Mathematics

Paper 2: reasoning

<table>
<thead>
<tr>
<th>First name</th>
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<tr>
<td>Middle name</td>
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<td>Last name</td>
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<tr>
<td>Date of birth</td>
<td>Day</td>
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<td>School name</td>
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Please do not write on this page.
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 one of the questions, 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.
Write the missing number.

One is done for you.

180 is 20 more than 160

___ is 20 more than 237

1 mark
A pack of paper has 150 sheets.

4 children each take 7 sheets.

How many sheets of paper are left in the packet?

Show your method.
This graph shows the temperature in six cities on one day in January.

Which city was 4 degrees **warmer** than Kiev?

What was the **difference** between the temperature in Oslo and the temperature in Berlin?
Here are some shapes made of squares.

A fraction of each shape is shaded.

Match each shape to its equivalent fraction.

One has been done for you.
5. What is 444 minutes in hours and minutes?

   hours   minutes

   1 mark

6. Stefan’s watch shows five minutes past nine.
   The watch is twelve minutes fast.

   What is the correct time?
In the circles, write a multiple that belongs to each set.

One has been done for you.

- **numbers from 1 to 99**  multiple of 10  50
- **numbers from 101 to 199**  multiple of 20
- **numbers from 201 to 299**  multiple of 30
- **numbers from 301 to 399**  multiple of 40

2 marks
Maria bakes cakes and sells them in bags.

She uses this formula to work out how much to charge for one bag of cakes.

\[
\text{Cost} = \text{number of cakes} \times 20\text{p} + 15\text{p for the bag}
\]

How much will a bag of 12 cakes cost?

\[£\]

1 mark

Olivia buys a bag of cakes for £5.15

Use the formula to calculate how many cakes are in the bag.

Show your method

\[\text{cakes}\]

2 marks
Here is a triangle.

Measure the shortest side accurately, in centimetres.

\[
\text{cm}
\]

1 mark

Measure the largest angle.

\[
\text{°}
\]

1 mark
Write the two missing digits to make this long multiplication correct.

\[ \begin{array}{c}
\times \\
4 \quad \square \\
\hline
2 \quad 4 \quad 6 \\
8 \quad 2 \quad 0 \\
\hline
1 \quad 0 \quad 6 \quad 6
\end{array} \]
11 Here is a number written in Roman numerals.

CXV

Write the number in figures.

1 mark

12 What number is halfway between 1.4 and 2.1?

1 mark
The diagram shows a shaded octagon on a square grid.

Line A joins two vertices of the octagon.

Join two other vertices to draw a line **parallel** to line A.

Use a ruler.

Join two vertices to draw a line **perpendicular** to line A.

Use a ruler.
Round 124,531

- to the nearest 10,000
- to the nearest 1,000
- to the nearest 100

2 marks
A shaded isosceles triangle is drawn inside a rectangle.

Calculate the size of angle $a$. 

Show your method.
Large pizzas cost £8.50 each.

Small pizzas cost £6.75 each.

Five children together buy one large pizza and three small pizzas.

They share the cost equally.

How much does each child pay?

Show your method
Seven children measured their heights.

<table>
<thead>
<tr>
<th>Children</th>
<th>Height (cm)</th>
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<tbody>
<tr>
<td>Stefan</td>
<td>144</td>
</tr>
<tr>
<td>Lara</td>
<td>136</td>
</tr>
<tr>
<td>Olivia</td>
<td>142</td>
</tr>
<tr>
<td>Chen</td>
<td>143</td>
</tr>
<tr>
<td>Maria</td>
<td>152</td>
</tr>
<tr>
<td>Dev</td>
<td>148</td>
</tr>
<tr>
<td>Sarah</td>
<td>150</td>
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What is the mean height of the children?
100 girls and 50 boys were asked which kind of chocolate they like best.

These two pie charts show the results.

Dev says,

“The pie charts show that more girls than boys liked milk chocolate best.”

Dev is correct.

Explain how you know.
One gram of gold costs £32.94

What is the cost of half a kilogram of gold?

Show your method

£
On Saturday Lara read \( \frac{2}{5} \) of her book.

On Sunday she read the other 90 pages to finish the book.

How many pages are there in Lara’s book?

Show your method.
[END OF TEST]

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