# Mathematics tests

## Paper 2

**Calculator allowed**

<table>
<thead>
<tr>
<th>First name</th>
<th></th>
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<tbody>
<tr>
<td>Middle name</td>
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<tr>
<td>Last name</td>
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</tr>
<tr>
<td>Date of birth</td>
<td>Day</td>
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<tr>
<td>School name</td>
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<tr>
<td>DfE number</td>
<td></td>
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</tbody>
</table>
Instructions

- You may use a calculator to answer any questions in this test paper.
- Work as quickly and as carefully as you can.
- You have 30 minutes for this test paper.
- 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.

Follow the instructions for each question carefully. This shows where you need to put the answer. If you need to do working out, you can use any space on a page.

Some questions have an answer box like this: Show your method for these questions you may get a mark for showing your method.
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Some questions have an answer box like this:

For these questions you may get a mark for showing your method.
The graph shows the average heights of girls in the UK from age 6 – 11 years.

Emily is 1.38m tall.
She is the average height for her age.
How old is she?

Zoe is 9\frac{1}{2} years old.
She is also 1.38m tall.
How much taller than average is she?
Give your answer in centimetres.
This is part of a number line.
Write in the missing numbers.
Runa and Jon are playing a game using a fair six-sided dice.
Runa throws the dice first, then Jon.

Jon wins the game if his number is greater than Runa’s.

Runa throws the dice.
It shows 3

What is the probability that Jon will win the game?

Runa throws the dice again.
The probability that Jon will win this game is \( \frac{1}{3} \)

What number did Runa throw?
Write the letter of the arrow that points to the number 50000

__________________________ (1 mark)
Here are two plastic bags of £1 coins.

**First bag**
Mass of coins: **190 grams**

**Second bag**
Mass of coins: **123.5 grams**

The **first** bag contains 20 £1 coins.

How many £1 coins does the **second** bag contain?

**Show your method**

(2 marks)
Which square number is closest to 1000?
The box below shows all the possible values for \( x \).

\[ x \text{ is a whole number.} \]

\[ 40 < x < 45 \]

\( x \) could be \( 41, 42, 43 \) or \( 44 \)

Write all the possible values for \( k \).

\[ k \text{ is a whole number.} \]

\[ 29 < 2k < 35 \]

\( k \) could be ______________________

Write all the possible values for \( w \).

\[ w \text{ is a whole number.} \]

\[ 18 < 3w + 1 < 24 \]

\( w \) could be ______________________ (3 marks)
The factors of 11 sum to 12

Write the other number whose factors sum to 12
The dotted line is a diagonal of this rhombus.

If angle $a = 80^\circ$, what is angle $b$?

Show your method

If angle $b = 80^\circ$, what is angle $a$?

(3 marks)
Look at these equations.

\[
\begin{align*}
    a &= 2b \\
    b &= 3c
\end{align*}
\]

Which equation below is also true?
Put a ring round the correct one.

\[
\begin{align*}
    b &= 2a \\
    a &= 2b + 3c \\
    a &= 5c \\
    a &= 6c \\
    a + b &= 5
\end{align*}
\]

(1 mark)
Look at the net drawn on square paper.
It folds to make a prism.

The net below folds to make a different prism.
Draw it on the grid.
Archery is an Olympic sport.

In 2008, two archers called Park and Zhang were in the women’s final.

Both archers shot 12 arrows.

**Zhang won** the final by 1 point.

Complete the table for Zhang below.

You can use the space to show your calculations.
The photograph shows a crop circle that was made in Mexico. People flattened crops to make a pattern inside a circle.

Some people are planning to make a crop circle.
Here is what they plan to do:

- They will make a circle of radius 30m.
- They will flatten about 60% of the area of the circle.
- Together, they can flatten 450m$^2$ in one hour.

The question is on the next page.
About how many hours do the people plan to spend making the crop circle?

You will need to use this formula:

The area of a circle is \(3.142 \times (\text{radius})^2\)

Show your method

(3 marks)
END OF TEST
The photograph on page 16 of this test paper has been provided courtesy of Greenpeace.

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STA/12/5685 (Pupil pack)
STA/12/5686 (Mark scheme pack)