# Mathematics

## Paper 2: reasoning

<table>
<thead>
<tr>
<th>First name</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Middle name</td>
<td></td>
</tr>
<tr>
<td>Last name</td>
<td></td>
</tr>
<tr>
<td>Date of birth</td>
<td>Day</td>
</tr>
<tr>
<td>School name</td>
<td></td>
</tr>
<tr>
<td>DfE number</td>
<td></td>
</tr>
</tbody>
</table>
You may not use a calculator to answer any questions in this test.

Questions and answers
You have 40 minutes to complete this test.
Follow the instructions for each question.
Work as quickly and as carefully as you can.
If you need to do working out, you can use the space around the question.
Do not write over any barcodes.
Some questions have a method box like this:

Show your method

For these questions, you may get a mark for showing your method.
If you cannot do a question, go on to the next one.
You can come back to it later, if you have time.
If you finish before the end, go back and check your work.

Marks
The number under each line at the side of the page tells you the maximum number of marks for each question.
Ali puts these five numbers in their correct places on a number line.

511  499  502  555  455

Write the number closest to 500

Write the number furthest from 500
Put these houses in order of price starting with the **lowest price**.

One has been done for you.

B

lowest

1 mark
Write the three missing digits to make this addition correct.

```
  1 5
+ 4 4
 1 5
```
This table shows the number of people living in various towns in England.

<table>
<thead>
<tr>
<th>Town</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bedford</td>
<td>82,448</td>
</tr>
<tr>
<td>Carlton</td>
<td>48,493</td>
</tr>
<tr>
<td>Dover</td>
<td>34,087</td>
</tr>
<tr>
<td>Formby</td>
<td>24,478</td>
</tr>
<tr>
<td>Telford</td>
<td>166,640</td>
</tr>
</tbody>
</table>

What is the **total** of the numbers of people living in Formby and in Telford?

What is the **difference** between the numbers of people living in Bedford and in Dover?
Write each number in its correct place on the diagram.

16  17  18  19

- prime numbers
- square numbers
- even numbers

2 marks
This diagram shows a shaded shape inside a border of squares.

Draw the reflection of the shape in the mirror line.

Use a ruler.
7 Write the two missing values to make these equivalent fractions correct.

\[
\frac{\square}{3} = \frac{8}{12} = \frac{4}{\square}
\]

1 mark

1 mark

8 Circle two numbers that add together to equal 0.25

0.05 0.23 0.2 0.5

1 mark
6 pencils cost £1.68

3 pencils and 1 rubber cost £1.09

What is the cost of 1 rubber?

Show your method

2 marks
Each diagram below is divided into equal sections.

Shade three-quarters of each diagram.
A packet contains 1.5 kg of oats.

Every day Maria uses 50 g of oats to make porridge.

How many days does the packet of oats last?
12 \[ n = 22 \]

What is \(2n + 9\)?

\[ \begin{array}{c}
\end{array} \]

1 mark

\[ 2q + 4 = 100 \]

Work out the value of \(q\).

\[ q = \begin{array}{c}
\end{array} \]

1 mark
A stack of 20 identical boxes is 140 cm tall.

Stefan takes **three** boxes off the top.

How tall is the stack now?
Write all the common multiples of 3 and 8 that are **less than 50**

____________________________

1 mark
Work out what $25^\circ C$ is in $^\circ F$. Show your method.
Write the number that is five less than ten million.

Write the number that is one hundred thousand less than six million.
17 Calculate the size of angles $a$ and $b$ in this diagram.

Not to scale

$160^\circ$

$a = \underline{\hspace{2cm}} \degree$  

$b = \underline{\hspace{2cm}} \degree$

1 mark

18 Write the missing number.

$70 \div \underline{\hspace{2cm}} = 3.5$

1 mark
Miss Mills is making jam to sell at the school fair.

Strawberries cost £7.50 per kg.

Sugar costs 79p per kg.

10 glass jars cost £6.90

She uses 12 kg of strawberries and 10 kg of sugar to make 20 jars full of jam.

Calculate the total cost to make 20 jars full of jam.

Show your method

£
Here are two triangles drawn on coordinate axes.

Triangle B is a reflection of triangle A in the x-axis.

Two of the new vertices of triangle B are (10, –10) and (20, –30).

What are the coordinates of the third vertex of triangle B?

( , )

1 mark
[END OF TEST]

Please do not write on this page.