Candidates answer on the Question Paper.

OCR supplied materials:
None

Other materials required:
- Scientific or graphical calculator
- Geometrical instruments
- Tracing paper (optional)

INSTRUCTIONS TO CANDIDATES
- Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
- Use black ink. HB pencil may be used for graphs and diagrams only.
- Answer all the questions.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- Your answers should be supported with appropriate working. Marks may be given for a correct method even if the answer is incorrect.
- Write your answer to each question in the space provided. Additional paper may be used if necessary but you must clearly show your candidate number, centre number and question number(s).
- Do not write in the bar codes.

INFORMATION FOR CANDIDATES
- The number of marks is given in brackets [ ] at the end of each question or part question.
- Your Quality of Written Communication is assessed in questions marked with an asterisk (*).
- Use the π button on your calculator or take π to be 3.142 unless the question says otherwise.
- The total number of marks for this paper is 100.
- This document consists of 20 pages. Any blank pages are indicated.

You are permitted to use a calculator for this paper
Area of trapezium = $\frac{1}{2} (a + b)h$

Volume of prism = (area of cross-section) × length
Caroline chooses one of these cards at random.

Choose a word from the box below to complete each sentence.

impossible  certain  unlikely  evens  likely

(a) It is _________________ that she chooses an odd number. [1]
(b) It is _________________ that she chooses a multiple of 3. [1]
(c) It is _________________ that she chooses the number 8. [1]
(d) It is _________________ that she chooses a positive integer. [1]
2 (a) Complete the following.

(i) \[ \square + 37 = 100 \] [1]

(ii) £1 – \[ \square \] = £ 0.82 [1]

(b) Here is the rule for the diagram below.

Multiply the numbers in the two circles to give the number in the square between the circles.

Complete the diagram.

```
3  \[ \square \]  15  \[ \square \]  5
\[ \square \]  \[ \square \]  7  \[ \square \]  63  \[ \square \]
```

[3]
3 (a) A shape has been drawn on the centimetre square grid.

(i) Find the area of the shape.

(a)(i) ______________________ cm\(^2\) [1]

(ii) Find the perimeter of the shape.

(ii) ______________________ cm [1]

(b) Draw the shapes described below on the centimetre square grids.

(i) A rectangle with area 12 cm\(^2\) and perimeter less than 16 cm.

(ii) A rectangle with area and perimeter that are numerically the same.
4 The grid shows a map of Goldham Island. Three of the towns on the island are shown.

(a) Write down the coordinates of

(i) Renford,  
   (a)(i) ( _____________ , _____________ ) [1]

(ii) Bidvale.  
   (ii) ( _____________ , _____________ ) [1]

(b) Measure the bearing of Bidvale from Renford.  
   (b) ___________________________ ° [1]

(c) The village of Acton is on a bearing of 270° from Bidvale. Acton is closer to Renford than to Venton.

(i) Mark and label with a cross a possible position of Acton.  
   (i) Mark and label with a cross a possible position of Acton. [2]

(ii) Write down the coordinates of your position of Acton.  
   (c)(ii) ( _____________ , _____________ ) [1]
Yasmin has 10 hair-slides in a box.

- 5 are green
- 2 are pink
- 2 are blue
- 1 is red

She chooses a hair-slide at random from her box.

Here is a probability line with some labelled arrows.

(a) (i) Choose an arrow from the line to complete these statements.

The probability that she takes a pink hair-slide is shown by arrow _________.

The probability that she takes a red or a green hair-slide is shown by arrow _________. [2]

(ii) Draw an arrow on the line above to show the probability that she takes a green hair-slide. Label your arrow G. [1]

(b) Yasmin buys 10 more hair-slides, 3 are green and 7 are blue. She places these in the box with the 10 hair-slides she already has. She chooses a hair-slide at random from her box.

Choose an arrow from the line above to complete this statement.

The probability that she takes a green hair-slide is shown by arrow ___________________. [2]
6 (a) Find the value of \( x \) in the following equations.

(i) \( x + 7 = 20 \)

\[ (a)(i) \quad \text{____________________________} \quad [1] \]

(ii) \( 6x = 42 \)

\[ (ii) \quad \text{____________________________} \quad [1] \]

(iii) \( \frac{x}{4} = 20 \)

\[ (iii) \quad \text{____________________________} \quad [1] \]

(b) Simplify completely.

(i) \( 7a - 4a + 12a \)

\[ (b)(i) \quad \text{____________________________} \quad [1] \]

(ii) \( 5x + 4 - 6x + 1 \)

\[ (ii) \quad \text{____________________________} \quad [2] \]

7 8 kg of potatoes cost £2.44.

Find the cost of 5 kg of these potatoes.

\[ £ \quad \text{____________________________} \quad [2] \]
8  (a) Find the volume of a cuboid measuring 25 mm by 20 mm by 40 mm.

(a) ______________________ mm$^3$ [2]

(b) Write your answer to part (a) in cubic centimetres (cm$^3$).

(b) ______________________ cm$^3$ [2]
9 (a) The timetable below shows the times of the Talyllyn Railway from Tywyn Wharf to Nant Gwernol during one day.

<table>
<thead>
<tr>
<th>Location</th>
<th>10:30</th>
<th>11:40</th>
<th>12:15</th>
<th>13:20</th>
<th>14:30</th>
<th>15:05</th>
<th>16:10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tywyn Wharf</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abergynolwyn</td>
<td>11:15</td>
<td>12:25</td>
<td>13:00</td>
<td>14:05</td>
<td>15:15</td>
<td>15:50</td>
<td>16:55</td>
</tr>
</tbody>
</table>

(i) How many trains leave Tywyn Wharf during the afternoon?

(a)(i) ________________________ [1]

(ii) At what time does the 11:40 train from Tywyn Wharf arrive at Nant Gwernol?

(ii) ________________________ [1]

(iii) How long, in minutes, is the journey on the 11:40 train from Tywyn Wharf to Nant Gwernol?

(iii) ________________________ minutes [1]

(b) The return timetable from Nant Gwernol to Tywyn Wharf is shown below.

<table>
<thead>
<tr>
<th>Location</th>
<th>11:35</th>
<th>12:45</th>
<th>13:20</th>
<th>14:25</th>
<th>15:35</th>
<th>16:10</th>
<th>17:27</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nant Gwernol</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tywyn Wharf</td>
<td>12:55</td>
<td>14:00</td>
<td>14:40</td>
<td>15:45</td>
<td>16:50</td>
<td>17:27</td>
<td>18:20</td>
</tr>
</tbody>
</table>

Sam catches the 11:40 train from Tywyn Wharf to Nant Gwernol. He must arrive back at Tywyn Wharf no later than 17:00.

What is the longest time Sam could spend in Nant Gwernol?

(b) ________________________ [2]
(c) Mr and Mrs Townley have two children aged 4 and 10. They are going to travel on the railway from Tywyn Wharf to Nant Gwernol and then back to Tywyn Wharf.

The costs of travel are shown below.

<table>
<thead>
<tr>
<th></th>
<th>Return</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult</td>
<td>£13.00</td>
</tr>
<tr>
<td>Child (5–15 years)</td>
<td>£3.00</td>
</tr>
<tr>
<td>Family (2 adults + 1 child over 5)</td>
<td>£28.50</td>
</tr>
</tbody>
</table>

Under 5 years travel FREE.

How much cheaper is it to buy a family ticket than to buy individual tickets?

(c) £ ____________________________ [2]
10 (a) Calculate.

(i) \(7.5^2\) \hspace{1cm} (a)(i) \hspace{1cm} \underline{\hspace{5cm}} \hspace{1cm} [1]

(ii) \(\sqrt{62.41} + 3\) \hspace{1cm} (ii) \hspace{1cm} \underline{\hspace{5cm}} \hspace{1cm} [1]

(iii) \(\frac{18.6 - 2.1}{5}\) \hspace{1cm} (iii) \hspace{1cm} \underline{\hspace{5cm}} \hspace{1cm} [1]

(b) (i) Round 346.78 to the nearest whole number.

(b)(i) \hspace{1cm} \underline{\hspace{5cm}} \hspace{1cm} [1]

(ii) Round 346.78 to one decimal place.

(ii) \hspace{1cm} \underline{\hspace{5cm}} \hspace{1cm} [1]

(iii) Round 346.78 to one significant figure.

(iii) \hspace{1cm} \underline{\hspace{5cm}} \hspace{1cm} [1]

11 Naomi wins £1200 in a lottery.

She spends \(\frac{1}{4}\) of the money on a laptop and she gives \(\frac{1}{10}\) of the money to her parents.

How much money does she have left?

£ \hspace{1cm} \underline{\hspace{5cm}} \hspace{1cm} [3]
12 (a) Simplify.

(i) \(4a \times 5\) 

(a)(i) ______________________ [1]

(ii) \(\frac{18y}{6}\) 

(ii) ______________________ [1]

(b) Work out the value of

(i) \(x^3\) when \(x = 6\),

(b)(i) ______________________ [1]

(ii) \(2x^2 + 3\) when \(x = 4\),

(ii) ______________________ [1]

(iii) \(16 - x^2\) when \(x = 3\).

(iii) ______________________ [1]

(c) Complete the following.

\[5(3x - 2) = 15x - \boxed{\text{ }}\]  

[1]
13 (a) Complete the following.

(i) 500 millimetres = _______ centimetres [1]

(ii) 2.4 litres = 2400 ________________ [1]

(iii) 4.1 kg + 800 g = ________________ [2]

(iv) _______ metres + 40 ________________ = 3.7 metres [2]

(b) Jackie wants to ride the Rumbler rollercoaster at the funfair. She is 4 feet 7 inches tall.

Use this information to decide if Jackie is allowed to ride the Rumbler rollercoaster. Show your working clearly. [4]
The cost of the same model of television in a French shop and an American shop is shown below.

French shop

€625

American shop

$850

These are the exchange rates.

£1 = €1.12

£1 = $1.68

In which shop is the television cheaper, and by how much?

The television in the _____________________ shop is cheaper by _____________________ [6]
Janet and Phil go to a summer fair.

Three cakes are left for sale on the cake stall.

<table>
<thead>
<tr>
<th>Fruit cake (F)</th>
<th>Chocolate cake (C)</th>
<th>Sponge cake (S)</th>
</tr>
</thead>
</table>

Janet buys one of these cakes at random and then Phil buys one of the remaining cakes at random.

(a) List all the possible ways they could do this. The first one has been done for you.

<table>
<thead>
<tr>
<th>Janet</th>
<th>Phil</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>C</td>
</tr>
</tbody>
</table>

(b) What is the probability that either Janet or Phil buys the chocolate cake?

(b) __________________________ [2]
Nisha goes on holiday in her car. The graph shows how many litres of petrol are in the tank of her car during the journey.

(a) (i) How many litres of petrol were in the tank at the start of the journey?

(a)(i) __________________________ litres [1]

(ii) How many litres of petrol did the car use in the first 3 hours of the journey?

(ii) __________________________ litres [1]

(iii) Work out how many litres of petrol per hour the car was using during the first 3 hours of the journey.

(iii) __________________________ litres/hour [2]

(b) What could have happened

(i) between 12.00 and 13.00,

__________________________________________________________________ [1]

(ii) at 15.00?

__________________________________________________________________ [1]
A chocolate bar is contained in a closed box which is a triangular prism.

(a) Make an accurate, full-size drawing of

(i) the plan (from P) and

(ii) the side elevation (from S) of the prism.

(i) Plan

[Diagram of the plan view with dimensions]
(ii) Side elevation

(b) The box is made from card.

What is the total area of card needed to make the box?

(b) ______________________ cm$^2$ [4]
The table shows the probabilities of how a randomly selected adult in a particular town would vote in an election.

<table>
<thead>
<tr>
<th>Party</th>
<th>Conservative</th>
<th>Liberal Democrat</th>
<th>Labour</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Probability</td>
<td>0.4</td>
<td>0.17</td>
<td>0.35</td>
<td></td>
</tr>
</tbody>
</table>

(a) Complete the table. [2]

(b) Work out the probability that a randomly selected adult would vote Conservative or Liberal Democrat.

(b) ____________________________ [2]

(c) There are 2500 adults in the town. How many of these adults might you expect to vote Labour?

(c) ____________________________ [2]

END OF QUESTION PAPER