Please write clearly in block capitals.

Centre number ____________  Candidate number ____________
Surname ________________________________________________________
Forename(s) _____________________________________________________
Candidate signature _____________________________________________

GCSE MATHEMATICS
Higher Tier  Unit 1  Statistics and Number

Wednesday 2 November 2016  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 1 and 9. 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.
1 On Thursday, the number of cars using 13 car parks is recorded. Here are the results.

40  51  72  47  60
55  61  75  63  69
52  64  56

*1 (a) Show the data on an ordered stem-and-leaf diagram. Remember to complete the key.

[4 marks]

Key:   |   represents   cars

<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>----------------</td>
</tr>
</tbody>
</table>
1 (b) On Friday, the median number of cars using the car parks is 15% lower than Thursday.

Work out the median for Friday.

[3 marks]

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
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______________________________________________________________________________

Answer __________________________________________

Turn over for the next question
The bar chart shows the cost of flights to four cities.

75 people fly to Miami. Some fly Economy and the others fly Premium.

The total cost of the Economy flights is £37 820

Use the bar chart to work out the total cost of the Premium flights.

[4 marks]

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Answer £ ___________________________
3 (a) A fair spinner has 10 equal sections.

Here are the results of eight spins.

4 7 5 6 4 9 4 2

Circle the probability of the arrow landing on 4 on the next spin.

[1 mark]

\[
\frac{1}{10} \quad \frac{3}{8} \quad \frac{4}{10} \quad \frac{4}{9}
\]

3 (b) Describe how to test if a six-sided dice is fair.

[2 marks]
In a survey, 160 people chose A, B or C.

30 women and 26 men chose B.

**Women** chose A : B : C in the ratio 1 : 2 : 3

2 more people chose A than chose C.

Complete the table. 

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women</td>
<td></td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td></td>
<td>26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td>160</td>
</tr>
</tbody>
</table>
5 Each day Chen buys pasta or a sandwich.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pasta</td>
<td>£3.20</td>
</tr>
<tr>
<td>Sandwich</td>
<td>£2.75</td>
</tr>
</tbody>
</table>

For 45 days, the relative frequency of Chen buying a sandwich was $\frac{1}{5}$.

Altogether, how much did he pay? [4 marks]

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
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______________________________________________________________________________

Answer £ ________________________________

Turn over for the next question
The table shows information about the waiting times of 400 patients.

<table>
<thead>
<tr>
<th>Time, ( t ) (minutes)</th>
<th>Frequency</th>
<th>Cumulative frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>( 10 &lt; t \leq 30 )</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>( 30 &lt; t \leq 50 )</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>( 50 &lt; t \leq 65 )</td>
<td>110</td>
<td></td>
</tr>
<tr>
<td>( 65 &lt; t \leq 80 )</td>
<td>155</td>
<td></td>
</tr>
<tr>
<td>( 80 &lt; t \leq 100 )</td>
<td>45</td>
<td></td>
</tr>
</tbody>
</table>

6 (a) Complete the cumulative frequency column. [1 mark]

6 (b) Show the information on a cumulative frequency graph. [3 marks]
In a competition, Amy and Beth each get five marks. For each person, the marks are put in order and the score is the mean of the middle three marks.

**Amy**

<table>
<thead>
<tr>
<th>Mean of all five marks</th>
<th>7.6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lowest mark</td>
<td>6.5</td>
</tr>
<tr>
<td>Highest mark</td>
<td>9.9</td>
</tr>
</tbody>
</table>

**Beth**

| Score                  | 7.4 |

Who has the higher score? You **must** show your working.

[4 marks]

Answer ______________________________________
Students from two schools took part in a maths challenge. None of the students scored 60 or 72.

164 students from school A took part.

Work out the number of students from school A who scored more than 72.

[2 marks]

Answer: ________________________________
8 (b) This box plot represents the scores of the students from school B.

190 students in total from both schools scored more than 60

Use both box plots to work out the number of students from school B who took part.

[2 marks]

Answer ________________________________

Turn over for the next question
I decrease a number by 26%  
The answer is $9 \times 10^{-7}$

What number did I start with?  
Give your answer in standard form.  

[3 marks]

Answer ______________________________________

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

Answer ______________________________________
The table shows information about 1500 people watching a sport.

<table>
<thead>
<tr>
<th>Age group</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult</td>
<td>340</td>
<td>260</td>
</tr>
<tr>
<td>Child</td>
<td>502</td>
<td>398</td>
</tr>
</tbody>
</table>

Kelly wants to survey 75 of these people, stratified by age group and gender.

How many more children than adults should she survey?

Answer ______________________________________

[3 marks]
11 The histogram shows information about the hourly wages of people in a company.

(a) Show that there are 60 people in the company.

[2 marks]
11 (b) Estimate the mean hourly wage. [4 marks]

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______________________________________________________________________________

Answer £ __________________________

11 (c) Sarah has the 12th highest hourly wage in the company.
Estimate her hourly wage.
You must show your working. [2 marks]

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______________________________________________________________________________

Answer £ __________________________

Turn over for the next question
The table shows information about the ages, in years, of 100 people.

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 18</td>
<td>12</td>
</tr>
<tr>
<td>18 to 65</td>
<td>78</td>
</tr>
<tr>
<td>Over 65</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Two of the people are chosen at random.

12 (a) Work out the probability that both are over 65

Answer ____________________________________
12 (b) Work out the probability that one is under 18 and the other is 18 or over.

[3 marks]

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
Answer ________________________________

END OF QUESTIONS
There are no questions printed on this page