Thursday 9 June 2016  Morning  Time allowed: 1 hour 45 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.

Information
• The marks for questions are shown in brackets.
• The maximum mark for this paper is 105.
• The quality of your written communication is specifically assessed in Questions 4, 17 and 22. These questions are indicated with an asterisk (*).
• 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.
Formulae Sheet: Foundation Tier

**Area of trapezium** = \( \frac{1}{2} (a + b)h \)

**Volume of prism** = area of cross section \( \times \) length
Answer all questions in the spaces provided.

1 (a) Circle the multiple of 9

4.5  19  36  42  60

[1 mark]

1 (b) Circle the factor of 76

4  6  8  24  152

[1 mark]

1 (c) Circle the cube number.

4  16  30  81  1000

[1 mark]
2 (a) Here are some letter cards.

Here is a list of words that describe chance.

impossible  unlikely  evens  likely  certain

A card is picked at random.

Choose one word from the list to describe each sentence. [2 marks]

The card has a letter T on it. ______________________

The card has a letter W on it. ______________________

2 (b) Here are seven blank cards.

Write a letter on each card so that when picking a card at random,

B is likely

and   D has twice the chance of being picked as C. [2 marks]
Here are five blank cards.

Write the number 2, 3 or 4 on each card so that when picking a card at random,

4 has the greatest chance of being picked but is **not** certain

and 2 and 3 have the same chance of being picked.

[2 marks]

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Turn over for the next question

---
3 (a) 30 men and 10 women choose one activity from fishing, walking and climbing.

10 men choose fishing.
1 woman chooses fishing.

12 men choose walking.
2 more men than women choose climbing.

Complete the dual bar chart.
3 (b) 38 children choose a sport.

<table>
<thead>
<tr>
<th>Sport</th>
<th>Football</th>
<th>Hockey</th>
<th>Tennis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of children</td>
<td>24</td>
<td>10</td>
<td>4</td>
</tr>
</tbody>
</table>

For each sport a **minimum** of 1 adult for every 8 children is needed.

Work out the **minimum** number of adults needed in total.
Put your answers in the table.

<table>
<thead>
<tr>
<th>Sport</th>
<th>Football</th>
<th>Hockey</th>
<th>Tennis</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of children</td>
<td>24</td>
<td>10</td>
<td>4</td>
<td>38</td>
</tr>
<tr>
<td>Minimum number of adults needed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[3 marks]
4 Jack's normal pay is £10.50 per hour.

*4 (a) Work out his pay for working 35 hours. [2 marks]

Answer £ ____________________________

4 (b) On Saturday, his pay per hour is £5.25 more than his normal pay of £10.50

How much is he paid for working 4 hours on Saturday? [2 marks]

Answer £ ____________________________
4 (c) Another week he works 28 hours at normal pay and works on Saturday.

His total pay for the week is £372.75

How many hours does he work on Saturday?

[3 marks]

Answer ___________________________ hours

Turn over for the next question
5 (a) The diagram shows a shape on a centimetre grid.

Work out the area of the shape.
State the units of your answer.

Answer ____________________________

5 (b) Tick any statements that are true for the shape in part (a).

[2 marks]

The shape covers less than one-third of the grid. [ ]

The shape covers exactly one-third of the grid. [ ]

The shape covers more than one-third of the grid. [ ]

The shape covers less than one-half of the grid. [ ]

The shape covers exactly one-half of the grid. [ ]

The shape covers more than one-half of the grid. [ ]
5 (c) On this centimetre grid, a rectangle is shown.

On the centimetre grid below, draw a different rectangle with the same perimeter and a smaller area.

Use whole squares only.

[2 marks]
6 (a) Ali is paid £20 000 a year.
He saves three-eighths of this amount.

How much does he save? [2 marks]

Answer £ ______________________

6 (b) Belle is paid £32 000 a year.
Her rent is £6000

Write the rent as a percentage of her pay. [2 marks]

Answer ______________________ %
7. The diagram shows a trapezium. All sides are measured in centimetres.

Work out the total length of the sides when \( x = 2.5 \text{ cm} \)

Answer \( \underline{\quad} \text{cm} \)

Turn over for the next question
8 (a) Work out \[10 \text{ km} + 1.5 \text{ km} + 500 \text{ m}\]
Give your answer in metres. [2 marks]

Answer ___________________________ metres

8 (b) How many 125 millimetre glasses can be filled from a 2 litre bottle of water? [2 marks]

Answer ___________________________

8 (c) Use \[5 \text{ miles} = 8 \text{ km}\] to show that 240 miles is approximately 380 km [2 marks]

Answer ___________________________
9  Points A and B are plotted on the centimetre grid.

9 (a) Write down the coordinates of A.

Answer (__________, __________) [1 mark]

9 (b) C is a point on the grid. The coordinates of C are integers.

\[ AC = 3 \text{ cm and } BC = 6 \text{ cm} \]

Work out the coordinates of C.

Answer (__________, __________) [2 marks]
10 (a) Work out the size of angle \( x \).

[1 mark]

Answer __________________ degrees

10 (b) \( ABCD \) is a quadrilateral. \( EAB \) is a straight line.

Work out the size of angle \( y \).

[2 marks]

Answer __________________ degrees
10 (c) The diagram shows an isosceles triangle.

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

[3 marks]

Answer __________________________ degrees

11 (a) Simplify \( 5a + 4b - 2a + b \)

[2 marks]

Answer __________________________

11 (b) Solve \( 4x - 7 = 9 \)

[2 marks]

\( x = \) __________________________
Sarah wants to have one starter and one main course.

List all the different choices she can have.

[2 marks]
13 (a) Work out the value of $8.2^3$
Give your answer to 1 decimal place.

[2 marks]

Answer ________________________________

13 (b) Work out the value of $\frac{\sqrt{6.76}}{2.5}$

[1 mark]

Answer ________________________________

14 Here are two fair spinners $X$ and $Y$.

Put the letter A, B or C on each section of spinner $Y$ so that the probability of landing on each letter is the same for each spinner.

[2 marks]
15 (a) Reflect this triangle in the $x$-axis. [1 mark]

![Triangle Diagram]

15 (b) Shape $B$ is an enlargement of shape $A$.
Write down the scale factor of the enlargement. [1 mark]

Answer ____________________________
16 Sam played in 15 hockey matches. The stem-and-leaf diagram shows the time he played in each match.

Key: 2 5 represents 25 minutes

<table>
<thead>
<tr>
<th>2</th>
<th>5 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0 3 4</td>
</tr>
<tr>
<td>4</td>
<td>1 6 7 8</td>
</tr>
<tr>
<td>5</td>
<td>4 5 7 8 8 9</td>
</tr>
</tbody>
</table>

The table shows information about the number of goals that Sam scored.

<table>
<thead>
<tr>
<th>Number of minutes Sam played in a match</th>
<th>less than 30</th>
<th>30 to 45</th>
<th>more than 45</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average number of goals Sam scored in each match</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

Work out the number of goals that Sam scored in the 15 matches.

[3 marks]

Answer ____________________________________________
*17 (a)  Alice wants to book a holiday for one adult and one child.

**Holiday**
- £720 per adult
- £430 per child

**Special Offer**
- 15% off

Alice has £1000

Does she have enough money to book this holiday using the special offer?
Tick a box.

Yes ☐ No ☐

You **must** show your working.

[5 marks]
17 (b) Ben changes £800 to Euros before he goes on holiday. 
£1 = 1.25 Euro

He spends 895 Euros.

He changes the Euros that he has left to Pounds (£). 
The exchange rate is now £1 = 1.40 Euro

How many Pounds does he get back? 

[4 marks]

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

Answer £ _______________________

Turn over for the next question
Here are the ingredients to make 8 biscuits.

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>flour</td>
<td>75 g</td>
</tr>
<tr>
<td>sugar</td>
<td>50 g</td>
</tr>
<tr>
<td>butter</td>
<td>40 g</td>
</tr>
<tr>
<td>egg yolks</td>
<td>2</td>
</tr>
</tbody>
</table>

Work out the ingredients to make 20 biscuits.

[3 marks]

__________________________ g flour
__________________________ g sugar
__________________________ g butter
__________________________ egg yolks
This formula converts degrees Celsius (C) to degrees Fahrenheit (F).

\[ F = \frac{9}{5} C + 32 \]

Use the formula to convert 28°C to °F
Give your answer to the nearest whole number.

[3 marks]

Answer __________________________ °F

Turn over for the next question
20 (a) The $n$th term of a sequence is $6 - 2n$

Work out the first three terms of the sequence.

[2 marks]

Answer __________, __________, __________

20 (b) Here is the term-to-term rule for a different sequence.

Multiply previous term by 2 and then subtract 3

The third term in this sequence is 31

Work out the first term.

[3 marks]

Answer ________________
21 The table shows information about the pay per hour of 40 people.

<table>
<thead>
<tr>
<th>Pay per hour, ( x ) (£)</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>( 5 &lt; x \leq 15 )</td>
<td>14</td>
</tr>
<tr>
<td>( 15 &lt; x \leq 25 )</td>
<td>12</td>
</tr>
<tr>
<td>( 25 &lt; x \leq 35 )</td>
<td>11</td>
</tr>
<tr>
<td>( 35 &lt; x \leq 45 )</td>
<td>2</td>
</tr>
<tr>
<td>( 45 &lt; x \leq 55 )</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>40</strong></td>
</tr>
</tbody>
</table>

21 (a) Which group contains the median pay per hour? Circle your answer.  
[1 mark]

\( 5 < x \leq 15 \) \hspace{1cm} 15 < x \leq 25 \hspace{1cm} 25 < x \leq 35 \hspace{1cm} 35 < x \leq 45 \hspace{1cm} 45 < x \leq 55 \)

21 (b) Work out an estimate of the mean pay per hour.  
[4 marks]

Answer £ ____________________________
The diagram shows a cylinder.

The radius of the base is 6 cm
The height is 15 cm

Work out the volume.

[3 marks]

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

Answer _______________________________ cm$^3$
A tank contains 45 000 cm³ of water. The tank leaks at 0.75 litres/minute.

How long does the tank take to empty? [4 marks]

Answer ________________________________________

Turn over for the next question
23 A baker makes 130 loaves so that there are

6 times as many white loaves as granary loaves
half as many brown loaves as white loaves.

How many of each type does he make? [3 marks]

White

Brown

Granary
The diagram shows a rectangle.

The area of the white rectangle in the middle is 1440 cm².

Work out the area of one shaded rectangle.

[5 marks]

Answer: cm²

END OF QUESTIONS