Mathematics test

Paper 2

Calculator allowed

Please read this page, but do not open your booklet until your teacher tells you to start. Write your name and the name of your school in the spaces below.

First name

Last name

School

Remember

- The test is 1 hour long.
- You may use a calculator for any question in this test.
- You will need: pen, pencil, rubber, ruler, tracing paper and mirror (optional) and a calculator.
- 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.

For marker’s use only

<table>
<thead>
<tr>
<th>Total marks</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Borderline check</td>
<td></td>
</tr>
</tbody>
</table>
Instructions

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

Calculators
You may use a calculator to answer any question in this test.
1. Draw lines to match the words to the correct numbers.
The first one is done for you.

- thirty-six 3006
- three hundred and six 36
- three thousand and six 306
- three thousand and sixty 3600
- three thousand six hundred 3060
2. There are 12 pupils in a group.
The table on the opposite page gives information about them.

Use the table to answer these questions.

(a) How many girls are in this group?

(b) Whose birthday is one day after Alex Alcroft’s birthday?

(c) Who is the oldest boy in the group?

(d) A new pupil, Sue Li, joins the group.
She was born exactly 1 month after Laura Miller.
What is Sue’s date of birth?
<table>
<thead>
<tr>
<th>First name</th>
<th>Last name</th>
<th>Male or Female?</th>
<th>Date of birth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alex</td>
<td>Alcroft</td>
<td>M</td>
<td>20.11.92</td>
</tr>
<tr>
<td>Helen</td>
<td>Brooks</td>
<td>F</td>
<td>10.01.93</td>
</tr>
<tr>
<td>Huw</td>
<td>Davies</td>
<td>M</td>
<td>21.11.92</td>
</tr>
<tr>
<td>Ben</td>
<td>Howard</td>
<td>M</td>
<td>24.06.93</td>
</tr>
<tr>
<td>Laura</td>
<td>Miller</td>
<td>F</td>
<td>07.12.92</td>
</tr>
<tr>
<td>Amy</td>
<td>Pound</td>
<td>F</td>
<td>08.06.93</td>
</tr>
<tr>
<td>Surjit</td>
<td>Sandhu</td>
<td>F</td>
<td>03.01.93</td>
</tr>
<tr>
<td>Jade</td>
<td>Smith</td>
<td>F</td>
<td>04.09.92</td>
</tr>
<tr>
<td>Mike</td>
<td>Smith</td>
<td>M</td>
<td>26.01.93</td>
</tr>
<tr>
<td>Leroy</td>
<td>Taylor</td>
<td>M</td>
<td>06.10.92</td>
</tr>
<tr>
<td>Claire</td>
<td>White</td>
<td>F</td>
<td>23.09.92</td>
</tr>
<tr>
<td>Louise</td>
<td>Wilson</td>
<td>F</td>
<td>26.02.93</td>
</tr>
</tbody>
</table>
3. (a) Look at this quadrilateral.

Which angle is biggest? Tick (✓) the correct box below.

- Angle a
- Angle b
- Angle c
- Angle d

1 mark

(b) Now look at this quadrilateral.

Angle e is marked with straight lines.

What does this tell you about the angle?

1 mark
4. To move **from A to B** on the square grid:

- move **North 3**
- then **East 2**

(a) Write the missing direction.

To move **from C to D** on the square grid:

- move **East 3**
- then ____________

(b) Write the missing directions.

To move **around the four sides of a square** on the square grid:

- move **West 1**
- then ____________
- then ____________
- then ____________
5. A shop sells birthday cards.
Each card has a code that shows the price.

<table>
<thead>
<tr>
<th>Code</th>
<th>Price of card</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>95p</td>
</tr>
<tr>
<td>B</td>
<td>£1.25</td>
</tr>
<tr>
<td>C</td>
<td>£1.65</td>
</tr>
<tr>
<td>D</td>
<td>£1.95</td>
</tr>
<tr>
<td>E</td>
<td>£2.35</td>
</tr>
</tbody>
</table>

(a) Karen pays for two cards.
One card has code A on it.
The other has code C.

Altogether, how much does Karen pay?


2 mark

(b) Tariq pays for two cards.
Both cards have code D on them.

Tariq pays with a £10 note.
How much change should he get?


2 mark
(c) Greg pays for two cards.
Altogether he pays £3.60

What could the codes on Greg’s cards be?
There are two different answers. Write them both.

The codes could be _______ and _______, or

the codes could be _______ and _______

1 mark

1 mark
6. Five people played each other at tennis.

The table shows who **won** each game.

For example, when Bob played Ann, Bob won.

<table>
<thead>
<tr>
<th></th>
<th>Ann</th>
<th>Bob</th>
<th>Carl</th>
<th>Dan</th>
<th>Ed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ann</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bob</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carl</td>
<td>Ann</td>
<td>Carl</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dan</td>
<td>Ann</td>
<td>Dan</td>
<td>Carl</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Ed</td>
<td>Ann</td>
<td>Bob</td>
<td>Carl</td>
<td>Dan</td>
<td>✓</td>
</tr>
</tbody>
</table>

(a) **Ann** played four games.

How many games did she **win**?

(b) Write the name of the person who **lost all** their games.

(c) Explain why there is a cross (×) in some of the boxes.
7. There are twelve points marked around this circle. The points are equally spaced. You can join 4 points to make a rectangle.

(a) Join 4 points to make a square.

(b) Join 3 points to make an equilateral triangle.

(c) Join a different set of 3 points to make an isosceles triangle.
8. The square grid shows a rectangle reflected in two mirror lines.

On the square grid below, show the triangle reflected in the two mirror lines.
9. (a) These rules show how to get from one number to the next in these sequences. Use the rules to write the next two numbers in each sequence.

**Rule: Add 8**

| 4 | 12 |   |   |

1 mark

**Rule: Multiply by 3**

| 4 | 12 |   |   |

1 mark

**Rule: Divide by 4 then add 11**

| 4 | 12 |   |   |

1 mark

(b) A sequence of numbers starts like this:

30  22  18

Could the rule be **Subtract 8**?

| Yes | No |

Explain your answer.

1 mark
10. A bottle contains 250ml of cough mixture.

**One adult** and **one child** need to take cough mixture **4 times a day** every day for **5 days**.

Will there be enough cough mixture in the bottle?

Explain your answer.
11. The grids in this question are centimetre square grids.

For each shape on the left, draw a rectangle that has the same area.
The first one is done for you.

<table>
<thead>
<tr>
<th>Shape</th>
<th>Rectangle</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Shape 1" /></td>
<td><img src="image2.png" alt="Rectangle 1" /></td>
</tr>
<tr>
<td><img src="image3.png" alt="Shape 2" /></td>
<td><img src="image4.png" alt="Rectangle 2" /></td>
</tr>
<tr>
<td><img src="image5.png" alt="Shape 3" /></td>
<td><img src="image6.png" alt="Rectangle 3" /></td>
</tr>
</tbody>
</table>
12. The table shows the average length of pregnancy for different mammals.

<table>
<thead>
<tr>
<th>Mammal</th>
<th>Average length of pregnancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dolphin</td>
<td>276 days</td>
</tr>
<tr>
<td>Horse</td>
<td>337 days</td>
</tr>
<tr>
<td>Seal</td>
<td>350 days</td>
</tr>
<tr>
<td>Whale</td>
<td>365 days</td>
</tr>
<tr>
<td>Camel</td>
<td>406 days</td>
</tr>
<tr>
<td>Elephant</td>
<td>640 days</td>
</tr>
</tbody>
</table>

Use the information in the table to answer these questions.

(a) Which mammal has an average length of pregnancy of 1 year?

(b) Which mammal has an average length of pregnancy of 50 weeks?

(c) A human has an average length of pregnancy of about 9 months.
   Which other mammal also has an average length of pregnancy of about 9 months?
13. Write the missing numbers in the boxes.

\[
4 \times \square + 20 = 180
\]
1 mark

\[
4 \times 20 + \square = 180
\]
1 mark

\[
4 \times \square - 20 = 180
\]
1 mark
I use two congruent trapeziums to make the shapes below. Tick (✓) all the shapes that are hexagons.
15. The pupils in a class had a sponsored swim.

They collected £429.24

(a) How much is £429.24 to the nearest hundred pounds?

£

1 mark

(b) How much is £429.24 to the nearest ten pounds?

£

1 mark
16. Wine gums are sweets that are made in different colours.

Pupils tested whether people can taste the difference between black wine gums and other wine gums.

The percentage bar charts show three pupils’ results.

**Key:**
- **Cannot** taste the difference
- **Can** taste the difference

**Ravi’s results**
- 100% cannot taste the difference
- 80% cannot taste the difference
- 60% cannot taste the difference
- 40% cannot taste the difference
- 20% cannot taste the difference
- 0% cannot taste the difference
- Ravi asked 50 people

**Sita’s results**
- 100% cannot taste the difference
- 60% cannot taste the difference
- 40% cannot taste the difference
- 20% cannot taste the difference
- 0% cannot taste the difference
- Sita asked 100 people

**Tina’s results**
- 100% cannot taste the difference
- 80% cannot taste the difference
- 60% cannot taste the difference
- 40% cannot taste the difference
- 20% cannot taste the difference
- 0% cannot taste the difference
- Tina asked 200 people
(a) Complete the table.

<table>
<thead>
<tr>
<th>Number of people who were tested</th>
<th>Number of people who can taste the difference</th>
<th>Number of people who cannot taste the difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ravi</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Sita</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Tina</td>
<td>200</td>
<td></td>
</tr>
</tbody>
</table>

(b) Explain why Tina’s results are likely to be more reliable than Ravi’s or Sita’s.

17. Look at the three expressions below.

\[
8 + k \\
3k \\
k^2
\]

When \( k = 10 \), what is the value of each expression?

\[
8 + k = \underline{\hspace{2cm}} \\
3k = \underline{\hspace{2cm}} \\
k^2 = \underline{\hspace{2cm}}
\]
18. I buy **12 packets** of cat food in a box.

The table shows the different varieties in the box.

<table>
<thead>
<tr>
<th>Variety</th>
<th>Number of packets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cod</td>
<td>3</td>
</tr>
<tr>
<td>Salmon</td>
<td>3</td>
</tr>
<tr>
<td>Trout</td>
<td>3</td>
</tr>
<tr>
<td>Tuna</td>
<td>3</td>
</tr>
</tbody>
</table>

(a) I am going to take out a packet at random from the box. What is the **probability** that it will be **cod**?

1 mark

(b) My cat eats **all** the packets of **cod**.

I am going to take out a packet at random from the ones left in the box. What is the **probability** that it will be **salmon**?

1 mark

(c) A different type of cat food has **10 packets** in a box.

The probability that the variety is chicken is **0.7**

What is the probability that the variety is **not** chicken?

1 mark
19. Some statements in the table are true. Some are false.

Beside each statement, write **true** or **false**.

For **true** statements you must **draw an example**.

The first one is done for you.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Write true or false.</th>
<th>If true, draw an example.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Some triangles have one right angle and two acute angles.</td>
<td>true</td>
<td></td>
</tr>
<tr>
<td>Some triangles have three right angles.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some triangles have three acute angles.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some triangles have one obtuse angle and two acute angles.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some triangles have two obtuse angles and one acute angle.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
20. Three different types of woodpecker live in Britain. The pictogram shows information about the numbers of each type.

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Key:</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>great spotted woodpecker</td>
<td>represents 10 000 woodpeckers</td>
</tr>
<tr>
<td>B</td>
<td>lesser spotted woodpecker</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>green woodpecker</td>
<td></td>
</tr>
</tbody>
</table>

(a) Complete the table below to show the percentages of each type of woodpecker.

<table>
<thead>
<tr>
<th>Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td></td>
</tr>
</tbody>
</table>

1 mark
(b) The ratio of type A : type B woodpeckers is 6 : 1

What is the ratio of type B : type C woodpeckers?

____ : ____

1 mark

21. Write the missing numbers in the boxes.

120mm is the same as ____ cm

1 mark

120cm is the same as ____ m

1 mark

120m is the same as ____ km

1 mark
22. A shop sells toilet rolls.
You can buy them in packs of 9 or packs of 6

Pack of 9 toilet rolls £3.90
Pack of 6 toilet rolls £2.50

Which pack gives you better value for money?
You must show your working.
END OF TEST