GCSE BITESIZE examinations

General Certificate of Secondary Education

Specimen paper

MATHEMATICS
FOUNDATION TIER

Paper 1 Non-calculator

Time allowed: 1 hour 30 minutes.

You must not use a calculator.

The maximum mark for this paper is 100.

Mark allocations are shown in brackets.

Show clearly how you work out your answer.

In addition to this paper, you will require:

- a ruler graduated in centimetres and millimetres
- protractor
- compasses
- pen
- HB pencil
- eraser
- tracing paper (optional)
Formulas sheet: Foundation Tier
You may use the following formulas:

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

Volume of prism = area of cross-section × length
Answer all questions in the spaces provided.

1. (a) Work out 1,436 + 217

Answer: ………………………………………………………… (1 mark)

(b) Calculate 26 × 19

Answer: ………………………………………………………… (1 mark)

(c) Work out 110 ÷ 4 exactly

Answer: ………………………………………………………… (1 mark)
2. (a) Write \( \frac{2}{5} \) as a decimal.

Answer: ………………………………………………………… (1 mark)

(b) Write 0.38 as a percentage.

Answer: ………………………………………………………… (1 mark)

(c) Write 36% as a fraction in its simplest terms.

Answer: ………………………………………………………… (2 marks)

(d) Write three hundred thousand in figures.

Answer: ………………………………………………………… (1 mark)

(e) \( \frac{7}{8} \) of the children in a school are right-handed. What fraction of the children in the school are left-handed?

Answer: ………………………………………………………… (1 mark)
3. (a) Write down the coordinates of the points A, B and C.

A (…….. , ……..) B (…….. , ……..) C (…….. , ……..)
(3 marks)

(b) Write down the coordinates of the point D, which makes a rectangle with A, B and C.

D (…….. , ……..)  
(2 marks)

4. (a) Circle the fractions in the list which are equivalent to \( \frac{3}{4} \)

\[
\frac{33}{44} \quad \frac{4}{7} \quad \frac{9}{12} \quad \frac{13}{14} \quad \frac{30}{40} \quad \frac{4}{5} \quad \frac{21}{28}
\]

(2 marks)

(b) Circle the numbers in the list that are equal to \( \frac{1}{4} \)

\[
2.5\% \quad 14\% \quad 0.25 \quad \frac{3}{12} \quad 0.14 \quad 25\% \quad \frac{1}{14}
\]

(2 marks)
5. (a) Add one square to this pattern to give it one line of symmetry.

(b) Draw one line of symmetry onto this pattern.

(c) Name the shape that this pattern is a net of:

Answer: .................................................................
6. (a) What is a six-sided polygon called?

Answer: .......................................................... (1 mark)

(b) What is the total of its interior angles?

Answer: ..........................................................° (2 marks)

(c) If the polygon is regular, what is the size of each interior angle?

Answer: ..........................................................° (1 mark)

7. The chart shows the number of winners of each prize in a local lottery.

(a) How many people won a £20 prize?

Answer: .......................................................... (1 mark)

(b) What is the mode prize?

Answer: £.......................................................... (1 mark)

(c) What is the median prize?

Answer: £.......................................................... (2 marks)
8. (a) Find the value of $3a + 2b$ when $a = 6$ and $b = 5$.

Answer: ................................................................. (2 marks)

(b) Find the value of $2x^2$ when $x = 3$

Answer: ................................................................. (1 mark)

(c) Find the value of $5x - 3y$ when $x = -2$ and $y = -4$

Answer: ................................................................. (2 marks)
9. Choose the most appropriate answer from the list above:

(a) Weight of a man
Answer: ................................................................. (1 mark)

(b) Length of a football pitch
Answer: ................................................................. (1 mark)

(b) Height of a room
Answer: ................................................................. (1 mark)

(c) Capacity of a glass
Answer: ................................................................. (1 mark)

10. A ten-sided die with sides numbered 1-10 is thrown.

(a) What is the probability of throwing a 1?

Answer: ...................... (1 mark)

(b) What is the probability of throwing a number less than 4?

Answer: ...................... (1 mark)

(c) What is the probability of throwing a prime number?

Answer: ...................... (2 marks)
11. The graph shows the motion of a high-speed model car.

(a) How far away from its starting point was the car after 7 seconds?
Answer: ......................................................... .......m (1 mark)

(b) How far did the car travel in the first 4 seconds?
Answer: ......................................................... .......m (1 mark)

(c) How fast did the car go in the first 4 seconds?
Answer: .................................................................m/s (2 marks)

(d) Between what times was the car travelling fastest?
Answer: ................................................................. (1 mark)

(e) Describe what is happening between 4 and 6 seconds.
Answer: ................................................................. (1 mark)
12. (a) Simplify $4a + 7b + 6a - 3b - 2a$

Answer: …………………………………………………………..

(2 marks)

(b) Simplify $3(x + 2) + 5x$

Answer: …………………………………………………………..

(2 marks)

(c) Solve $x + 5 = 12$

Answer: …………………………………………………………..

(1 mark)

(d) Solve $5x - 2 = 13$

Answer: …………………………………………………………..

(1 mark)

(e) Solve $7x - 14 = 4x + 7$

Answer: …………………………………………………………..

(2 marks)
13. (a) A new breakfast cereal is sold in boxes, as shown. What is the volume of the box?

Answer: .................... cm$^3$  (2 marks)

(b) In a promotion, the company is offering “20% extra free”. What is the new volume?

................................................................. cm$^3$  (2 marks)
A survey looked at 90 people’s favourite TV magazine. The results are shown in the table.

<table>
<thead>
<tr>
<th>Magazine</th>
<th>People</th>
</tr>
</thead>
<tbody>
<tr>
<td>TV First</td>
<td>22</td>
</tr>
<tr>
<td>TV Moments</td>
<td>40</td>
</tr>
<tr>
<td>What’s On?</td>
<td></td>
</tr>
<tr>
<td>My TV Guide</td>
<td></td>
</tr>
</tbody>
</table>

(a) A pie chart is drawn to show the data. What size angle should be used for the slice representing *TV First*?

Answer: .....................................................° (2 marks)

(b) How many people chose *My TV Guide*?

Answer: .....................................................people (2 marks)

Rakesh and Tina share out £40 in the ratio 5:3, in that order. How much do they each get?

Answer: Rakesh £.................. Tina £.................. (3 marks)
A furniture company makes tables and chairs. Tables are sold for £120, and chairs for £40.

(a) An order comes in for 9 tables and 17 chairs. What is the total bill?

Answer: £……………………………………………………………… (2 marks)

(b) Write down an expression for the cost of an order (the retail cost, not the cost of manufacture) for $t$ tables and $c$ chairs.

Answer: £ ………………………………………………………………… (2 marks)
17. (a) Draw the reflection of the shape in the line shown. (2 marks)

(b) Draw a 90° clockwise rotation of the shape using the black circle as the centre. (2 marks)

(c) Enlarge this shape with a scale factor of 3, centre O. (3 marks)
18.  (a) Find the size of the angle marked $x$.

Answer $x = \ldots$° (1 mark)

(b) Find the size of the angles marked $y$ and $z$.

Answers $y = \ldots$° $z = \ldots$° (2 marks)

(c) Fill in the table from this list of angles:

$156°, 90°, 310°, 21°, 175°, 89°$

<table>
<thead>
<tr>
<th>Acute angle</th>
<th>Obtuse angle</th>
<th>Reflex angle</th>
<th>Right angle</th>
</tr>
</thead>
</table>

(2 marks)
The recommended price of a Portable DVD player is £90.
TVs Direct is selling the player with 20% off the recommended price.
Hi-Fi Gear is selling the player with a discount of \( \frac{2}{9} \) off the recommended price.
(a) What is the price in TVs Direct?

Answer: £………………………………………………………….. (2 marks)

(b) What is the price in Hi-Fi gear?

Answer: £………………………………………………………….. (2 marks)

(c) How much more does the DVD player cost in TVs Direct?

Answer: £………………………………………………………….. (1 mark)
20. The picture shows a sequence made from sets of wooden rods.

(a) Write down the numbers of rods in each of the first 4 sets.

Answer: ................................................................. (1 mark)

(b) Write down the next two numbers in the sequence.

Answer: ................................................................. (2 marks)

(c) Write down a rule which explains how to get the next number in the sequence.

Answer: ................................................................. (1 mark)

(d) Write down a rule which explains how to get the number in the sequence by knowing its position in the sequence.

Answer: ................................................................. (2 marks)
21. (a) Complete the table for the equation $y = 3x + 1$

<table>
<thead>
<tr>
<th>$x$</th>
<th>-3</th>
<th>-2</th>
<th>-1</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>$y$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(3 marks)

(b) Draw the graph of $y = 3x + 1$  

(2 marks)

(c) Add the line $y = 7$ to your graph.

(1 mark)