Paper 1

Calculator not allowed

First name _______________________________________________

Last name _______________________________________________

School _______________________________________________

Remember

- The test is 1 hour long.
- You must not use a calculator for any question in this test.
- You will need: pen, pencil, rubber, ruler, tracing paper and mirror (optional).
- Some formulae you might need are on page 2.
- This test starts with easier questions.
- Try to answer all the questions.
- Write all your answers and working on the test paper – do not use any rough paper. Marks may be awarded for working.
- Check your work carefully.
- Ask your teacher if you are not sure what to do.
Instructions

Answers
This means write down your answer or show your working and write down your answer.

Calculators
You must not use a calculator to answer any question in this test.

Formulae
You might need to use these formulae

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

Prism
Volume = area of cross-section \times length
1. Work out the following.

\[ 65 \times 9 \]

\[ 154 \div 7 \]
2. Here is a number line.

\[ \begin{array}{cccccccc}
-5 & -4 & -3 & -2 & -1 & 0 & 1 & 2 & 3 & 4 & 5 \\
\end{array} \]

It can help you work out the answers to the calculations below.

The first one is done for you.

\[ -3 + 1 = \boxed{-2} \]

\[ -4 + 1 = \boxed{} \quad 1 \text{ mark} \]

\[ -2 + 5 = \boxed{} \quad 1 \text{ mark} \]

\[ 3 - 5 = \boxed{} \quad 1 \text{ mark} \]
3. 8 people took part in a chess competition.

The diagram shows how many games each person won, and how many games each person lost.

(a) Who won the most games? Write the person's letter.

(b) How many games were won by person A?

(c) Each person played 7 games.

Each game was won, lost or drawn.

How many of person D's games were drawn?
4. Write the missing numbers in the boxes.

\[ 8 \times \square = 800 \]

1 mark

\[ 0.8 \times \square = 8 \]

1 mark

5. Look at the calculation below.

Write the correct digits in the boxes.

\[ \begin{array}{c}
4 \quad 3 \\
+ \quad 2 \quad 8 \\
\hline
\quad 7 \quad 5
\end{array} \]
6. On the square grid below, some squares are shaded to make a pattern with exactly 4 lines of symmetry.

(a) On the square grid below, shade some squares to make a pattern with exactly 2 lines of symmetry.

(b) On the square grid below, shade some squares to make a pattern with exactly 1 line of symmetry.
7. (a) Henry thinks of a number **between 1 and 20**

He thinks of the number **12**

For each question below, tick (✓) Yes or No for Henry’s number.

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is it an <strong>even</strong> number?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is it a <strong>multiple of 3</strong>?</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Is it a <strong>factor of 18</strong>?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(b) Ashraf also thinks of a number **between 1 and 20**

The table shows information about his number.

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is it an <strong>even</strong> number?</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Is it a <strong>multiple of 3</strong>?</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Is it a <strong>factor of 18</strong>?</td>
<td></td>
<td>✔</td>
</tr>
</tbody>
</table>

What is Ashraf’s number?
8. Look at the dial.

The pointer starts at 0 and turns **clockwise** around the centre.

(a) Which number does it point to after turning clockwise through $90^\circ$?

(b) The pointer turns clockwise from 3 to 6

Through how many degrees does it turn?
9. The table shows the temperatures in 10 cities on a day in December.

<table>
<thead>
<tr>
<th>City</th>
<th>Temperature in °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Athens</td>
<td>18</td>
</tr>
<tr>
<td>Barcelona</td>
<td>16</td>
</tr>
<tr>
<td>Berlin</td>
<td>7</td>
</tr>
<tr>
<td>Brussels</td>
<td>8</td>
</tr>
<tr>
<td>Dublin</td>
<td>9</td>
</tr>
<tr>
<td>Geneva</td>
<td>6</td>
</tr>
<tr>
<td>Madrid</td>
<td>12</td>
</tr>
<tr>
<td>Moscow</td>
<td>2</td>
</tr>
<tr>
<td>Paris</td>
<td>6</td>
</tr>
<tr>
<td>Rome</td>
<td>19</td>
</tr>
</tbody>
</table>

(a) Which temperature was the mode?

(b) In a different city, the temperature was 5°C lower than in Moscow.
What was the temperature in this city?
10. Write two numbers that add to 10
   One of the numbers must be **positive**.
   The other number must be **negative**.

\[ \square + \square = 10 \]

1 mark

11. Work out the following.

\[ 1.2 \times 6 \]

\[ 1.2 \div 6 \]

1 mark

1 mark
Duckweed is a plant that grows in water.

Pupils added **different amounts of salt** to three identical containers of water. In each container they put some duckweed plants.

Then they recorded the number of leaves on the plants every day.

**Results:**

![Graph showing the number of leaves over time for different amounts of salt.]

**Key:**
- **A:** No salt
- **B:** Small amount of salt
- **C:** Large amount of salt
(a) How many leaves were in each container on day 1?

(b) In container A, how many more leaves were there on day 19 than on day 1?

(c) Duckweed plants with no leaves are dead.
On which day did the pupils record that the plants in container B were dead?

(d) How did the amount of salt affect the change in the number of leaves?
13. Each shape in this question is made from **six cubes**.

Look at this shape.

Which **two** of the diagrams below show the **same** shape?

Tick (√) them both.
14. Write numbers in the boxes to make the statements true.

When \( x = \) then \( x + 3 = \) \[\underline{\hspace{2cm}}\] \[\underline{\hspace{2cm}}\]  

When \( x = \) then \( 3x = \) \[\underline{\hspace{2cm}}\] \[\underline{\hspace{2cm}}\]  

When \( x = \) then \( \frac{x}{3} = \) \[\underline{\hspace{2cm}}\] \[\underline{\hspace{2cm}}\]  

2 marks

15. Boxes of tins are delivered to a shop.

There are 37 boxes.

Each box contains 25 tins.

How many tins are there?

2 marks
16. (a) Write the correct numbers in the gaps below.

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$3\frac{1}{2}$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>10$\frac{1}{2}$</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>21</td>
<td></td>
</tr>
</tbody>
</table>

Use the table to help you work out this calculation.

\[60 \times 3\frac{1}{2} = \quad \]
(b) Is the answer to $11 \times 3 \frac{1}{2}$ a whole number?

[ ] Yes  [ ] No

Explain your answer.

17. Find the values of $x$

$5x - 3 = 12$

$x = \text{___________} \quad 1 \text{ mark}$

$13 + 2x = 3$

$x = \text{___________} \quad 1 \text{ mark}$
18. Look at the square drawn on the graph.

Point A is the centre of the square.

What are the coordinates of point A?

A is (______, ______)  

2 marks
19. Match each expression on the left with the equivalent expression on the right. The first one is done for you.

- $3d + d$ matches $3$
- $3d - d$ matches $2d$
- $3d \times d$ matches $3d$
- $3d \div d$ matches $4d$
- $3d^2$ matches $2d^2$
- $3d^3$ matches $2d^3$
20. Look at the two triangular prisms.

They are joined to make the new shape below.
Complete the views of the new shape on the grid.
The first one is done for you.

21. I am thinking of a number.
My number is a multiple of 6

What three other numbers must my number be a multiple of?

________, ________ and ________
22. There are **25 pupils** in a class.

The table shows information about their test results in maths and English.

<table>
<thead>
<tr>
<th>Level 5</th>
<th>Level 6</th>
<th>Level 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>maths</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level 5</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Level 6</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>Level 7</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Level 8</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

(a) How many pupils had the **same level** in both maths and English?

(b) How many pupils had a **higher** level in **maths** than in English?
23. The diagram shows a square with a **perimeter** of **12 cm**.

Six of these squares fit together to make a rectangle.

What is the **area** of the **rectangle**?

You **must** give the correct unit with your answer.

---

Not drawn accurately

Not drawn accurately

---

1 mark

---

1 mark
24. The table shows whether pupils in a class walk to school.

<table>
<thead>
<tr>
<th></th>
<th>Walk to school</th>
<th>Do not walk to school</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boys</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Girls</td>
<td>5</td>
<td>10</td>
</tr>
</tbody>
</table>

(a) What percentage of the **boys** walk to school?

\[
\frac{2}{2+8} \times 100\% = \frac{2}{10} \times 100\% = 20\%
\]

(b) What percentage of the **pupils** in this class walk to school?

\[
\frac{2+5}{2+8+5+10} \times 100\% = \frac{7}{25} \times 100\% = 28\%
\]
25. A pupil recorded the times of 23 people running the 100 metres. The stem-and-leaf diagram shows the results.

| 13 | 6 |
| 14 | 1 3 4 |
| 14 | 7 7 8 9 |
| 15 | 0 1 1 3 4 4 |
| 15 | 5 7 8 8 9 |
| 16 | 2 2 4 4 |

Key: \[\begin{array}{c}
13 \mid 6 \text{ represents } 13.6 \text{ seconds}
\end{array}\]

(a) Two of the people ran the 100 metres in 14.7 seconds. How many of them ran the 100 metres faster than this?

\[\begin{array}{c}
\underline{\text{people}}
\end{array}\]

1 mark

(b) What was the range of times?

\[\begin{array}{c}
\underline{\text{seconds}}
\end{array}\]

2 marks
26. For each sequence below, tick (✓) the correct box to show if it is increasing, decreasing or neither.

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

- Increasing: [ ]
- Decreasing: [ ]
- Neither: [ ]

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>13</td>
<td>12</td>
<td>11</td>
<td>10</td>
</tr>
</tbody>
</table>

- Increasing: [ ]
- Decreasing: [ ]
- Neither: [ ]

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>6</td>
<td>8</td>
</tr>
</tbody>
</table>

- Increasing: [ ]
- Decreasing: [ ]
- Neither: [ ]

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

- Increasing: [ ]
- Decreasing: [ ]
- Neither: [ ]

2 marks
27. Find the value of $x$

$$6 + 2x = x - 6$$

$$x = \phantom{0000}$$

2 marks

28. Work out

$$\frac{1 \times 2 \times 3 \times 4 \times 5}{1 \times 2 \times 3} = \phantom{0}$$

1 mark
END OF TEST