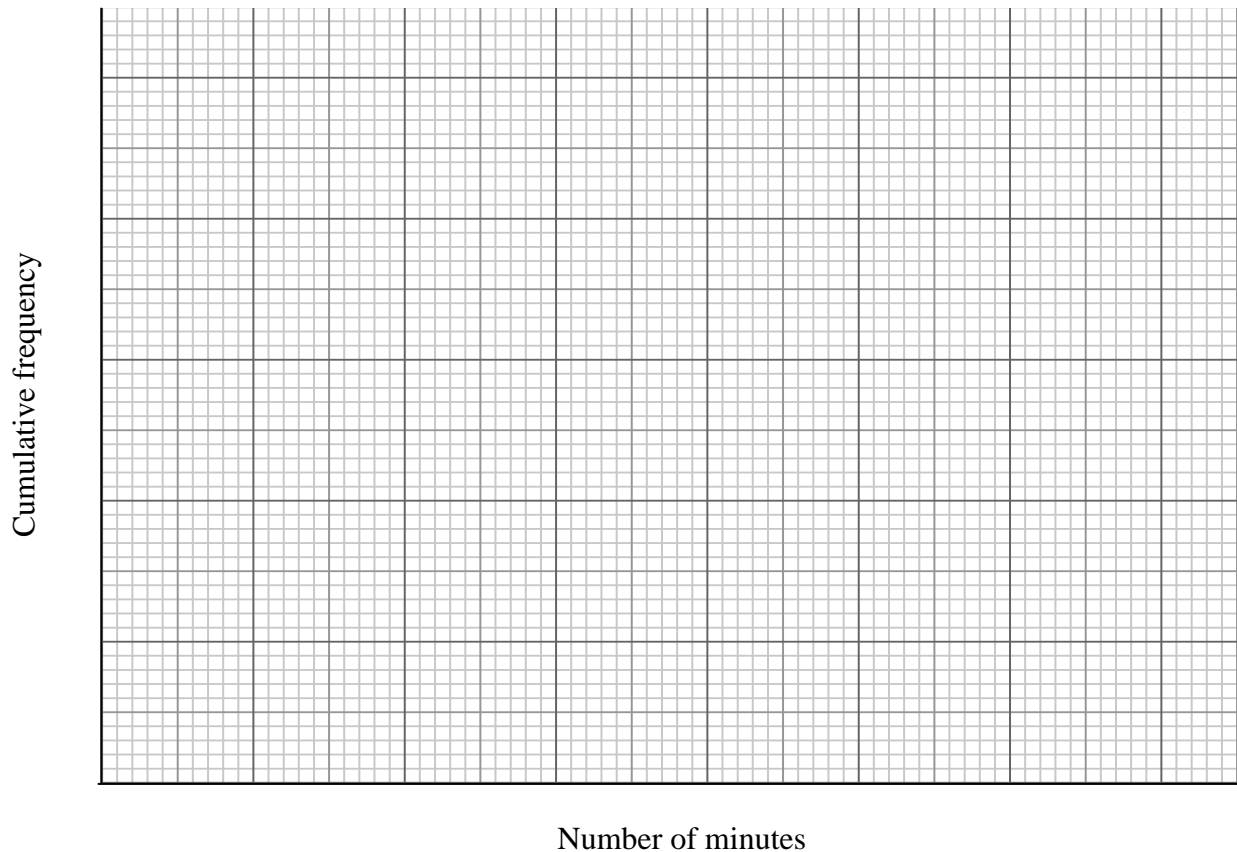
Answer **all** questions in the spaces provided.

Use **Video games** from page 3 of the Data Sheet.

- 4 The data are reproduced below.
You may use the spare column for any calculation required.

Length of time, t minutes	Percentage of people who played video games	
$0 \leq t < 10$	0	
$10 \leq t < 60$	19	
$60 \leq t < 120$	22	
$120 \leq t < 300$	31	
$300 \leq t < 600$	14	
$600 \leq t < 900$	6	
$900 \leq t < 1500$	8	
$1500 \leq t$	0	

- 4 (a) Draw a cumulative frequency curve to show the data.



(4 marks)

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

4 (b) (i) the median;

.....
(2 marks)

4 (b) (ii) the lower quartile;

.....
(1 mark)

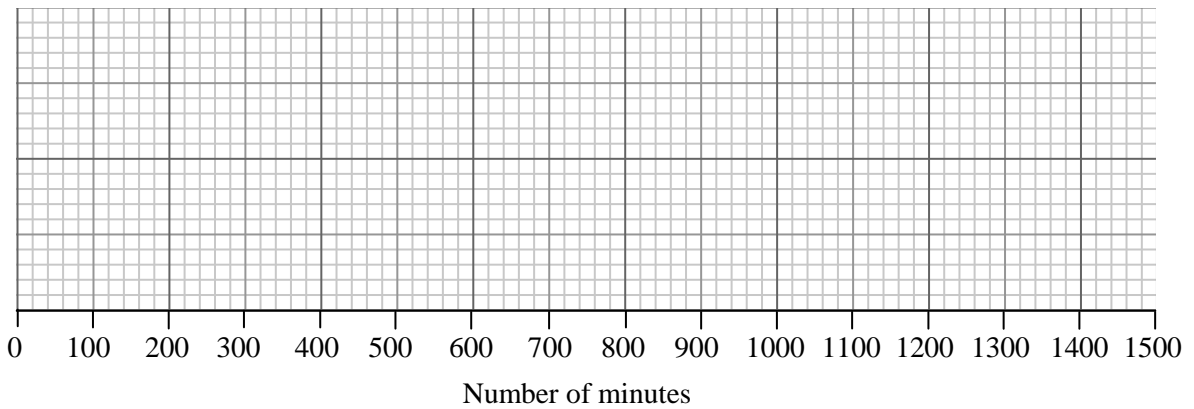
4 (b) (iii) the upper quartile;

.....
(1 mark)

4 (b) (iv) the interquartile range.

.....
(1 mark)

4 (c) Draw a box and whisker diagram representing the measures found in part (b).



(3 marks)

Section E

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

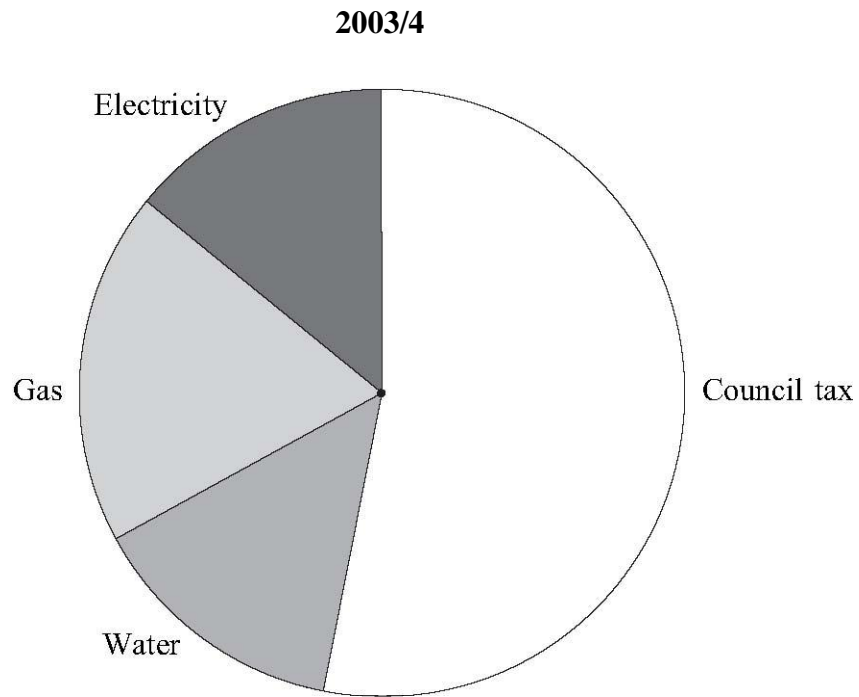
Use **Household bills** from page 4 of the Data Sheet.

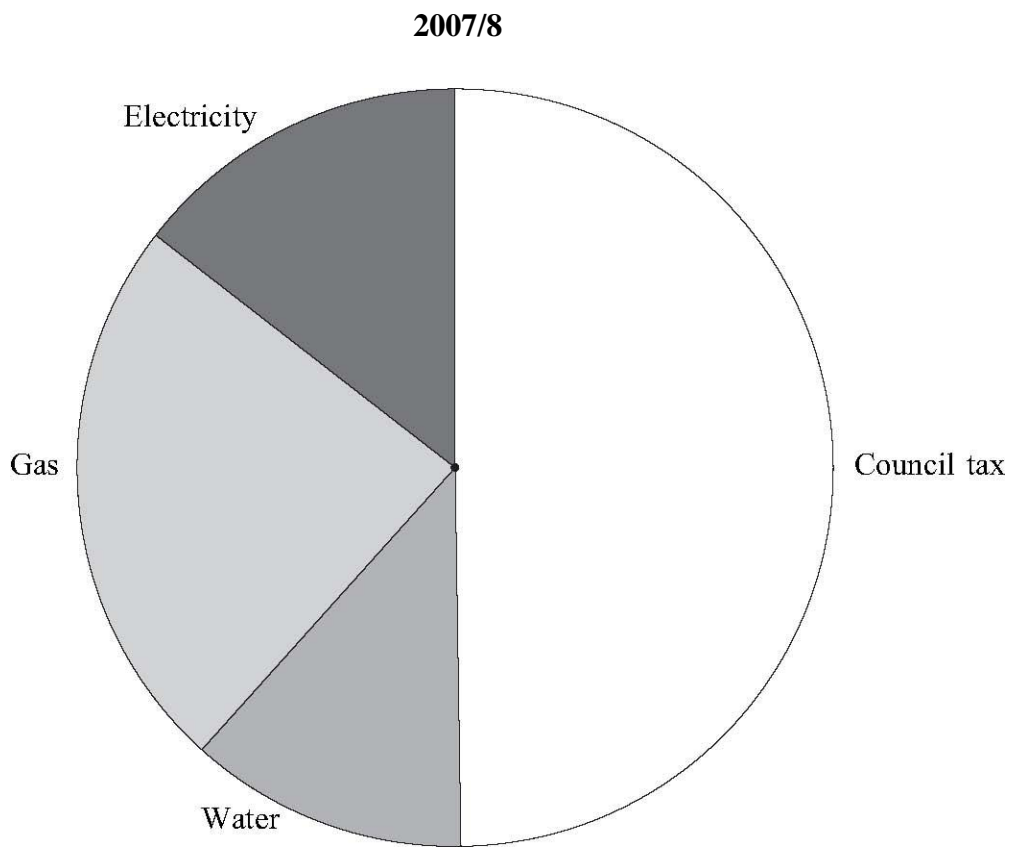
5 (a) Calculate the average gas bill in the financial year 2007/08.

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(3 marks)

5 (b) The comparative pie charts below and opposite show the average household bills in the two financial years 2003/ 04 and 2007/ 08.





Calculate the total average annual cost of running a home in 2003/ 04.

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(4 marks)

Section F

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

6

In 1963–64, an American golfer, Floyd Rood hit a golf ball across America. He took 479 days and hit the ball 114 737 times.

Using approximations, estimate how many times on average he hit the ball on each day.

You must show your approximations and all your working.

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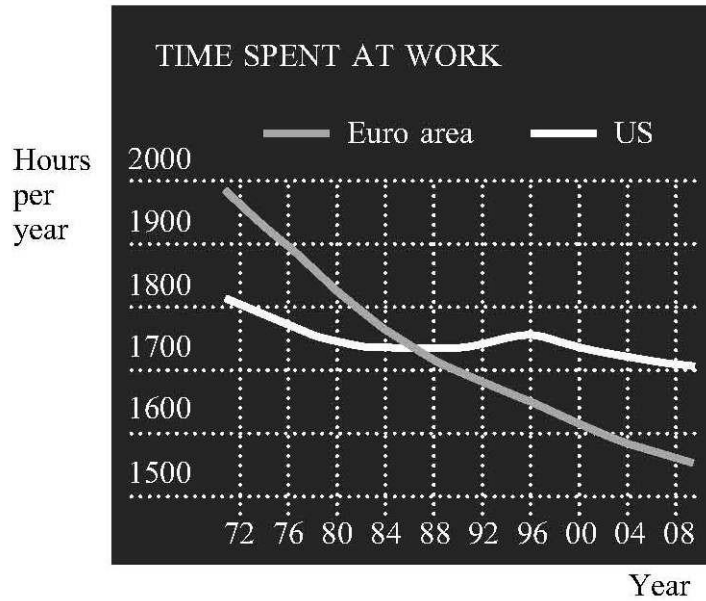
(3 marks)

3

7

The Organisation for Economic Cooperation and Development (OECD) produced a report on the annual number of hours people spend at work in the Euro area and in the US. The report covered the years from 1972 to 2008.

A newspaper illustrated the data by means of the diagram below.



7 (a)

In which year did the average time spent at work in the Euro area equal that worked in the US?

.....

Answer.....
(1 mark)

7 (b)

In which time period, and where, did the average number of hours spent at work increase?

.....

Answer.....
(1 mark)

7 (c)

In 2008, Philippe worked in France, which is part of the Euro area. He worked the normal working week in France, which is 35 hours. He worked the number of hours shown on the graph for the Euro area.

How many weeks' holiday did Philippe have in 2008?

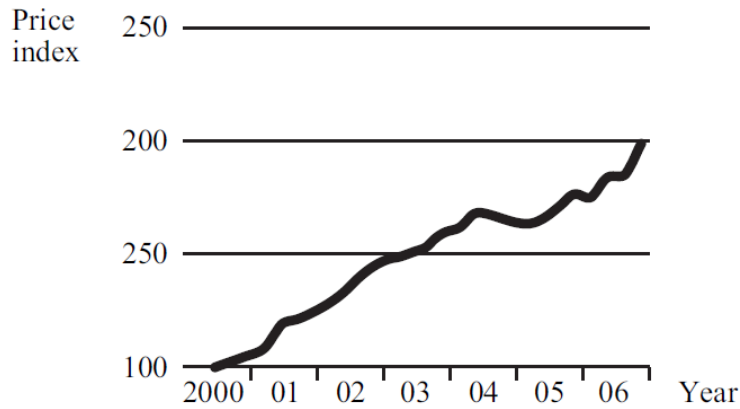
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Answer.....
(3 marks)

8

The line graph below was used by a newspaper to indicate how house prices in Greater London have increased between the years 2000 and 2006.

Identify a mistake in the diagram.



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.....
.....

(2 marks)

END OF QUESTIONS

5

2

ACKNOWLEDGEMENT OF COPYRIGHT – HOLDERS AND PUBLISHERS

- Section B: 'Not worth buying?' by J. Neale, © *The Sunday Times*, 11 February 2007
- Section C: 'National Daily Newspaper Circulation' © Audit Bureau of Circulations
- Section D: 'Game for Anything' by S. Hills, *Metro*, 18 January 2007
- Section E: '£870 The extra cost every year as household bills go up and up' by S. Poulter, © *Daily Mail*, 01 March 2007
- Section F: 'London's Uber rich call the shots', ©*The Times* 01/2007, 14 January 2007