Fill in these boxes and read what is printed below.

Full name of centre

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1. You may NOT use a calculator.

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FORMULAE LIST

Circumference of a circle: \( C = \pi d \)
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Theorem of Pythagoras:
\[ a^2 + b^2 = c^2 \]

Trigonometric ratios
in a right angled triangle:

\[
\begin{align*}
\tan \theta & = \frac{\text{opposite}}{\text{adjacent}} \\
\sin \theta & = \frac{\text{opposite}}{\text{hypotenuse}} \\
\cos \theta & = \frac{\text{adjacent}}{\text{hypotenuse}}
\end{align*}
\]
ALL questions should be attempted.

1. (a) Find $6.17 - 2.3$.

(b) Find 75% of £1200.

2. Joyce is going on holiday. She must be at the airport by 1.20 pm. It takes her 4 hours 30 minutes to travel from home to the airport. What is the latest time that she should leave home for the airport?
3. A regular polygon is a shape with three or more equal sides.

**Examples of regular polygons**

A rule used to calculate the size, in degrees, of each angle in a regular polygon is:

Size of each angle = \(180 - (360 \div \text{number of sides})\)

**Calculate** the size of each angle in the regular polygon below.

Do not measure with a protractor.
You must show your working.
4. The number of peas counted in each of 100 pea pods is shown in this frequency table.

<table>
<thead>
<tr>
<th>Peas in pod</th>
<th>Frequency</th>
<th>Peas in pod $\times$ Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>4</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td>5</td>
<td>28</td>
<td>140</td>
</tr>
<tr>
<td>6</td>
<td>36</td>
<td>216</td>
</tr>
<tr>
<td>7</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td><strong>Total = 100</strong></td>
<td><strong>Total =</strong></td>
<td><strong>Total =</strong></td>
</tr>
</tbody>
</table>

Complete the table above and calculate the mean number of peas in a pod.

5. Solve algebraically the equation

$$11a - 8 = 37 + 6a.$$
6. Anwar wants to buy some accessories for his computer. He sees this advert for Cathy’s Computers.

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital Camera</td>
<td>£95</td>
</tr>
<tr>
<td>Scanner</td>
<td>£75</td>
</tr>
<tr>
<td>Printer</td>
<td>£70</td>
</tr>
<tr>
<td>Cordless Keyboard</td>
<td>£45</td>
</tr>
<tr>
<td>Pair of Speakers</td>
<td>£40</td>
</tr>
</tbody>
</table>

Special Offer
Free microphone when you spend £160 or more

Anwar wants to spend enough to get the free microphone. He can afford to spend a maximum of £200. He does not want to buy more than one of each accessory.

One combination of accessories that Anwar can buy is shown in the table below.

<table>
<thead>
<tr>
<th></th>
<th>Digital Camera</th>
<th>Scanner</th>
<th>Printer</th>
<th>Cordless Keyboard</th>
<th>Pair of Speakers</th>
<th>Total Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combination</td>
<td>£95</td>
<td>£75</td>
<td>£70</td>
<td>£45</td>
<td></td>
<td>£185</td>
</tr>
</tbody>
</table>

Complete the table to show all possible combinations that Anwar can buy.
7. (a) Complete the table below for \( y = -2x + 5 \).

<table>
<thead>
<tr>
<th>( x )</th>
<th>-2</th>
<th>0</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>( y )</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(b) Draw the line \( y = -2x + 5 \) on the grid.
8. (a) While in New York, Martin changed £50 into US dollars. The exchange rate was £1 = $1.62. How many US dollars did Martin receive for £50?

(b) A few days later he received $320 in exchange for £200. What was the new exchange rate?

9. (a) Write \( \frac{7}{1000} \) as a decimal.

(b) Starting with the smallest, write the following numbers in order.

\[ \frac{7}{1000}, \quad 0.069, \quad 7 \times 10^{-4} \]

Show working to explain your answer.
10. In a **magic square**, the numbers in each row, each column and each diagonal add up to the same **magic total**.

In this magic square the **magic total** is 3.

\[
\begin{array}{ccc}
-2 & 5 & 0 \\
3 & 1 & -1 \\
2 & -3 & 4 \\
\end{array}
\]

(a) \[
\begin{array}{ccc}
-4 & 3 & -2 \\
1 & -1 & -3 \\
0 & -5 & 2 \\
\end{array}
\]
This is another magic square. What is its **magic total**?

(b) Complete this **magic square**.

\[
\begin{array}{ccc}
1 & & \\
& -2 & \\
& & -5 \\
\end{array}
\]

[END OF QUESTION PAPER]
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\end{align*}
\]
ALL questions should be attempted.

1. Calculate the volume of the cube below.

![Cube Diagram]

55 cm

Round your answer to the nearest thousand cubic centimetres.

2. Claire sells cars.
   
   She is paid £250 per month plus 3% commission on her sales.
   
   How much is she paid in a month when her sales are worth £72 000?
3. A group of students visit a theme park. The graph below shows their journey. They set off from the college at 9 am and arrive back at 4 pm.

(a) How long did the students spend at the theme park?

(b) Calculate the average speed, in miles per hour, of the students' return journey.

4. Solve algebraically the inequality

\[3t + 4 > 28.\]
5. The stem and leaf diagram below shows the ages of the players in the Kestrels rugby team.

\[
\begin{array}{c|c}
\text{AGES} \\
\text{Kestrels} \\
1 | 9 \\
2 | 1 3 4 7 9 \\
3 | 0 2 4 5 5 5 8 9 \\
4 | 1 \\
\end{array}
\]

\[2 \mid 1 \text{ represents 21 years}\]

(a) What age is the oldest player?

(b) Calculate the range of ages.

The stem and leaf diagram below shows the ages of both the Kestrels and the Falcons rugby teams.

\[
\begin{array}{c|c}
\text{AGES} \\
\text{Falcons} & \text{Kestrels} \\
9 9 | 1 9 \\
8 7 7 6 3 2 1 1 0 & 2 1 3 4 7 9 \\
8 6 4 3 & 3 0 2 4 5 5 5 8 9 \\
\mid 4 | 1 \\
\end{array}
\]

\[2 \mid 1 \text{ represents 21 years}\]

(c) Compare the ages of the two teams. Comment on any difference.
6.  

(a) Multiply out the brackets and simplify  
\[ 11n + 4(7 - 2n). \]

(b) Factorise  
\[ 15 + 6x. \]

7.  
The scores of 12 golfers in a competition were as follows.

\[
\begin{array}{ccccccc}
67 & 70 & 68 & 75 & 71 & 70 \\
70 & 75 & 76 & 75 & 74 & 75
\end{array}
\]

(a) Find the modal score.

(b) Find the median score.

(c) Find the probability of choosing a golfer from this group with a score of 70.
6. (a) Multiply out the brackets and simplify

\[ 11n + 4(7 - 2n). \]

(b) Factorise \( 15 + 6x \).

7. The scores of 12 golfers in a competition were as follows.

<table>
<thead>
<tr>
<th>67</th>
<th>70</th>
<th>68</th>
<th>75</th>
<th>71</th>
<th>70</th>
</tr>
</thead>
<tbody>
<tr>
<td>70</td>
<td>75</td>
<td>76</td>
<td>75</td>
<td>74</td>
<td>75</td>
</tr>
</tbody>
</table>

(a) Find the modal score.

(b) Find the median score.

(c) Find the probability of choosing a golfer from this group with a score of 70.
8. 60 workers in a factory voted on a new pay deal.  
42 of them voted to accept the deal.  
What percentage voted to accept the deal?

9. The pie chart shows the different sizes of eggs laid by a flock of hens.

The flock of hens laid 1260 eggs.  
How many of the eggs were large?
10. A rectangular shelf is supported by brackets as shown. Each bracket is a right angled triangle.

Calculate the width of this bracket. Give your answer correct to one decimal place. **Do not use a scale drawing.**
11. The diagram below shows a speedway track.

The straights are each 100 metres long.
The bends are semi-circles as shown.
Calculate the perimeter of the inside of the track.

12. Use the formula below to find the value of $A$ when $b = 2.4$ and $c = 5$.

$$A = 3bc^2$$
13. PQRS is a rhombus. The diagonals PR and QS are 15 centimetres and 8 centimetres long as shown.

![Diagram of a rhombus with diagonals PR and QS labeled 15 cm and 8 cm respectively.]

Calculate the length of side PQ. **Do not use a scale drawing.**

14. Margaret is recovering from an operation. She needs to take 4 tablets each day for a year. The tablets are supplied in boxes of 200. Each box costs £6.50. How much does it cost for the year's supply?
15. The diagram below shows a plan of a patio.

The patio is built using square slabs with sides of length 60 centimetres. The slabs can be cut in half to fit as shown.

(a) How many slabs fit exactly along edge AB?

(b) How many slabs are needed altogether to build the patio?