GCSE MATHEMATICS

Foundation Tier Paper 1 Non-Calculator

Exam Date Morning Time allowed: 1 hour 30 minutes

Materials

For this paper you must have:
• mathematical instruments
You must not use a calculator.

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. Solve \( \frac{x}{6} = 12 \)
   Circle your answer. \[1\text{ mark}\]
   
   \[
   \begin{array}{cccc}
   & 2 & 6 & 18 & 72 \\
   \end{array}
   \]

2. Circle all the numbers that have 11 as a factor. \[1\text{ mark}\]
   
   \[
   \begin{array}{cccc}
   121 & 122 & 132 & 133 \\
   \end{array}
   \]

3. Does a cuboid have more faces, edges or vertices?
   Circle your answer. \[1\text{ mark}\]
   
   \[
   \begin{array}{ccc}
   \text{faces} & \text{edges} & \text{vertices} \\
   \end{array}
   \]
4 Which shape is not a polygon? Circle the correct letter.

A B C D

Turn over for the next question

[1 mark]
This is how the scores in a quiz are worked out.

<table>
<thead>
<tr>
<th>Correct answer</th>
<th>3 points</th>
</tr>
</thead>
<tbody>
<tr>
<td>No answer</td>
<td>−1 point</td>
</tr>
<tr>
<td>Incorrect answer</td>
<td>−2 points</td>
</tr>
</tbody>
</table>

5 (a) Team A answer 7 of their first 10 questions. They give 5 correct answers and 2 incorrect answers. How many points do they score on the 10 questions? [2 marks]

Answer

________________________________________
________________________________________
5 (b) Team B score 17 points on the first 10 questions.

Complete the table.

<table>
<thead>
<tr>
<th>Number of questions</th>
<th>Total points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correct answer</td>
<td></td>
</tr>
<tr>
<td>No attempt</td>
<td></td>
</tr>
<tr>
<td>Incorrect answer</td>
<td></td>
</tr>
</tbody>
</table>

Total = 10

Total = 17

Turn over for the next question
Which of these is smallest

25 centimetres as a fraction of 2 metres
or 30 grams as a fraction of 2 kilograms
or 11 pence as a fraction of £1?

You must show your working.

Answer ____________________________

[5 marks]
In a bag of coins
there are 36 coins
there is £6 altogether
\( \frac{3}{4} \) of the coins are 10p coins
there are no £1 or £2 coins.

Work out one possible set of coins.
Complete the table.

[4 marks]

<table>
<thead>
<tr>
<th>Coin</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total = 36
Here are the scores of 10 students in two tests.

\[
\begin{array}{cccccccccc}
\text{Test A} & 3 & 6 & 8 & 9 & 9 & 10 & 11 & 12 & 13 & 15 \\
\text{Test B} & 6 & 5 & 10 & 11 & 10 & 5 & 18 & 17 & 20 & 14 \\
\end{array}
\]

8 (a) Plot the scores on the scatter graph. [2 marks]

8 (b) What is the median score for test A? [1 mark]

Answer __________________________
The data for one of the students on Test B seems unusual.

On the scatter graph, put a circle around the point that represents this student.
Give a reason for your choice.

[2 marks]
9 The cost of fuel is £1.10 per litre.
1 gallon = 4.5 litres

9 (a) Work out the cost of 1 gallon.

[3 marks]

Answer £

9 (b) A car travels 35 miles per gallon of fuel.

How many gallons are used for a journey of 105 miles?

[2 marks]

Answer 

gallons
The diagram shows a rectangle.

Not drawn accurately

24 cm

32 cm

The rectangle is cut in half with one half thrown away.
This is repeated a number of times.

10 (a) Which size of rectangle is not possible after three cuts?
Circle your answer.

4 cm by 24 cm
32 cm by 3 cm
16 cm by 12 cm
8 cm by 12 cm

[1 mark]

10 (b) What fraction of the original rectangle is left after 3 cuts?

[2 marks]

Answer ___________________________
Work out the value of $x$.

Not drawn accurately

Answer ___________________ degrees
12  Last season a football club sold 8000 season tickets at £250 each.  
This season the season ticket price is reduced by 20% to £200  
If the club sell 20% more tickets will the amount of money they receive increase,  
decrease or stay the same?  
You **must** show your working

[5 marks]

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Answer  

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Turn over for the next question
13. Solve \(8x - 3 = 6x - 9\)  

\[ x = \ldots \]

14. How many sixths are in 1.5?  
Circle your answer.  

\[ 4 \quad 6 \quad 9 \quad 15 \]

15. What is 150% of 36?  
Circle your answer.  

\[ 18 \quad 24 \quad 54 \quad 186 \]
16 (a) Work out the size of angle $x$.  

[1 mark]

Answer \underline{\hspace{2cm}} degrees

16 (b) Work out the size of angle $y$.  

You must show your working, which may be on the diagram.  

[2 marks]

Answer \underline{\hspace{2cm}} degrees
Harry is tiling a wall of area 25 m²
A tub contains 15 kg of tile cement.
The instructions say 2 kg of tile cement will tile 1 m² of wall.

17 (a) How many tubs does Harry need to buy? [3 marks]

Answer

17 (b) In fact, Harry uses more than 2 kg of tile cement per m²
Without needing to buy more tubs, what is the maximum amount he could use per m²? [2 marks]

Answer ___________________________ kg
18. Work out \( \frac{3.6}{0.4} \)

Circle your answer. [1 mark]

90  9  0.9  0.09

19. Expand and simplify \( 3(2x - 5) + 4(2x + 1) \) [2 marks]

Answer

Turn over for the next question
A circle has radius 6 cm
Two diameters split the circle into four sectors, as shown.

Area of sector $A$ : Area of sector $B = 1 : 3$

Work out the area of sector $A$.
Give your answer in terms of $\pi$.

[3 marks]

Answer ___________________________ cm$^2$
21 The table shows information about the times for 100 people to complete a task.

<table>
<thead>
<tr>
<th>Time, $t$, (minutes)</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0 &lt; t \leq 5$</td>
<td>17</td>
</tr>
<tr>
<td>$5 &lt; t \leq 10$</td>
<td>28</td>
</tr>
<tr>
<td>$10 &lt; t \leq 15$</td>
<td>33</td>
</tr>
<tr>
<td>$15 &lt; t \leq 20$</td>
<td>22</td>
</tr>
</tbody>
</table>

The shortest time was 3 minutes 40 seconds.

21 (a) Work out the greatest possible range of times. [2 marks]

Answer ____________ minutes ____________ seconds

21 (b) Jack says,

"The median time is exactly 10 minutes."

Give a reason why he must be incorrect. [1 mark]

Turn over for the next question
22. Work out the value of \( (\sqrt{5})^2 + (\sqrt{6})^2 - (\sqrt{7})^2 \)
You must show your working.

[1 mark]

Answer ________________________________
23 Using ruler and compasses, construct a triangle $ABC$ so that

- $BC$ is perpendicular to $AB$
- $AC = 9$ cm

$AB$ has been drawn for you.

[3 marks]
A bag contains 20 counters. 
10 of the counters are red, 8 are blue and 2 are yellow.

Three counters are taken out at random.

(a) If all three of these counters are the same colour, what is the probability that the next counter taken out at random is yellow?

Answer __________________________________________________________________________

(b) If all three of these counters are different colours, what is the probability that the next counter taken out at random is yellow?

Answer __________________________________________________________________________
25 List the integers that satisfy both these inequalities.

\[ 2x + 7 < 0 \]

and \[ x > -10 \]  

Answer

26 \( y \) is directly proportional to \( x \).

Complete the table.

<table>
<thead>
<tr>
<th>( x )</th>
<th>(-8)</th>
<th>0</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>( y )</td>
<td></td>
<td></td>
<td>63</td>
</tr>
</tbody>
</table>
27 (a) Complete the table of values for \( y = x^2 - 2x \)  

<table>
<thead>
<tr>
<th>( x )</th>
<th>(-1)</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
</table>
| \( y \) | 0 | -1 | \  

[2 marks]

27 (b) Draw the graph of \( y = x^2 - 2x \) for values of \( x \) from \(-1\) to 3  

[2 marks]

27 (c) Write down the coordinates of the turning point of the graph.  

Answer \((\_\_, \_\_\_)\)
Jon is drawing a quadrilateral.
The length of each side is 5.2 cm to 1 decimal place.

28 (a) Complete the error interval for the length of one side. [2 marks]

Answer \( \quad \text{cm} \leq \text{length} < \quad \text{cm} \)

28 (b) Complete the error interval for the perimeter. [2 marks]

Answer \( \quad \text{cm} \leq \text{perimeter} < \quad \text{cm} \)

END OF QUESTIONS