Mathematics

Unit 1

Monday 10 November 2014 9.00 am to 10.00 am

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

Time allowed
- 1 hour

Instructions
- Use black ink or black ball-point pen. Draw diagrams in pencil.
- 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 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 8. 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  Ten cards have letters written on them.

A  M  A   Q   A
M  A   T   H   S

One card is chosen at random.

1 (a) Circle the chance of choosing Q.

impossible  unlikely  evens  likely  certain

1 (b) Circle the chance of choosing B.

impossible  unlikely  evens  likely  certain

1 (c) Draw a cross on the scale to show the probability of choosing A.

[1 mark]

1 (d) What is the probability of not choosing A?

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

Answer ......................................................................
2 Adam saved these amounts.

| Amount | £124 | £79.50 | £122.50 | £96 | £85 |

2 (a) Work out the range.

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

2 (b) Matthew saved half as much as Adam.

Work out the total amount that Matthew saved.

Answer £ ............................................................
A band played 20 concerts in five continents.

<table>
<thead>
<tr>
<th>Continent</th>
<th>Tally</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Europe</td>
<td>/////</td>
<td></td>
</tr>
<tr>
<td>North America</td>
<td>///</td>
<td></td>
</tr>
<tr>
<td>South America</td>
<td>/////</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>20</strong></td>
</tr>
</tbody>
</table>

*3 (a) Draw a fully labelled bar chart to show this information. [4 marks]
3 (b) What fraction of the 20 concerts were in South America? Give your answer in its simplest form.

Answer

4 80 people were asked if they own a car. The table shows some of the information.

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women</td>
<td>18</td>
<td></td>
<td>35</td>
</tr>
<tr>
<td>Men</td>
<td>33</td>
<td>12</td>
<td>80</td>
</tr>
</tbody>
</table>

4 (a) How many men said yes?

Answer

4 (b) Complete the table.
A bag has 12 counters. They are pink (P), white (W), green (G) or yellow (Y).

One counter is taken from the bag. A new counter is then added to the bag. The mode is now yellow.

5 (a) What colour counter was taken out? Circle your answer. [1 mark]

- Pink
- White
- Green
- Yellow

5 (b) What colour counter was added? Circle your answer. [1 mark]

- Pink
- White
- Green
- Yellow
6 A data logging machine counts people entering and leaving a museum.

<table>
<thead>
<tr>
<th>Hour ending at</th>
<th>Entering</th>
<th>Leaving</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 am</td>
<td>30</td>
<td>6</td>
</tr>
<tr>
<td>9 am</td>
<td>21</td>
<td>25</td>
</tr>
<tr>
<td>10 am</td>
<td>75</td>
<td>70</td>
</tr>
<tr>
<td>11 am</td>
<td>40</td>
<td>38</td>
</tr>
</tbody>
</table>

6 (a) The museum opens at 7 am.

Show that there were 24 people in the museum at 8 am.  

[1 mark]

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6 (b) How many people were in the museum at 11 am?

[2 marks]

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Answer ..........................................................................................................................
Emma worked for 12 weeks. The stem-and-leaf diagram shows the number of sales she made each week.

Key: \(2 \, 0\) represents 20 sales

<table>
<thead>
<tr>
<th>Number of sales in a week</th>
<th>Bonus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 25</td>
<td>£0</td>
</tr>
<tr>
<td>25 – 30</td>
<td>£15</td>
</tr>
<tr>
<td>Over 30</td>
<td>£50</td>
</tr>
</tbody>
</table>

Each week she could earn a bonus of £15 or £50

Calculate her total bonus for the 12 weeks.

[2 marks]

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Answer £ ...................................................................
A reporter asked people if they agreed with a government policy.

\[\frac{1}{3}\] said Yes

\[\frac{2}{5}\] said No

The rest said Don't know

Survey results

Complete the pie chart.

[3 marks]

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A secretary types letters and answers the telephone. The times spent on six days are shown on the scatter graph.

9 (a) The table shows the times spent on the next four days.

<table>
<thead>
<tr>
<th>Time on telephone (minutes)</th>
<th>275</th>
<th>150</th>
<th>125</th>
<th>180</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time typing (minutes)</td>
<td>125</td>
<td>190</td>
<td>225</td>
<td>175</td>
</tr>
</tbody>
</table>

Show these times on the scatter graph. [2 marks]
9 (b) Draw a line of best fit. [1 mark]

9 (c) On another day she spent 200 minutes on the telephone.

Use your line of best fit to estimate the time she spent typing that day. [1 mark]

Answer ......................................................... minutes

Turn over for the next question
Here is some information about tourism in 2012:

<table>
<thead>
<tr>
<th>Country visited</th>
<th>Number of tourists (millions)</th>
<th>Total spent by tourists ($ millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>83.0</td>
<td>53 600</td>
</tr>
<tr>
<td>USA</td>
<td>67.0</td>
<td>126 200</td>
</tr>
<tr>
<td>Spain</td>
<td>57.7</td>
<td>55 900</td>
</tr>
</tbody>
</table>

10 (a) How many more tourists visited France than Spain? [2 marks]

Answer ........................................................... million

10 (b) 21% of the total spent by tourists in the USA was by Canadians.

Work out the amount spent by Canadian tourists in the USA. [2 marks]

Answer $ ........................................................ million
10 (c) In the UK the total spent by tourists was $36 600 million. There were 29.3 million tourists.

Work out the average spent per tourist in the UK.
Give your answer to the nearest $10

[3 marks]

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Answer $ .................................................................

Turn over for the next question
11 An outdoor centre has activities for children.

**Number of children choosing each activity**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Saturday</th>
<th>Sunday</th>
</tr>
</thead>
<tbody>
<tr>
<td>Archery</td>
<td>25</td>
<td>20</td>
</tr>
<tr>
<td>Walking</td>
<td>15</td>
<td>30</td>
</tr>
<tr>
<td>Sailing</td>
<td>20</td>
<td>10</td>
</tr>
</tbody>
</table>

11 (a) Adults help with **walking** in the ratio

\[
\text{number of adults} : \text{number of children} = 1 : 5
\]

3 adults can help with walking on **Saturday**.

Is this enough?
You **must** show your working.

[2 marks]
11 (b) A group of people go sailing in the ratio

number of adults : number of children = 1 : 2

What fraction of the group are adults? [1 mark]

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

11 (c) On Sunday all the children do the activity they choose.

The ratios for each activity are shown in the table.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Number of adults : number of children</th>
</tr>
</thead>
<tbody>
<tr>
<td>Archery</td>
<td>1 : 3</td>
</tr>
<tr>
<td>Walking</td>
<td>1 : 5</td>
</tr>
<tr>
<td>Sailing</td>
<td>1 : 2</td>
</tr>
</tbody>
</table>

Work out the total number of adults needed for Sunday. [3 marks]

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Answer ................................................................................................................................
A team plays four games.

There are six combinations of results that score **at least 5** points.

Complete the table to show these combinations.

<table>
<thead>
<tr>
<th>Number of wins</th>
<th>Number of draws</th>
<th>Number of losses</th>
<th>Total score</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>0</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>0</td>
<td>7</td>
</tr>
</tbody>
</table>
13. Four numbers have a mean of 10
   The median is 8
   Two of the numbers are 1 and 5
   Work out the other two numbers. [3 marks]

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   Answer .................................. and ..................................

14. Jess wants to know the number of people who live in her street.
   She carries out a survey.

   Which two words describe the data she collects?
   Circle your answers. [2 marks]

   Primary  Secondary  Discrete  Continuous

END OF QUESTIONS
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