GCSE MATHEMATICS

Foundation Tier     Unit 1     Statistics and Number

Wednesday 4 November 2015     Morning     Time allowed: 1 hour

Materials
For this paper you must have:
• a calculator
• mathematical instruments.

Instructions
• Use black ink or black ball-point pen. Draw diagrams in pencil.
• Answer all questions.
• You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
• Do all rough work in this book.

Information
• The marks for questions are shown in brackets.
• The maximum mark for this paper is 54.
• The quality of your written communication is specifically assessed in Questions 2, 3 and 14. These questions are indicated with an asterisk (*).
• You may ask for more answer paper and graph paper. These must be tagged securely to this answer book.

Advice
• In all calculations, show clearly how you work out your answer.
Answer all questions in the spaces provided.

**1**

**Average daytime temperatures in Morocco**

<table>
<thead>
<tr>
<th>Month</th>
<th>Temperature (ºC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>May</td>
<td>20</td>
</tr>
<tr>
<td>June</td>
<td>25</td>
</tr>
<tr>
<td>July</td>
<td>30</td>
</tr>
<tr>
<td>Aug</td>
<td>35</td>
</tr>
<tr>
<td>Sept</td>
<td>30</td>
</tr>
<tr>
<td>Oct</td>
<td>25</td>
</tr>
</tbody>
</table>

**1 (a)** Write down the **lowest** average daytime temperature shown in the bar chart.  

[1 mark]

Answer ................................................................. º C

**1 (b)** The average daytime temperature in Morocco in October is 25ºC

Complete the bar chart.  

[1 mark]

**1 (c)** Which **two** months have an average daytime temperature between 26ºC and 30ºC?  

[2 marks]

Answer ...................................................... and ......................................................
1 (d) In July, the average temperature at night in Morocco is 19ºC.

How much lower is this than the average daytime temperature in Morocco in July? [2 marks]

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

Answer ................................................................. ºC

2 50 raffle tickets are sold for 25p each.
The winning ticket is picked at random.
Linda buys 14 tickets.

*2 (a) She pays with a £10 note.
How much change should she get? [3 marks]

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

Answer £ ...................................................................

2 (b) Write down the probability that Linda buys the winning ticket. [1 mark]

Answer .................................................................

2 (c) Work out the probability that Linda does not buy the winning ticket. [1 mark]

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

Answer .................................................................
The table shows the number of people going into a gym on one day.

<table>
<thead>
<tr>
<th>Time</th>
<th>07:00 - 09:59</th>
<th>10:00 - 12:59</th>
<th>13:00 - 15:59</th>
<th>16:00 - 18:59</th>
<th>19:00 - 21:59</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of people</td>
<td>11</td>
<td>1</td>
<td>4</td>
<td>6</td>
<td>9</td>
</tr>
</tbody>
</table>

Complete the pictogram.

Key: [ ] represents 2 people
The table shows some information about car hire.

<table>
<thead>
<tr>
<th>Car</th>
<th>Maximum number of people</th>
<th>Cost per day (£)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>4</td>
<td>16.71</td>
</tr>
<tr>
<td>Medium</td>
<td>5</td>
<td>17.31</td>
</tr>
<tr>
<td>Large</td>
<td>5</td>
<td>28.35</td>
</tr>
</tbody>
</table>

**Extras**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Insurance</td>
<td>£7.50 per day</td>
</tr>
<tr>
<td>Baby seat</td>
<td>£39.60 per week</td>
</tr>
</tbody>
</table>

Tracey wants to hire a car  
for 5 people  
for 7 days  
with insurance  
and a baby seat.

Work out the cheapest total cost.  

Answer £ ..........................................................
5 (a) What percentage of spending was on Pensions?
Circle your answer.

[1 mark]

14% 25% 50% 90%

5 (b) Calculate the angle of the sector for Schools.

[2 marks]

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

Answer ........................................................ degrees

5 (c) Work out the ratio of spending Health : Police
Give your answer in its simplest form.

[2 marks]

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

Answer ..................... : .....................
The heights of 20 men and 20 women were measured. The ordered stem-and-leaf diagrams show the results.

Key: 17 2 represents 172 cm

<table>
<thead>
<tr>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>16</td>
<td>1 1 1</td>
</tr>
<tr>
<td>17</td>
<td>2 4 6 6</td>
</tr>
<tr>
<td>18</td>
<td>1 3 3 5 7 8</td>
</tr>
<tr>
<td>19</td>
<td>2 2 4 5</td>
</tr>
<tr>
<td>20</td>
<td>3 5</td>
</tr>
</tbody>
</table>

6 (a) For the men, which average is 161 cm? Circle your answer. [1 mark]

| median | mode | mean |

6 (b) Work out the median height of the women. [1 mark]

Answer .................................................. cm

6 (c) Calculate the range of all 40 heights. [2 marks]

Answer .................................................. cm
40 students have brown, blue or green eyes.

Half of the students with brown eyes are boys. There are 6 more girls than boys altogether.

7 (a) Complete the table [4 marks]

<table>
<thead>
<tr>
<th></th>
<th>Boys</th>
<th>Girls</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brown</td>
<td>18</td>
<td></td>
<td>18</td>
</tr>
<tr>
<td>Blue</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Green</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>40</td>
</tr>
</tbody>
</table>

7 (b) What percentage of the students have brown eyes? [2 marks]

Answer ......................................................... %
8 (a) An ordinary, fair dice is rolled 420 times.
How many times is the number 3 expected? 

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Answer ............................................................................

8 (b) A biased dice is rolled 50 times.
The number 5 appears 23 times.
Which of the following give the relative frequency of the number 5?
Circle all the correct answers.

23% \quad \frac{23}{50} \quad 0.23 \quad 0.46 \quad \frac{5}{23} \quad 46%

Turn over for the next question
Each question in a test has 1, 2, 3 or 4 marks as shown.

<table>
<thead>
<tr>
<th>Number of marks</th>
<th>Number of questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>

9 (a) Show that there are 24 questions. [1 mark]

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9 (b) Work out the mean number of marks per question. [3 marks]

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Answer .................................................................................................
9 (c) An extra question is added to the test.
The mean number of marks per question is now 2.2

How many marks does the extra question have? [2 marks]

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

Answer ..............................................................................................................

10 Ben wants to find out which type of music people prefer.
He surveys 10 boys in his class.

Write down one way that Ben can improve his survey. [1 mark]

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Turn over for the next question
A teacher recorded the number of lessons missed by 30 students. She compared the number of lessons they missed with their results in a test.

11 (a) What type of correlation is shown? [1 mark]

Answer .................................................................
11 (b) Draw a line of best fit on the graph. [1 mark]

11 (c) Another student missed 40 lessons.
Use your line of best fit to estimate her test result. [1 mark]

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

Answer ........................................................................ %

12 There are 20 coloured balls in a bag.
The probability of choosing a red ball at random is \( \frac{1}{4} \)
One more red ball is added.

Work out the new probability of choosing a red ball. [2 marks]

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Answer ..............................................................................

Turn over for the next question
13 Three positive whole numbers have a mean of 6

What is the greatest possible range of the three numbers? [3 marks]

Answer ..........................................................
Two boxes contain a mix of apples and oranges.

In box A, the ratio of apples to oranges is $5 : 7$

In box B, $\frac{2}{5}$ of the fruit are apples.

A piece of fruit is chosen at random from each box.

Is there a greater probability of choosing an apple from box A or box B? You **must** show your working.

[2 marks]