Mathematics test

Paper 1

Calculator not 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 must not use a calculator for any question in this test.
▪ You will need: pen, pencil, rubber, ruler and tracing paper (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.

For marker's use only

Total marks ____________________
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 = \text{area of cross-section} \times \text{length}
1. Write the missing numbers on the number lines.

- Number line 1:
  -8
  +3
  -8

- Number line 2:
  -3
  +6
  +6

1 mark

2 marks
2. Look at the diagrams on the centimetre square grid. Work out the area that is shaded on each diagram.

\[ \text{cm}^2 \]

\[ \text{cm}^2 \]

\[ \text{cm}^2 \]
3. (a) Add together 3.7 and 6.5

(b) Subtract 5.7 from 15.2

(c) Multiply 254 by 5

(d) Divide 342 by 6
4. (a) I weigh a melon.

Then I weigh an apple and the melon.

Write the missing numbers in the sentences below.

The melon weighs ............. grams.

The apple weighs ............. grams.

(b) How many grams are in one kilogram?

Put a ring round the correct number below.
5. (a) There are two children in the Smith family.  
The range of their ages is **exactly 7 years**. 
What could the ages of the two children be?  
Give an example.  

\[ \ldots \text{ and } \ldots \]  

1 mark

(b) There are two children in the Patel family.  
They are twins of the **same age**.  
What is the range of their ages?  

\[ \ldots \text{ years} \]  

1 mark
6. Here are four fractions.

\[
\frac{3}{4} \quad \frac{1}{8} \quad \frac{1}{3} \quad \frac{3}{5}
\]

Look at the number line below.

Write each fraction in the correct box.
7. (a) Jackie asked 27 people:

‘Do you like school dinners?’

The bar chart shows her results for ‘Yes’ and ‘No’.
Complete the bar chart to show her result for ‘Don’t know’.

(b) This pictogram also shows her results for ‘Yes’ and ‘No’.
Complete the pictogram to show her result for ‘Don’t know’.
Percentages

8. (a) Complete the sentences.

- ............ out of 10 is the same as 70% 1 mark
- 10 out of 20 is the same as .............% 1 mark

(b) Complete the sentence.

- ........ out of ........ is the same as 5% 1 mark

Now complete the sentence using different numbers.

- ........ out of ........ is the same as 5% 1 mark
Rotating

9. The shapes below are drawn on square grids.

The diagrams show a rectangle that is rotated, then rotated again.
The centre of rotation is marked •

Rotate

90°clockwise

Rotate another
90°clockwise

Complete the diagrams below to show the triangle when it is rotated, then rotated again.
The centre of rotation is marked •

Rotate

90°clockwise

Rotate another
90°clockwise

2 marks
10. I am thinking of a number.

My number **multiplied by 15** is 315

My number **multiplied by 17** is 357

What is my number?

11. Complete the statements below.

When \( x \) is \( \ldots \ldots \) , \( 4x \) is \( \ldots \ldots \)  

1 mark

When \( x \) is \( \ldots \ldots \) , \( 4x \) is 48  

1 mark

When \( x \) is \( \ldots \ldots \) , \( \ldots \ldots \) is 48  

1 mark
12. (a) Look at these three numbers.

\[ 9 \quad 11 \quad 10 \]

Show that the mean of the three numbers is 10

1 mark

Explain why the median of the three numbers is 10

1 mark

(b) Four numbers have a mean of 10 and a median of 10, but none of the numbers is 10

What could the four numbers be?

Give an example.

1 mark
13. The diagram shows triangle PQR.

Work out the sizes of angles $a$, $b$ and $c$

$a = \ldots \, ^\circ$  
$b = \ldots \, ^\circ$  
$c = \ldots \, ^\circ$
14. Solve these equations.

\[3y + 1 = 16\]

\[y = \ldots \]  

\[18 = 4k + 6\]

\[k = \ldots \]  

15. Work out

\[374 \times 23\]
16. (a) P is the **midpoint** of line AB.

What are the coordinates of point P?

\[ P \text{ is } (\ldots, \ldots) \]

1 mark

(b) Q is the **midpoint** of line MN.

The coordinates of Q are \((30, 50)\)

What are the coordinates of points M and N?

\[ M \text{ is } (\ldots, \ldots) \]

1 mark

\[ N \text{ is } (\ldots, \ldots) \]

1 mark
17. The diagram shows a square.

Two straight lines cut the square into four rectangles.

The area of one of the rectangles is shown.

Work out the area of the rectangle marked A.

\[ \text{Area of A} = 2 \times 3 = 6 \text{ cm}^2 \]

2 marks
18. (a) Look at this information.

Two numbers **multiply** to make zero.

One of the statements below is true.
Tick (✓) the true statement.

- Both numbers must be zero.
- At least one number must be zero.
- Exactly one number must be zero.
- Neither number can be zero.

(b) Now look at this information.

Two numbers **add** to make zero.

If **one** number is **zero**, what is the other number?

If **neither** number is **zero**, give an example of what the numbers could be.
19. I join six cubes face to face to make each 3-D shape below.

Then I join the 3-D shapes to make a **cuboid**.

Draw this cuboid on the grid below.
20. How many eighths are there in one quarter?

Now work out \( \frac{3}{4} \div \frac{1}{8} \)

21. Solve this equation.

\[ 75 + 2t = 100 - 2t \]
22. This shape has been made from two congruent *isosceles* triangles.

What is the size of angle $p$?

$p = \ldots \ldots \degree$
23. Bumps are built on a road to slow cars down.

The stem-and-leaf diagrams show the speed of **15 cars** before and after the bumps were built.

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Use the diagrams to write the missing **numbers** in these sentences.

**Before** the bumps:

The maximum speed was ............... mph, and ............... cars went at more than 30 mph.

**After** the bumps:

The maximum speed was ............... mph, and ............... cars went at more than 30 mph.

2 marks
24. The graph shows the straight line with equation \( y = 3x - 4 \)

(a) A point on the line \( y = 3x - 4 \) has an \( x \)-coordinate of 50
What is the \( y \)-coordinate of this point?

(b) A point on the line \( y = 3x - 4 \) has a \( y \)-coordinate of 50
What is the \( x \)-coordinate of this point?
END OF TEST