INSTRUCTIONS

- Answer all questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do not use an erasable pen or correction fluid.
- Do not write on any bar codes.
- You should use a calculator where appropriate.
- You may use tracing paper.
- You must show all necessary working clearly.
- Give non-exact numerical answers correct to 3 significant figures, or 1 decimal place for angles in degrees, unless a different level of accuracy is specified in the question.
- For π, use either your calculator value or 3.142.

INFORMATION

- The total mark for this paper is 56.
- The number of marks for each question or part question is shown in brackets [ ].

This document has 12 pages. Any blank pages are indicated.
1 Write the number one hundred and three thousand eight hundred and six in figures.

.................................................  [1]

2

(a) Measure the length of the line $AB$ in millimetres.

................................................. mm [1]

(b) Mark the midpoint, $M$, of the line $AB$.

................................................. [1]

(c) Draw a line through $M$ that is perpendicular to the line $AB$.

................................................. [1]

3 Simplify.

$3x - 4x + 7x$

................................................. [1]

4 Work out the area of a rectangle that is 9.5 m long and 6.8 m wide.

................................................. $m^2$ [2]

5 The probability of picking a red sweet from a bag is 0.05.

Find the probability of not picking a red sweet.

................................................. [1]
Measure the bearing of point B from point A.

.................................................  [1]

7 Work out the value of $\frac{mk^3}{\sqrt{3}}$ when $m = 4$ and $k = 7$.

.................................................  [2]

8 A box, in the shape of a cuboid, has volume 357 cm$^3$. It has a length of 8.5 cm and a width of 6 cm.

Calculate the height of the box.

................................................. cm [2]
9

$PQRS$ is a quadrilateral. 
$RST$ is a straight line.

Find angle $PST$.

\[
\text{Angle } PST = \text{................................................} \ [2]
\]

10 These are the masses, in kg, of 12 parcels.

\[
\begin{array}{ccccccccccc}
0.3 & 0.4 & 1.2 & 0.8 & 1.1 & 2.1 & 1.7 & 1.8 & 1.2 & 2.3 & 0.7 & 1.1 \\
\end{array}
\]

(a) Complete the stem-and-leaf diagram for the 12 parcels.

<table>
<thead>
<tr>
<th>0</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Key: $0 \mid 3$ represents $0.3$ kg

(b) Find the median.

\[
\text{................................. kg} \ [1]
\]
11 The grid shows point $P$ and point $R$.

(a) Write down the coordinates of point $P$.

\[ (.................., ..................) \] \[1\]

(b) $\overrightarrow{PQ} = \left( \begin{array}{c} 3 \\ -2 \end{array} \right)$

Mark point $Q$ on the grid. \[1\]

(c) Find $\overrightarrow{QR}$.

\[ \overrightarrow{QR} = \left( \begin{array}{c} \text{ } \\ \text{ } \end{array} \right) \] \[1\]

(d) Complete this statement.

$\overrightarrow{PQ} + \overrightarrow{QR} = \text{ }$ \[1\]

12 Simplify.

(a) $y^3 \div y^5$

\[ \text{.................................................} \] \[1\]

(b) $7x^0$

\[ \text{.................................................} \] \[1\]
The scatter diagram shows the number of visitors and the total amount spent, in thousands of dollars, at a zoo on each of eight days.

(a) On one of the eight days there are 410 visitors.

Find the total amount spent by visitors during this day.

$ ................................................  \ [1]$

(b) Information for the ninth day is shown in the table.

<table>
<thead>
<tr>
<th>Number of visitors</th>
<th>175</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total amount spent ($1000)</td>
<td>9</td>
</tr>
</tbody>
</table>

Plot this information on the scatter diagram. \ [1] 

(e) Draw a line of best fit on the scatter diagram. \ [1] 

(d) On the tenth day the total amount spent is $22,000.

Estimate the number of visitors on this day.

.................................................  \ [1]
(a) Calculate the height, \( h \), of the triangle.

\[ h = \text{........................................... cm} \ [3] \]

(b) The triangle is one face of a square-based pyramid.

On the 1 cm\(^2\) grid, draw a net of this pyramid.
15 Factorise completely.
\[18px - 27p\]

................................................. [2]

16 The \(n\)th term of a sequence is \(n^2 - 1\).

Find the first three terms of this sequence.

................................................., ................................................., ................................................. [2]

17

The diagram shows two right-angled triangles, \(ABC\) and \(PQR\).

(a) Complete this statement with a geometrical term.

Triangle \(ABC\) is ............................................... to triangle \(PQR\). [1]

(b) Calculate angle \(ABC\).

Angle \(ABC\) = ................................................. [2]
18 Find the lowest common multiple (LCM) of 32 and 40.

................................................. [2]

19 Joe thinks of a number, $n$, trebles it, and subtracts 5. The result is 22.

Write this as an equation in terms of $n$, and solve the equation.

\[ n = \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots [3] \]

20 Find the gradient of line $L$.

................................................. [2]
21 Dominic asks 30 students in his class if they are right-handed or left-handed.
7 students are left-handed.

Work out the expected number of left-handed students in the whole school of 960 students.

................................................. [2]

22 Without using a calculator, work out \( 4\frac{1}{6} - 1\frac{7}{8} \).

You must show all your working and give your answer as a mixed number in its simplest form.

................................................. [3]

23 Solve the simultaneous equations.

You must show all your working.

\[
\begin{align*}
4x - 3y &= 26 \\
5x + 6y &= 13
\end{align*}
\]

\( x = \) .................................................

\( y = \) ................................................. [3]