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|---------------------|--|--|--|--|------------------|--|--|--|--|
| Surname             |  |  |  |  | Other Names      |  |  |  |  |
| Centre Number       |  |  |  |  | Candidate Number |  |  |  |  |
| Candidate Signature |  |  |  |  |                  |  |  |  |  |

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|--------------------|
| For Examiner's Use |
|--------------------|

Free-Standing Mathematics Qualification  
 January 2007  
 Foundation Level



**MAKING SENSE OF DATA**  
**Unit 3**

**6983/2**

Friday 2 February 2007 9.00 am to 10.00 am

|   |
|---|
| <p><b>For this paper you must have:</b></p> <ul style="list-style-type: none"> <li>• a calculator</li> <li>• a clean copy of the Data Sheet (enclosed)</li> <li>• a protractor</li> <li>• a ruler.</li> </ul> |
|---|

| For Examiner's Use  |      |          |      |
|---------------------|------|----------|------|
| Question            | Mark | Question | Mark |
| 1                   |      | 5        |      |
| 2                   |      | 6        |      |
| 3                   |      | 7        |      |
| 4                   |      | 8        |      |
| Total (Column 1) →  |      |          |      |
| Total (Column 2) →  |      |          |      |
| TOTAL               |      |          |      |
| Examiner's Initials |      |          |      |

Time allowed: 1 hour

**Instructions**

- Use blue or black ink or ball-point pen. Pencil should only be used for drawing.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- Answer the questions in the spaces provided.
- 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 40.
- 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.

**SECTION A**

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

Use **Hourly employment costs** on page 2 of the Data Sheet.

**1** For the countries listed on the data sheet, find, in euros:

(a) the greatest hourly employment cost;

Answer.....  
(1 mark)

(b) the least hourly employment cost;

Answer.....  
(1 mark)

(c) the modal hourly employment cost;

.....

Answer.....  
(1 mark)

(d) the median hourly employment cost;

.....

.....

.....

Answer.....  
(2 marks)

(e) the mean hourly employment cost;

.....

.....

.....

Answer.....  
(3 marks)

(f) the range of the hourly employment costs.

.....

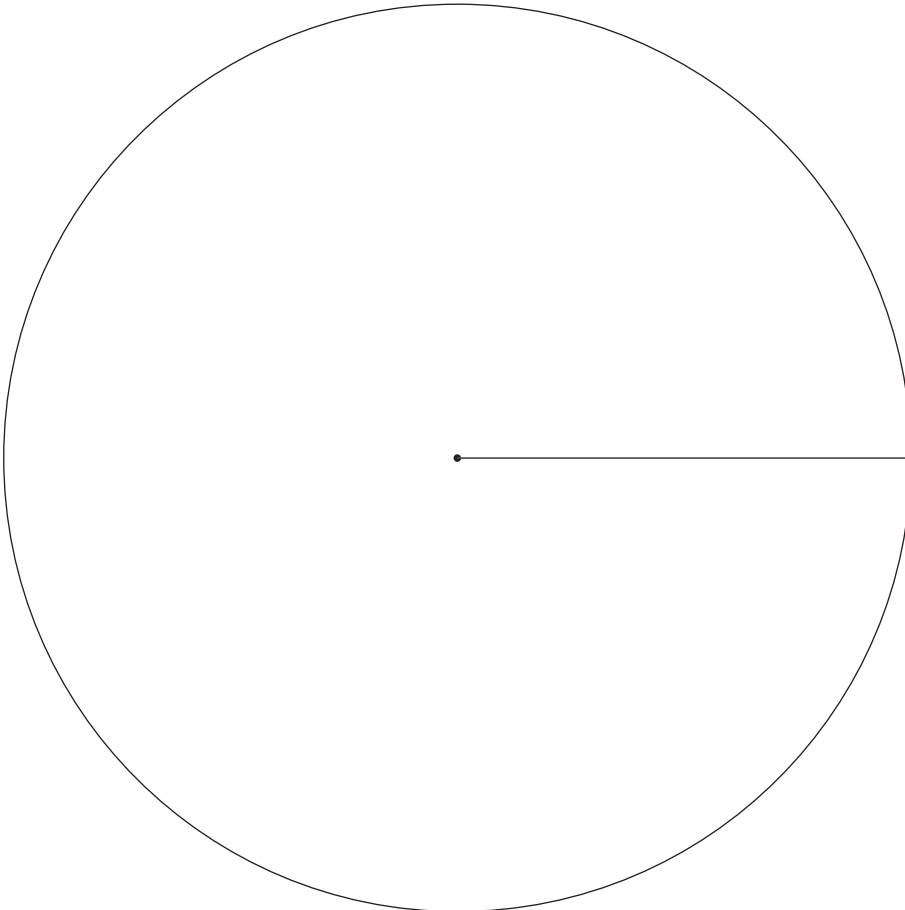
Answer.....  
(2 marks)

**SECTION B**

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

Use **Cost of running a home** on page 2 of the Data Sheet.

- 2 Complete the pie chart below to show the four percentage costs of owning and running a home.



*Space for working*

*(5 marks)*

.....

.....

.....

.....

.....

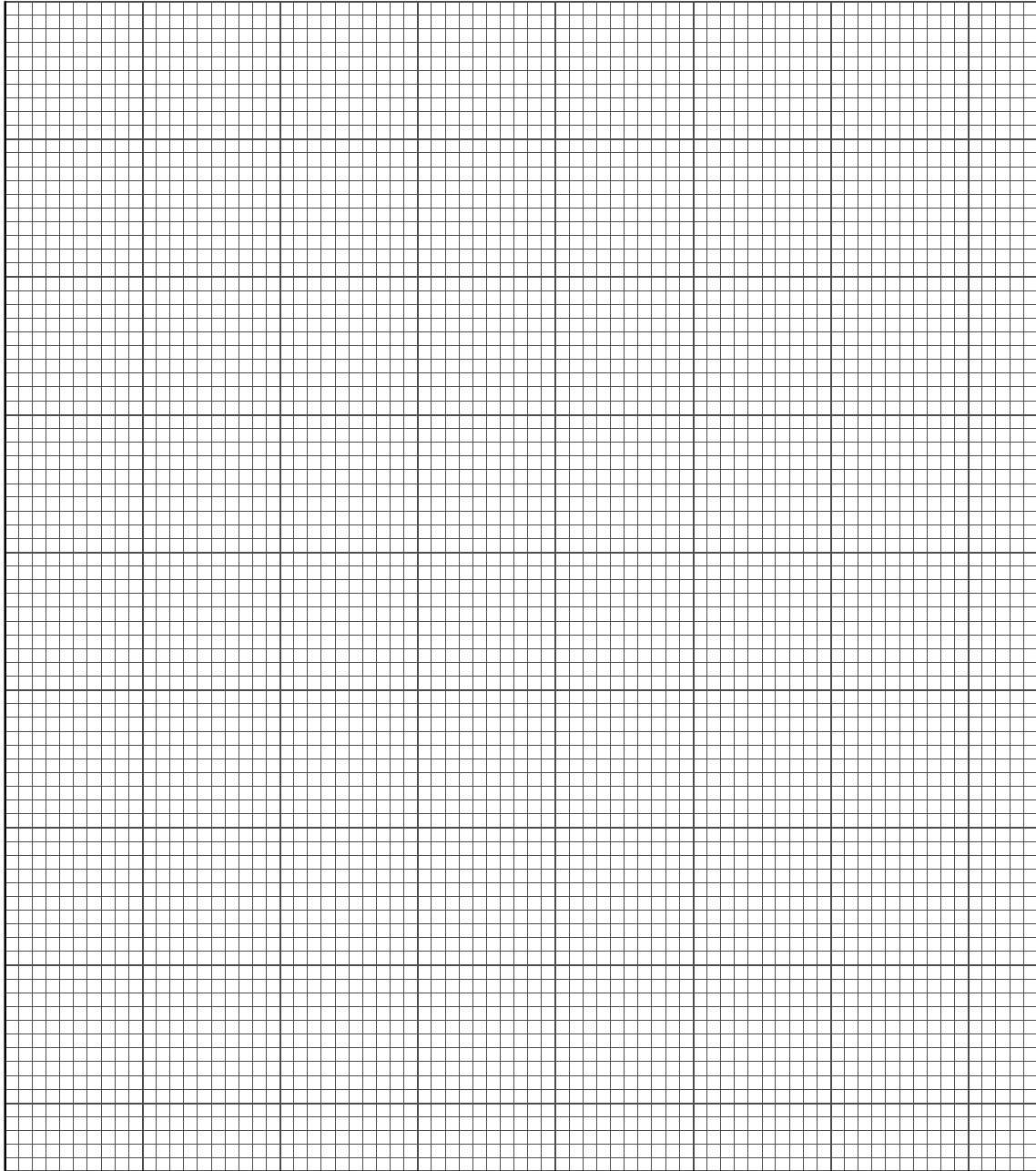
.....

Turn over ►

|   |
|---|
| 5 |
|---|

3 Draw a bar chart to show the annual costs of running a home in the five regions listed.

Annual  
cost of  
running  
a home



Region

(4 marks)

4

4 The cost of household insurance was 5% of the cost of owning and running a house.

- (a) Express 5% as a fraction.  
Give your answer as a fraction in its simplest form.

.....  
.....

Answer.....  
(2 marks)

- (b) Express 5% as a decimal.

.....  
.....

Answer.....  
(1 mark)

|   |
|---|
| 3 |
|---|

**Turn over for the next question**

**Turn over** ►

**SECTION C**

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

Use **Most common garden birds** on page 3 of the Data Sheet.

- 5 The spreadsheet below gives the data for five of the most common garden birds.

|   | A              | B                                      | C                                      | D   | E  |
|---|----------------|--|--|---|--|
| 1 | <b>Species</b> | <b>Average number of birds in 1979</b> | <b>Average number of birds in 2004</b> | <b>Change in the average number of birds seen</b> | <b>Percentage change in the average number of birds seen</b> |
| 2 | House sparrow  | 10.0                                   | 4.8                                    |   |  |
| 3 | Starling       | 15.0                                   | 4.3                                    |   |  |
| 4 | Blackbird      | 4.0                                    | 2.7                                    |   |  |
| 5 | Wood pigeon    | 0.2                                    | 1.4                                    |   |  |
| 6 | Robin          | 2.0                                    | 1.4                                    |   |  |

- (a) Complete the spreadsheet to show the percentage changes in the average numbers of birds seen per garden.

Give the percentages to the nearest whole number.

(5 marks)

*Space for working*

.....

.....

.....

.....

.....

.....

(b) State the formula which gives the value in cell D4.

.....

Answer.....  
(1 mark)

(c) A report states that the number of wood pigeons increased by 595%.

Give one reason why your figure is **not** 595%.

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

(1 mark)

7

6 In one hour, Simon saw 20 birds in his garden. These birds were either blackbirds or robins and the ratio of their numbers was 2 : 3, with Simon seeing more blackbirds.

How many blackbirds did Simon see?

.....  
.....

(3 marks)

3

**Turn over for the next question**

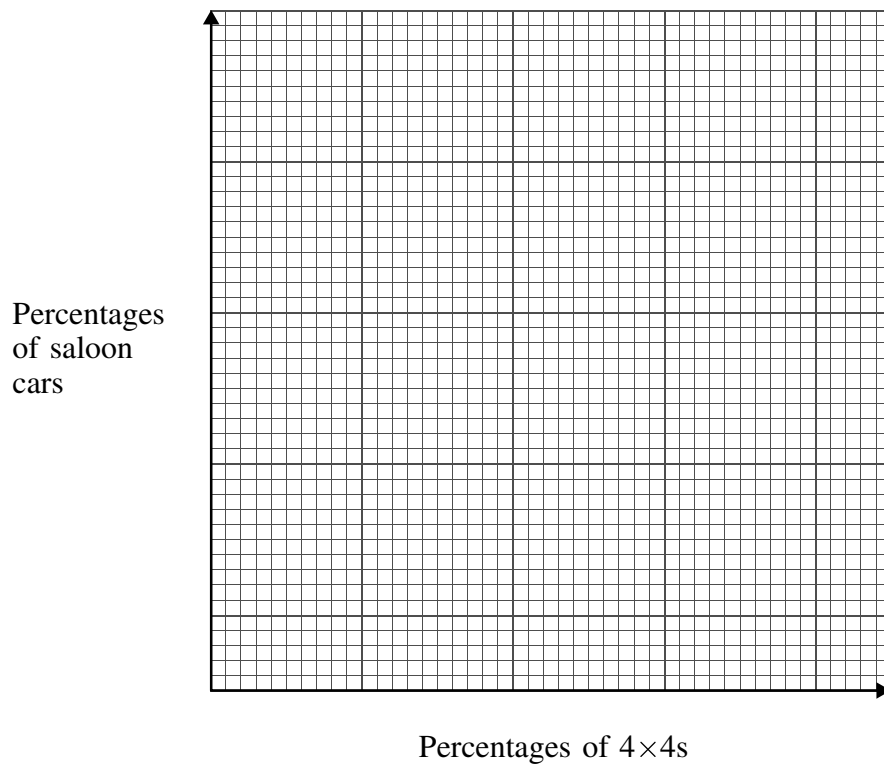
**Turn over** ►

**SECTION D**

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

Use **Types of vehicle sold** on page 3 of the Data Sheet.

- 7 (a) On the axes below, plot points showing the 'percentages of saloon cars' and the 'percentages of 4 × 4s' sold.



(3 marks)

- (b) Explain what feature of your graph shows that the 'percentages of saloon cars' and the 'percentages of 4 × 4s' are not directly proportional.

.....

.....

.....

(2 marks)



**SECTION E**

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

Use **A lifetime of labour** on page 4 of the Data Sheet.

**8** (a) In which subject area does a male graduate earn more **extra** than a female graduate?

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

(b) After studying in which subject area does a female graduate earn the most **extra**?

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

(c) In which subject area should a man study if he wishes to earn the most **extra**?

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

|          |
|----------|
|          |
| <b>3</b> |

**END OF QUESTIONS**

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Question 4: Office of National Statistics

Question 5: RSPB

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Free-Standing Mathematics Qualification  
January 2007  
Foundation Level



**MAKING SENSE OF DATA**  
**Unit 3**

**6983/2PM**

**PRELIMINARY MATERIAL**

**DATA SHEET**

**To be issued to candidates between Friday 19 January 2007  
and Friday 26 January 2007**

**REMINDER TO CANDIDATES**

YOU MUST **NOT** BRING THIS DATA SHEET  
WITH YOU WHEN YOU SIT THE EXAMINATION.  
A CLEAN COPY WILL BE MADE AVAILABLE.

### Hourly employment costs

The average hourly employment costs for a number of European countries are given below. These costs are in euros, and exclude social taxes.

The data are accurate for the year 2004 and the costs are given to the nearest integer.

| Country  | The average hourly employment cost (euros) |
|----------|--|
| Denmark  | 27   |
| Estonia  | 3  |
| France   | 24   |
| Germany  | 26   |
| Ireland  | 17   |
| Italy    | 19   |
| Latvia   | 2  |
| Poland   | 4  |
| Portugal | 8  |
| Spain    | 14   |
| UK       | 24   |

### Cost of running a home

In 2004, the average annual cost in the UK of owning and running a home was £ 5928.

Of this total:

48% was the cost of the house (including mortgage interest payments and council tax);

13% was the cost of power (gas, electricity, oil and coal);

8% was the cost of repairs;

31% was spent on other costs.

The annual costs varied by region; the annual costs for a number of regions are given below.

| UK region     | Annual cost |
|---------------|-------------|
| London        | £ 7691      |
| North East    | £ 4358      |
| South East    | £ 6741      |
| Wales         | £ 5375      |
| West Midlands | £ 5604      |

### Most common garden birds

The table below lists ten of the most common birds seen in gardens in 2004. It also gives the average numbers of birds per garden during one day in each of the years 1979 and 2004.

| Species       | Average number of birds per garden |      |
|---------------|------------------------------------|------|
|               | 1979                               | 2004 |
| House sparrow | 10.0                               | 4.8  |
| Starling      | 15.0                               | 4.3  |
| Blue tit      | 2.4                                | 2.9  |
| Blackbird     | 4.0                                | 2.7  |
| Chaffinch     | 3.0                                | 2.3  |
| Greenfinch    | 1.0                                | 1.8  |
| Collared dove | 0.3                                | 1.8  |
| Great tit     | 0.9                                | 1.5  |
| Wood pigeon   | 0.2                                | 1.4  |
| Robin         | 2.0                                | 1.4  |

**Note:** data are given to one decimal place.

### Types of vehicle sold

The table below shows the percentage sales of saloon cars, MPVs and 4 × 4s as percentages of the total UK vehicle sales.

| Year | Saloon | MPV | 4 × 4 |
|------|--------|-----|-------|
| 1994 | 34     | 0   | 4     |
| 1996 | 31     | 2   | 4     |
| 1998 | 32     | 2   | 4     |
| 2000 | 26     | 3   | 4     |
| 2002 | 24     | 4   | 5     |
| 2004 | 22     | 5   | 7     |

**Note:** Percentages are given to the nearest whole number.

## A lifetime of labour

The bar chart below shows the results of a study into how much **extra** a graduate will earn over an entire career compared with an A level school leaver.

This **extra** amount earned depends on the subject area studied by the student for the degree.



**END OF DATA SHEET**

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Hourly employment costs: Copyright OECD

Cost of running a home: Office of National Statistics

Most common garden birds: RSPB

Types of vehicle sold: Bryan Appleyard; The Sunday Times, London, 20 March 2005

A lifetime of labour: Dr Nigel O'Leary, University of Wales

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