Thursday 8 June 2017  Morning  Time allowed: 1 hour 30 minutes

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. Cross through any work you do not want to be marked.

Information
• The marks for questions are shown in brackets.
• The maximum mark for this paper is 80.
• You may ask for more answer paper, graph paper and tracing 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. Which unit is most suitable for measuring the length of a tennis court?
   Circle your answer.  
   [1 mark]
   kilometres   metres   centimetres   millimetres

2. Circle the multiple of both 8 and 12  
   [1 mark]
   4   32   72   108

3. What is \( \frac{3}{2} \) as a decimal?
   Circle your answer.  
   [1 mark]
   1.05   1.1   1.5   3.2
4. Circle the correct statement. [1 mark]

-4 < -3  1 ≤ -2  -6 > 5  -1 ≥ 0

5 (a) Use your calculator to work out \( \sqrt{701} \) as a decimal. [1 mark]
Write down your full calculator display.

Answer ____________________________

5 (b) Give your answer to part (a) to 1 decimal place. [1 mark]

Answer ____________________________

Turn over for the next question
A swimming pool has three changing rooms, Male, Female and Family. The pictogram shows the number of people using each changing room during one hour.

**Key:** 🧦 represents _______ people

<table>
<thead>
<tr>
<th>Room</th>
<th>Pictogram</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>🧦 🧦 🧦</td>
</tr>
<tr>
<td>Female</td>
<td>🧦 🧦 🧦 🧦 🧦</td>
</tr>
<tr>
<td>Family</td>
<td>🧦</td>
</tr>
</tbody>
</table>

8 people used the Male changing room.

6 (a) Complete the key. [1 mark]

6 (b) How many people used the Female changing room? [1 mark]

Answer __________________________
6 (c) The manager has bought lockers for the changing rooms.

Why should she **not** use these results to decide where to put them?  

[1 mark]

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7 Here is a list of numbers.

21 17 23 21 29 32 21 25 36

Work out the median.  

[2 marks]

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Answer _____________________________

Turn over for the next question
8 Here is a map of a town.

Scale: 1 cm represents 200 m

8 (a) Which place is exactly North West of the Station? Circle your answer.

[1 mark]

Cinema Town Hall Library Park Monument

8 (b) Circle the three-figure bearing of the Monument from the Park.

[1 mark]

090° 180° 270° 360°
8 (c) What is the distance, in metres, from the Cinema to the Station? [3 marks]

Answer ____________________________ metres

8 (d) Why might the shortest walking distance from the Cinema to the Station be greater than your answer to part (c)? [1 mark]

Turn over for the next question
Complete the bank statement.

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
<th>Credit (£)</th>
<th>Debit (£)</th>
<th>Balance (£)</th>
</tr>
</thead>
<tbody>
<tr>
<td>13/12/2016</td>
<td>Starting balance</td>
<td></td>
<td></td>
<td>212.48</td>
</tr>
<tr>
<td>14/12/2016</td>
<td>Council tax</td>
<td></td>
<td>128.39</td>
<td></td>
</tr>
<tr>
<td>15/12/2016</td>
<td>Salary</td>
<td>856.21</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
10 The average age of teachers at a school is 36 years.

Mr Smith's age is $\frac{11}{9}$ of the average.

How old is Mr Smith?

[2 marks]

Answer _______________ years

11 Solve $4x - 3 = 14$

[2 marks]

$x = \underline{\hspace{2cm}}$

Turn over for the next question
12 Lee sells ice creams. 

The table shows the midday temperature and his sales for five days.

<table>
<thead>
<tr>
<th>Day</th>
<th>Temperature (°C)</th>
<th>Sales (£)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 1</td>
<td>30</td>
<td>180</td>
</tr>
<tr>
<td>Day 2</td>
<td>26</td>
<td>150</td>
</tr>
<tr>
<td>Day 3</td>
<td>17</td>
<td>80</td>
</tr>
<tr>
<td>Day 4</td>
<td>22</td>
<td>130</td>
</tr>
<tr>
<td>Day 5</td>
<td>20</td>
<td>120</td>
</tr>
</tbody>
</table>

12 (a) He draws this scatter graph and line of best fit.

Write down two mistakes he has made. [2 marks]

Mistake 1

Mistake 2
12 (b) Lee wants to work out the range of the five temperatures. His calculation is $30 - 20 = 10$

Is his method correct?

Tick a box.

[1 mark]

Yes [ ] No [ ]

Give a reason to support your answer.

12 (c) The table shows Lee’s costs.

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>15% of sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel</td>
<td>£7 per day</td>
</tr>
</tbody>
</table>

Work out his total profit for the five days.

[5 marks]

Answer £ ________________

8
Work out the size of angle \( x \).

[2 marks]

Answer \( \underline{\hspace{4cm}} \) degrees
14 In this question, use

1 kilogram = 2.2 pounds
1 stone = 14 pounds

Change 70 kilograms into stones.

[3 marks]

Answer __________________________ stones

15 Here are some numbers.

10 13 15 20 27 39

10 15 20 is an arithmetic progression.

Use three of the numbers to make a different arithmetic progression.
Describe the rule.

[2 marks]

Answer ______ ______ ______

Rule ____________________________
16 The counters in a bag are red or blue.
One fifth of the counters are red.
Work out the ratio red counters : blue counters
Circle your answer.

[1 mark]

1 : 4  1 : 5  4 : 5  1 : 6

17 Circle the fraction equal to 0.1%

[1 mark]

1
10

1
100

1
1000

1
10,000
Ellen works for a company that sells cars.

Her **monthly** pay is

- a salary of £1470
- 28% of the total **profit** the company makes from her sales
- a £250 bonus if she sells at least 15 cars.

The table shows information about the cars she sold last year.

<table>
<thead>
<tr>
<th>Total cost to the company</th>
<th>Total income for the company</th>
<th>Number of months when she sold at least 15 cars</th>
</tr>
</thead>
<tbody>
<tr>
<td>£464 500</td>
<td>£538 000</td>
<td>3</td>
</tr>
</tbody>
</table>

Was Ellen’s total pay for the **year** more than £40 000?

You **must** show your working.

---

Answer: ____________________________

---
Ben and Katy throw darts at a target.

Ben’s ratio of hits to misses is $5 : 1$
Katy’s ratio of hits to misses is $3 : 1$

Ben says,
“5 is bigger than 3, so I must have more hits than Katy.”

Give an example to show that this might not be true. [2 marks]
20 A code has 4 digits.
Each digit is a number from 0 to 9
Digits may be repeated.
The code starts 5 4 1

20 (a) Joe chooses a number at random for the last digit.
Write down the probability that he chooses the correct number.

[1 mark]

Answer ________________________________________________________________________

20 (b) Amy knows the last digit is odd but not 7
She chooses a different odd number at random.
What is the probability that she chooses the correct number?

[1 mark]

Answer ________________________________________________________________________

Turn over for the next question
21 Eva thinks she can save water by having a shower instead of a bath.

Eva’s shower
  uses 10.8 litres per minute
  lasts for 8 minutes.

Eva assumes that the water in her bath is in the shape of this cuboid.

\[
\text{1000 cm}^3 = 1 \text{ litre}
\]

21 (a) Using Eva’s assumption, work out how many litres of water she saves by having a shower instead of a bath.

\[
\text{Answer } \underline{\text{litres}}
\]
21 (b) A shows the water level before Eva gets into the bath.  
B shows the cuboid in the empty bath.  

What does this tell you about the amount of water saved?  

[1 mark]
Work out the value of $x$ as a decimal.

[3 marks]

Answer ____________________________
Lily goes on a car journey. For the first 30 minutes her average speed is 40 miles per hour. She then stops for 15 minutes. She then completes the journey at an average speed of 60 miles per hour. The total journey time is 1 hour.

23 (a) Draw a distance-time graph for her journey.

23 (b) Write down the average speed for the total journey.

Answer _______________ mph
24 The pie chart shows information about voters in an election.

3360 more women voted than men.

Work out the total number of voters.

[3 marks]

Answer ____________________________
The table shows information about some CDs.

<table>
<thead>
<tr>
<th>Type</th>
<th>Rock</th>
<th>Pop</th>
<th>Jazz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of CDs</td>
<td>2</td>
<td>x</td>
<td>2x + 5</td>
</tr>
</tbody>
</table>

A CD is chosen at random.
The probability it is rock is \( \frac{1}{20} \)

Work out the probability it is jazz.

Answer

Turn over for the next question
26 (a) Complete the table of values for \( y = x^2 - x - 2 \)

\[
\begin{array}{|c|c|c|c|c|c|c|}
\hline
x & -2 & -1 & 0 & 1 & 2 & 3 \\
\hline
y & & -2 & -2 & & 4 \\
\hline
\end{array}
\]

[2 marks]

26 (b) Draw the graph of \( y = x^2 - x - 2 \) for values of \( x \) from -2 to 3

[2 marks]
27 Write these numbers in **descending** order.

9563  \(9.56 \times 10^3\)  \(9.56 \times 3^{10}\)

[2 marks]

Answer ___________________ , ___________________ , ___________________

28 Rearrange \(y = \frac{x}{3} + 9\) to make \(x\) the subject.

[2 marks]

Answer ___________________

Turn over for the next question
29 Use trigonometry to work out the length $x$.

\[ \text{[2 marks]} \]

Answer \hphantom{cm} cm

END OF QUESTIONS