Please write clearly in block capitals.

Centre number  | Candidate number
Surname        |                             
Forename(s)    |                             
Candidate signature |                           

GCSE MATHEMATICS
Foundation Tier Paper 1 Non-Calculator

Thursday 24 May 2018 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.
• Fill in the boxes at the top of this page.
• 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 graph paper, tracing paper and more answer 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. Work out \( \frac{1}{2} \times 5 \)
   Circle your answer. [1 mark]

   \[
   \frac{5}{10} \quad 2 \frac{1}{2} \quad \frac{1}{10} \quad 2 \frac{1}{5}
   \]

2. Circle the number that is 5 less than \(-2\) [1 mark]

   \[-10 \quad -7 \quad -3 \quad 3\]

3. Simplify \( 3 \times a \times 3 \times a \)
   Circle your answer. [1 mark]

   \[9a \quad 6a^2 \quad 9a^2 \quad 6a\]
4 Which shape is similar to shape X?

Circle the correct letter.

A       B  

C       D

[1 mark]
5 Work out 20% of 14 000 [2 marks]

Answer

6 (a) Write 0.85 as a fraction in its simplest form. [2 marks]

Answer

6 (b) Write $\frac{5}{8}$ as a decimal. [1 mark]

Answer
7 A rectangular carpet measures 8 m by 6 m
Part of the carpet is covered by a square rug of length 2 m

Show that \( \frac{1}{12} \) of the carpet is covered by the rug.

[2 marks]
8  Sam, Carl and Erik share 40 sweets.  
Erik gets the largest share.  
What is the **smallest** possible number of sweets that Erik could get?  

[2 marks]

Answer

9  The time in Rio is three hours behind London.  
The time in New York is five hours behind London.  
What is the time in New York when it is 1.00 am in Rio?  

[2 marks]

Answer

Here is a list of numbers.

5 6 1 3 5 5 8 4 2 2

(a) Work out the median.

Answer ____________________________ [2 marks]

(b) Work out the mean.

Answer ____________________________ [2 marks]
11 300 passengers go on a coach trip.
   Each coach takes 50 passengers.
   Each passenger pays £25

The table shows the costs for the coach company.

<table>
<thead>
<tr>
<th>Cost for each coach</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pay for driver</td>
<td>£90</td>
</tr>
<tr>
<td>Fuel</td>
<td>70p per mile</td>
</tr>
</tbody>
</table>

Each coach travels 200 miles.

Work out the total profit the company makes from this trip. [6 marks]

Answer £_________________________
12 (a) Work out \(16.4 - 3.92 + 7.8\) [2 marks]

Answer

12 (b) Work out \(2843.61 \div 7\) [2 marks]

Answer

Turn over for the next question
In a game, two fair spinners are spun.

If the numbers the arrows land on are different, the score is the **higher** number.
If the numbers the arrows land on are the same, the score is 0

13 (a) Complete the table to show the possible scores.

<table>
<thead>
<tr>
<th>Spinner A</th>
<th>Spinner B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2</td>
<td>2 2 3 5</td>
</tr>
<tr>
<td>4 6</td>
<td></td>
</tr>
</tbody>
</table>

13 (b) Write down the probability that the score is an **odd** number.

Answer ________________________________
13 (c) The same game is played using spinners C and D. The numbers on C are shown.

![Spinner C](image)

![Spinner D](image)

The table shows some of the possible scores.

<table>
<thead>
<tr>
<th></th>
<th>Spinner C</th>
<th></th>
<th>Spinner D</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td></td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td></td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>0</td>
<td></td>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>

Write the missing numbers on spinner D.

[2 marks]
14 2 people working at the same rate will take 6 hours to paint a room.

14 (a) Assuming that they all work at this rate,
how long will it take 3 people to paint the room?

[2 marks]

Answer ____________________________ hours

14 (b) In fact, the third person works at a faster rate.
How does this affect the time to paint the room?

[1 mark]
15 \[3a + b = 7\] and \[6x + 8y = 40\]

Show that \(9a + 3b\) has a greater value than \(3x + 4y\) [2 marks]
16 Circle the point that lies on the line \( x - 3 = 0 \)  

(3, 0) (0, 3) (−3, 0) (0, −3)  

[1 mark]

17 \( a \) is a negative odd number.  

Circle the words that describe \( a^2 \)  

negative and odd negative and even  

positive and odd positive and even  

[1 mark]

18 Circle the ratio which is the same as the scale 1 cm represents 1 km  

1 : 100 1 : 1000 1 : 10 000 1 : 100 000  

[1 mark]
19 Circle the percentage that is closest in value to \( \frac{1}{3} \) [1 mark]

\[
\begin{array}{cccc}
30\% & 33\% & 33.3\% & 33.4\%
\end{array}
\]

20 Work out \( \sqrt{121} - (13 - 5 \times 2)^2 \) [3 marks]

Answer

Turn over for the next question
21 (a) Reflect the triangle in the line $x = 2$

[2 marks]
21 (b) Rotate the kite 90° anticlockwise about (0, 0) [2 marks]
Anna plays a computer game.
Each game is a win or a loss.

   She wins three quarters of her first 24 games.
   She then wins her next 12 games.

For all 36 games, work out the ratio wins : losses
Give your answer in its simplest form.

Answer ________________ : ________________
23 A solid shape is made from centimetre cubes. Here are the plan, side elevation and front elevation of the shape.

Plan

Side elevation

Front elevation

Centimetre cubes are added to make this cuboid.

How many cubes are added? [3 marks]

Answer ________________________________

6
24 Divide 405 in the ratio 4 : 11

Answer ___________ and ___________

[3 marks]

25 The height of Zak is 1.86 metres.
The height of Fred is 1.6 metres.
Write the height of Zak as a fraction of the height of Fred.
Give your answer in its simplest form.

Answer ________________________

[3 marks]
26. \(A (0, 2)\) and \(B (6, 5)\) are points on the straight line \(ABCD\).

\[AB = BC = CD\]

Work out the coordinates of \(D\). 

[3 marks]

Answer \((\underline{\quad}, \underline{\quad})\)

Turn over for the next question
A coin is thrown 50 times. It lands on heads 31 times.

27 (a) Write down the relative frequency it lands on heads. [1 mark]

Answer

27 (b) Raj says, “The coin is biased towards heads.” Use the data to give a reason why he might be correct. [1 mark]

Solve $5(x + 3) < 60$ [2 marks]

Answer
29. The range of a set of numbers is $15\frac{1}{4}$.
   The smallest number is $-2\frac{7}{8}$.
   Work out the largest number. [3 marks]

Answer

30. $y$ is inversely proportional to $x$.

Complete the table. [2 marks]

<table>
<thead>
<tr>
<th>$x$</th>
<th>12</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>$y$</td>
<td>4</td>
<td>8</td>
</tr>
</tbody>
</table>
A large rectangle is made by joining three identical small rectangles as shown.

The perimeter of one small rectangle is 15 cm
Work out the perimeter of the large rectangle.

[4 marks]

Answer ___________________________ cm
Put these numbers in order from smallest to largest.

\[ 8 \times 10^{-4} \quad 4 \times 10^{-2} \quad 6 \times 10^{-4} \quad 0.07 \]

[2 marks]

Smallest

Largest

END OF QUESTIONS