Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										

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

AQA

Free-Standing Mathematics Qualification
Higher Level
June 2014

Data Handling 4986

Unit 6

Monday 12 May 2014 1.30 pm to 2.45 pm

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

Section A

Answer **all** questions.

Answer each question in the space provided for that question.

Use **Dress sizes** *on page 2 of the Data Sheet.*

1 The table below shows the measurements of size 14 dresses at eight high street stores.

High street store	Bust (inches)	Waist (inches)
French Connection	37.4	31.1
M&S	37.8	31.1
Next	37.0	30.0
Topshop	38.2	31.2
Dorothy Perkins	38.2	30.7
Gap	39.0	31.5
Reiss	39.5	32.1
Jaeger	40.2	32.3

1 (a) Find:

1 (a) (i) the mean of the eight bust measurements;

1 (a) (ii) the mean of the eight waist measurements.

[3 marks]

.....

.....

.....

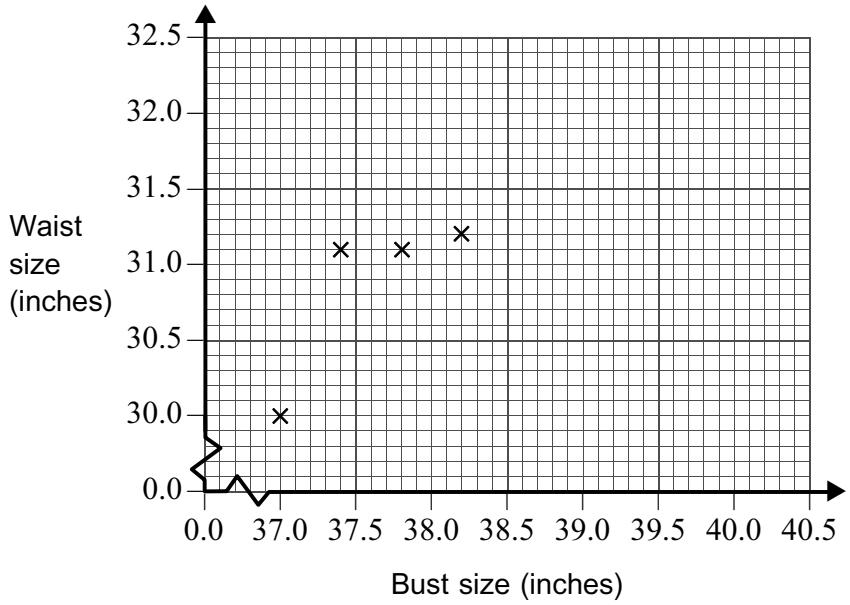
.....

Answer **(i)** bust .....

(ii) waist .....

1 (b) Plot a scatter graph of the data.
The first four points have been done for you.

[2 marks]



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

[2 marks]

1 (d) The bust size of a size 14 dress at Zara was 38.6 inches.

Using your scatter graph, estimate the waist size of a size 14 dress at Zara.

[2 marks]

Answer.....

1 (e) Why is it not possible for you to decide which shop has the most accurate bust and waist measurements for a size 14 dress?

[1 mark]

.....

.....

.....

10

Turn over for the next question

Section B

Answer **all** questions.

Answer each question in the space provided for that question.

Use **Petrol prices** *on page 3 of the Data Sheet.*

2 The table below shows the prices of unleaded petrol at the pump in 15 European countries in mid-January 2012.

Country	Pump price of unleaded petrol (pence per litre)
Bulgaria	99.5
Poland	105.3
Estonia	108.8
Lithuania	111.4
Spain	113.1
Slovenia	114.2
Austria	115.8
Malta	116.7
Ireland	122.9
Germany	130.7
United Kingdom	132.9
Finland	133.6
Belgium	134.4
Sweden	135.0
Denmark	137.9

2 (a) Find:

2 (a) (i) the median;

[1 mark]

.....

Answer.....

2 (a) (ii) the lower quartile;

[1 mark]

.....

Answer.....

2 (a) (iii) the upper quartile.

[1 mark]

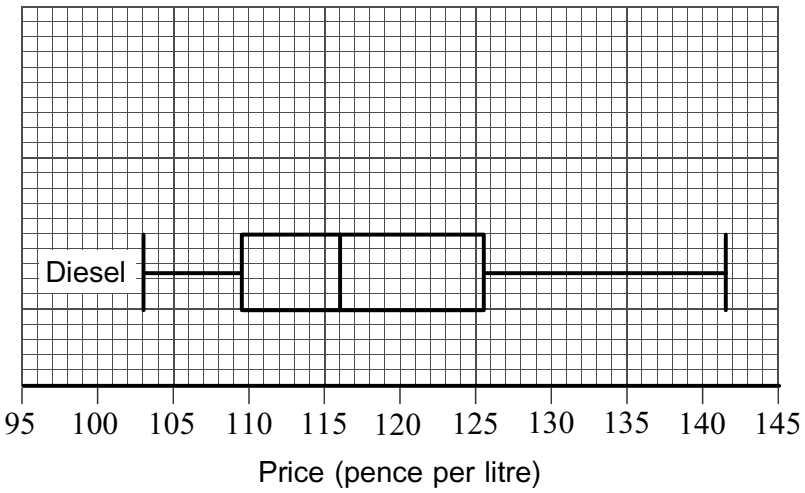
.....

Answer.....

2 (b) The price of diesel in each of these 15 European countries was also recorded in mid-January 2012.
The data are shown as a box and whisker diagram below.

On the graph below, add another box and whisker diagram representing unleaded petrol prices.

[3 marks]



2 (c) Use the box and whisker diagrams to compare the prices of unleaded petrol and diesel in these 15 European countries in mid-January 2012.

You should make **two** different comments.

[2 marks]

Comment 1 .....

.....

.....

Comment 2 .....

.....

.....

8

Turn over for the next question

Section C

Answer **all** questions.

Answer each question in the space provided for that question.

Use **Royal engagements** *on page 3 of the Data Sheet.*

3 (a) For the Queen, find the ratio of the number of engagements in the UK to the number of overseas engagements.

Give your answer in its simplest form.

[2 marks]

.....

.....

Answer.....

3 (b) For the Earl of Wessex, work out the fraction of total engagements which were overseas engagements.

Give your answer in its simplest form.

[2 marks]

.....

.....

Answer.....

3 (c) In February 2011, the Duke of York flew to Bangkok from London. He returned in March 2011. The cost of the two flights was £29 946 .

The distance from London to Bangkok is 5934 miles.

Use approximations to check that £2.50 is a good estimate for the cost per mile of the flights.

You **must** show your working.

[3 marks]

.....

.....

.....

.....

.....

.....

7

Section D

Answer **all** questions.

Answer each question in the space provided for that question.

Use **The best green companies** *on page 4 of the Data Sheet.*

4 The data are reproduced below.

You may use the spare columns for any calculation required.

Years trading (y)	**Number of companies**		
$0 < y \leqslant 10$	16		
$10 < y \leqslant 30$	25		
$30 < y \leqslant 50$	9		
$50 < y \leqslant 80$	6		
$80 < y \leqslant 110$	1		
$110 < y \leqslant 160$	3		
Total	**60**		

4 (a) Estimate the mean number of years that these 60 companies have been trading.

[4 marks]

.....

.....

.....

.....

Answer.....

4 (b) One of the companies is chosen at random.

What is the probability that the company has been trading for more than 50 years?

[1 mark]

.....

Answer.....

5

Section E

Answer **all** questions.

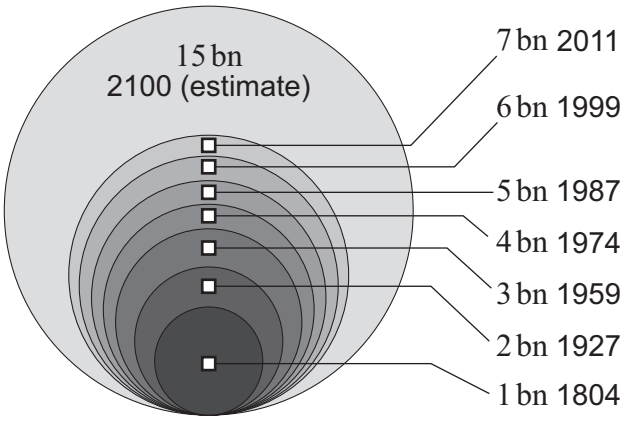
Answer each question in the space provided for that question.

Use **World population** *on page 4 of the Data Sheet.*

5 A newspaper used this diagram to show world population growth since 1804.
The overlapping circles are comparative pie charts.

World population

Not to scale



The diameter of the pie chart representing 1804 is 1.5 cm.

Work out the diameter of the pie chart representing 2100 .

Give your answer to three significant figures.

You must show all your working.

[4 marks]

.....

.....

.....

.....

.....

Answer.....

4

Turn over for the next question

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED

Section F

Answer **all** questions.

Answer each question in the space provided for that question.

Use **Applications for teacher training** *on page 5 of the Data Sheet.*

6

	A	B	C	D	E
1	**Type of training**	**2011**	**2012**	**Decrease in number of applications**	**Percentage decrease**
2	Secondary	22 585	19 019		
3	Middle	260	134		
4	Primary	25 337	21 862		

6 (a) Complete the spreadsheet above to show:

6 (a) (i) the decrease in the number of applications for each type of training;

[1 mark]

6 (a) (ii) the percentage decrease for each type of training.

Give these percentages to two decimal places.

[4 marks]

Space for working

.....

.....

.....

.....

.....

6 (b) State a formula which gives the value in cell **E4**.

[1 mark]

.....

Answer.....

6

Turn over for the next question

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED

Section G

Answer **all** questions.

Answer each question in the space provided for that question.

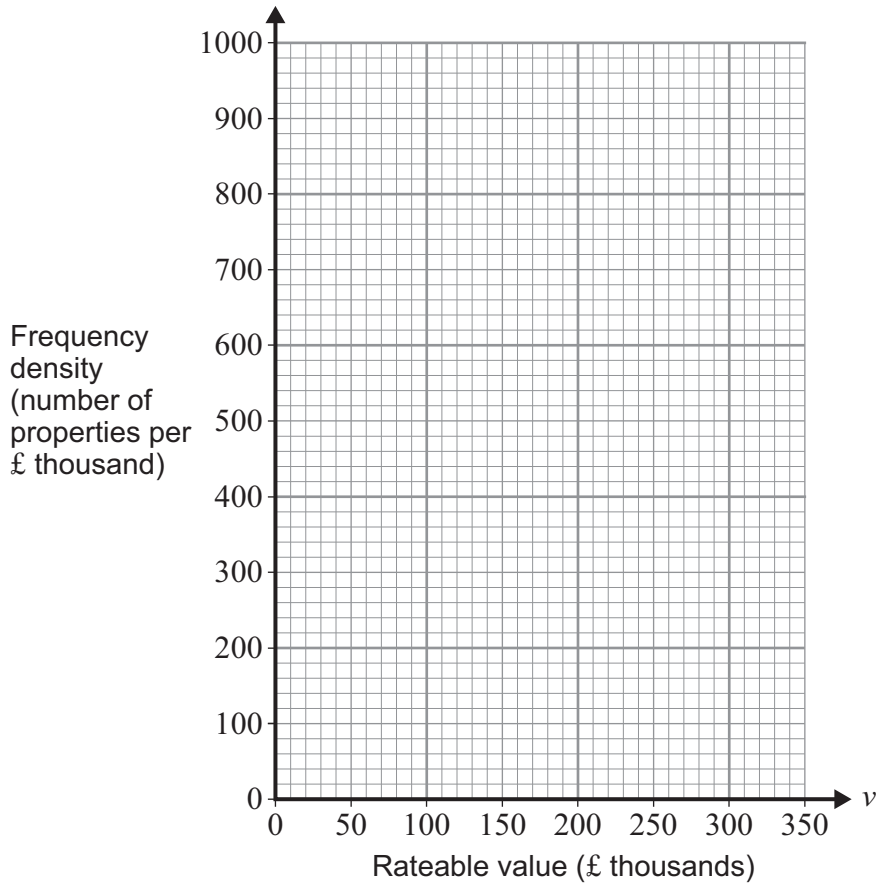
Use **Council Tax bands** *on page 6 of the Data Sheet.*

7 The data are reproduced below.
You may use the spare columns for any calculation required.

Valuation band	Rateable value of property, v (£ thousands)	Number of properties		
A	$0 < v \leqslant 40$	9 340		
B	$40 < v \leqslant 52$	11 650		
C	$52 < v \leqslant 68$	5 320		
D	$68 < v \leqslant 88$	3 470		
E	$88 < v \leqslant 120$	1 680		
F	$120 < v \leqslant 160$	400		
G	$160 < v \leqslant 320$	60		
H	$320 < v$	0		

7 (a) Draw a histogram on the axes below to represent the data.

[5 marks]



7 (b) Estimate the number of properties with a rateable value over £100 000 .

[3 marks]

.....

.....

.....

.....

Answer.....

8

Turn over for the next question

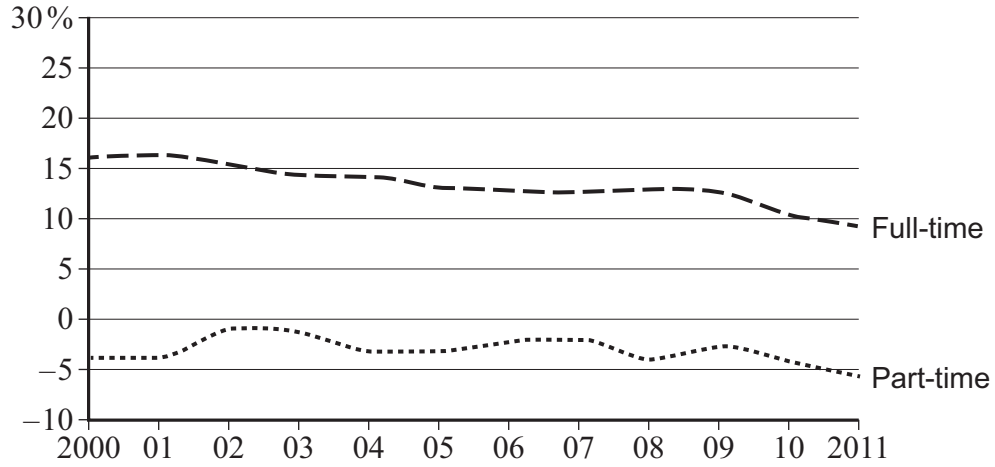
Section H

Answer **all** questions.

Answer each question in the space provided for that question.

8 A newspaper used the graph below to show the percentage difference in the average earnings of men compared with those of women. It shows that men who are employed **part-time** earn **less** than women who are employed part-time.

How much money do men earn?



8 (a) Explain how you can tell from the graph that men who are employed **part-time** earn **less** than women who are employed part-time.

[1 mark]

.....

.....

.....

8 (b) Write down **one** criticism of the graph.

[1 mark]

.....

.....

.....

2

END OF QUESTIONS

There are no questions printed on this page

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED

There are no questions printed on this page

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED

ACKNOWLEDGEMENT OF COPYRIGHT-HOLDERS AND PUBLISHERS

Section A: © Daily Mail

Section B: © Daily Mail

Section D: © The Sunday Times

Section E: © Daily Mail

Section F: By kind permission of TES

Section G: Contains public sector information licensed under the Open Government Licence v1.0

Section H: © The Times