GCSE Mathematics

Practice Paper 2026

Paper 1 (Non-Calculator)

Higher Tier

How it all Works

Work through the practice booklet, scan the code, watch the live tutorial and check your answers.

Try it out

Answer ALL questions.
Write your answers in the spaces provided.
You must write down all the stages of your working.

1. Find the highest common factor (HCF) of 72 and 90

……

(2 marks)

2. Work out 63.72 ÷ 1.2

Give your answer as a decimal

……

(3 marks)

3. A warehouse stores 520 boxes of goods.
The boxes contain electronics, clothing, toys or books.

$\frac{3}{8}$ of the 520 boxes contain electronics.
30% of the 520 boxes contain clothing.

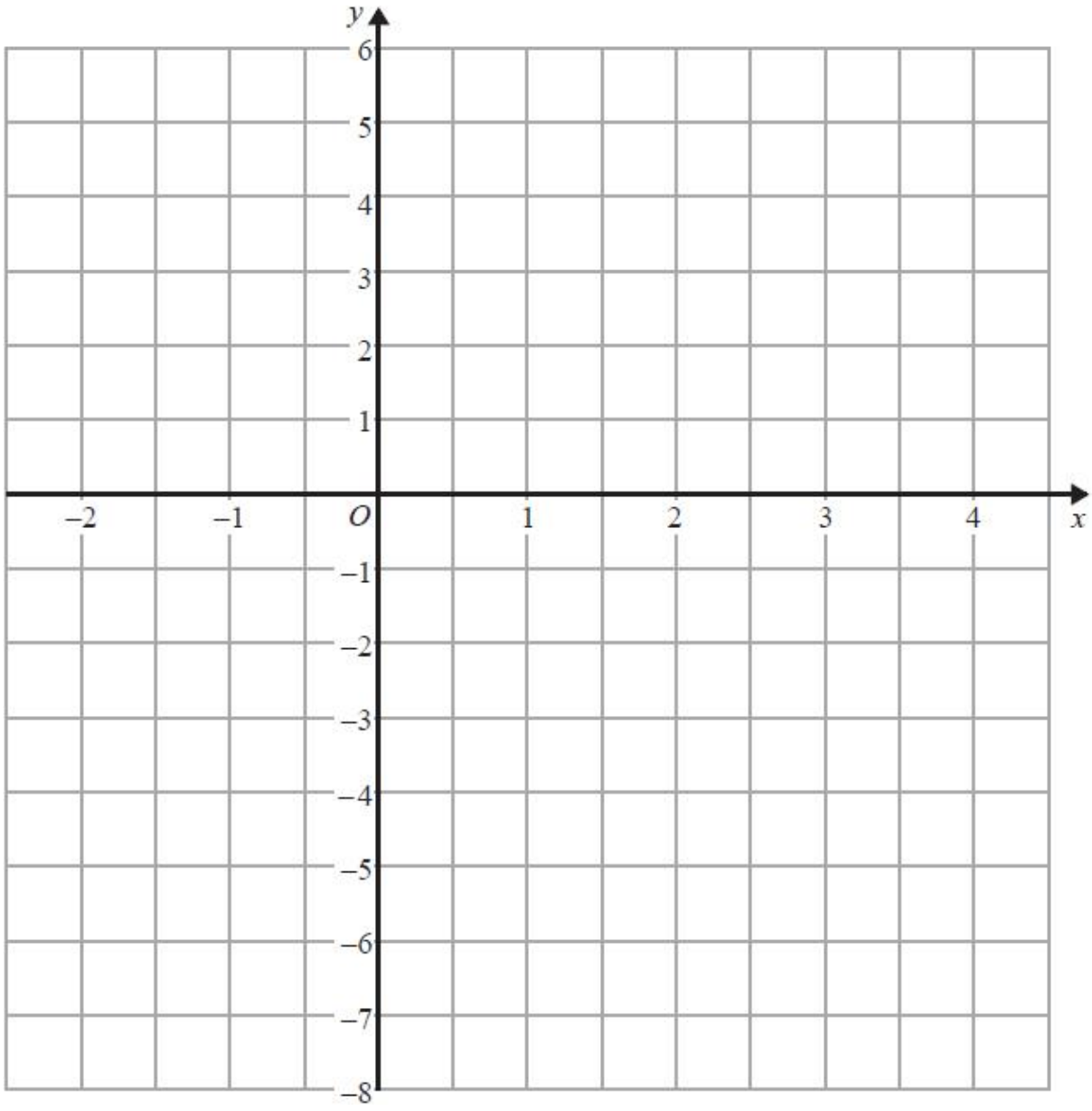
The number of boxes containing toys to the number of boxes containing books is in the ratio $6:7$.

Work out the number of boxes containing books.

.....

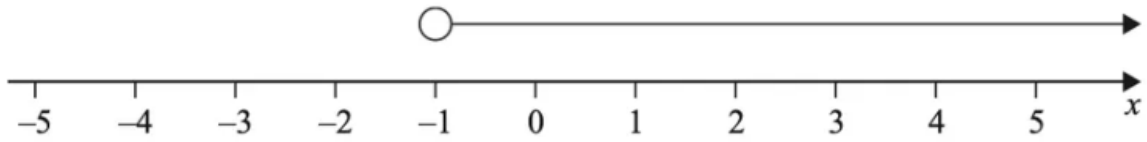
(5 marks)

4. On the grid below, draw the graph of $3x + 2y = 6$ for values of x from −2 to 4



(3 marks)

5. Here is an inequality in x shown on a number line.



(a) Write down the inequality.

.....

(1 mark)

$-12 \leq 3y < 6$

y is an integer

(b) Find all the possible values of y

.....

(2 marks)

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6. Factorise fully $15a^3b^2 - 21a^2$

.....

(2 marks)

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7. (a) Simplify $\frac{9}{(2x)^0}$

.....

(1 mark)

(b) Simplify fully $(32p^{10})^{\frac{3}{5}}$

.....

(2 marks)

8. A school is analysing test results.

There are 20 Year 11 students, 10 Year 10 students and 10 Year 9 students.

The mean score for the Year 10 students is 14.8
The mean score for the Year 9 students is 8.6

A teacher says that the mean score for all 40 students is 11.1

Work out the mean score for the Year 11 students.

.....

(3 marks)

9. (a) Write 0.00549 in standard form.

.....

(1 mark)

(b) Find the value of $(8 \times 10^3)^2$

Give your answer in standard form.

.....

(2 marks)

(c) Find the value of $(7.6 \times 10^5) + (8.7 \times 10^4)$

Give your answer in standard form.

.....

(2 marks)

10. Show that $2\frac{2}{3} \div 6 = \frac{4}{9}$

(3 marks)

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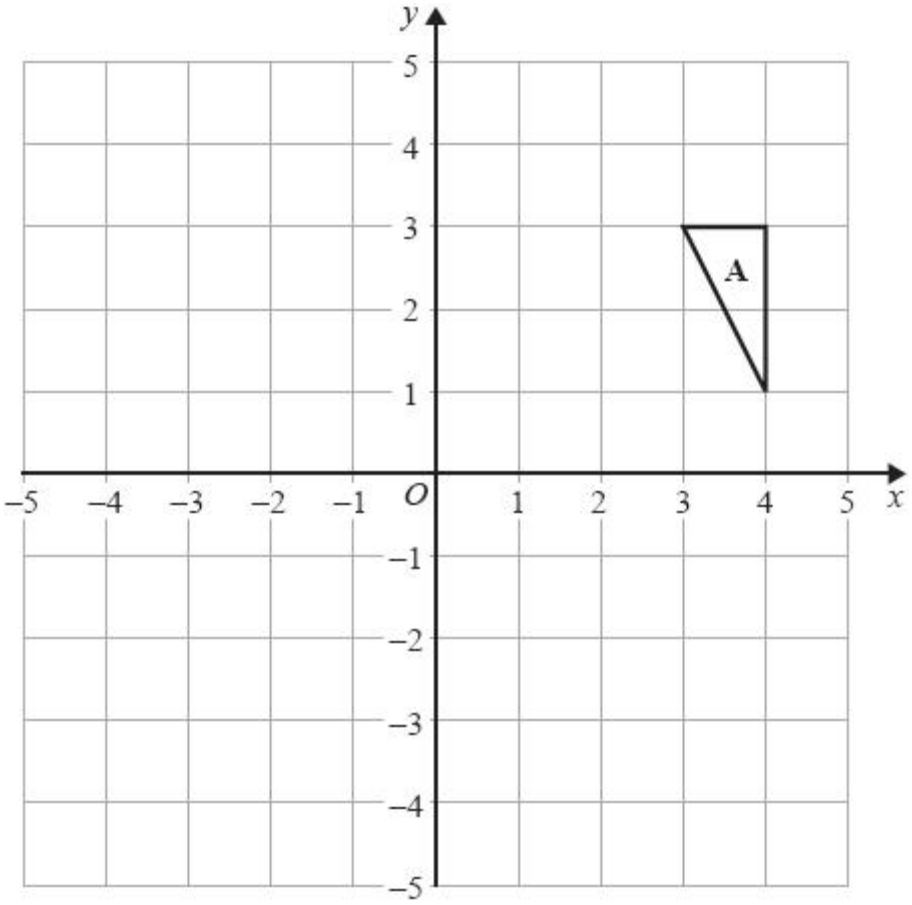
11. Show that $3x(2x + 4)(3x - 1)$ can be written in the form $ax^3 + bx^2 + cx$ where a, b, and c are positive integers.

.....

(3 marks)

12. The diagram shows triangle **A** drawn on a grid.



(a) On the grid, translate triangle **A** by the vector $\begin{pmatrix} -5 \\ -5 \end{pmatrix}$
Label the new triangle **B**.

(1 mark)

(b) On the grid, reflect triangle **B** in the line $y = -x$
Label the new triangle **C**.

(1 mark)

Under the combined transformation that maps triangle **A** onto triangle **C**, the point **P** is invariant.

(c) Write down the coordinates of point **P**.

(..... , ...)
(1 mark)

13. Here are the first five terms of a sequence.

-4 -6 -6 -4 0

Find an expression, in terms of n, for the nth term of this sequence.

.....

(3 marks)

14. Solve $3^{-3x} = 81$

$x =$ .....

(2 marks)

15. Prove algebraically that the difference between the squares of any two consecutive odd numbers is always a multiple of 8

(3 marks)

16. $3a : 4c = 15 : 28$

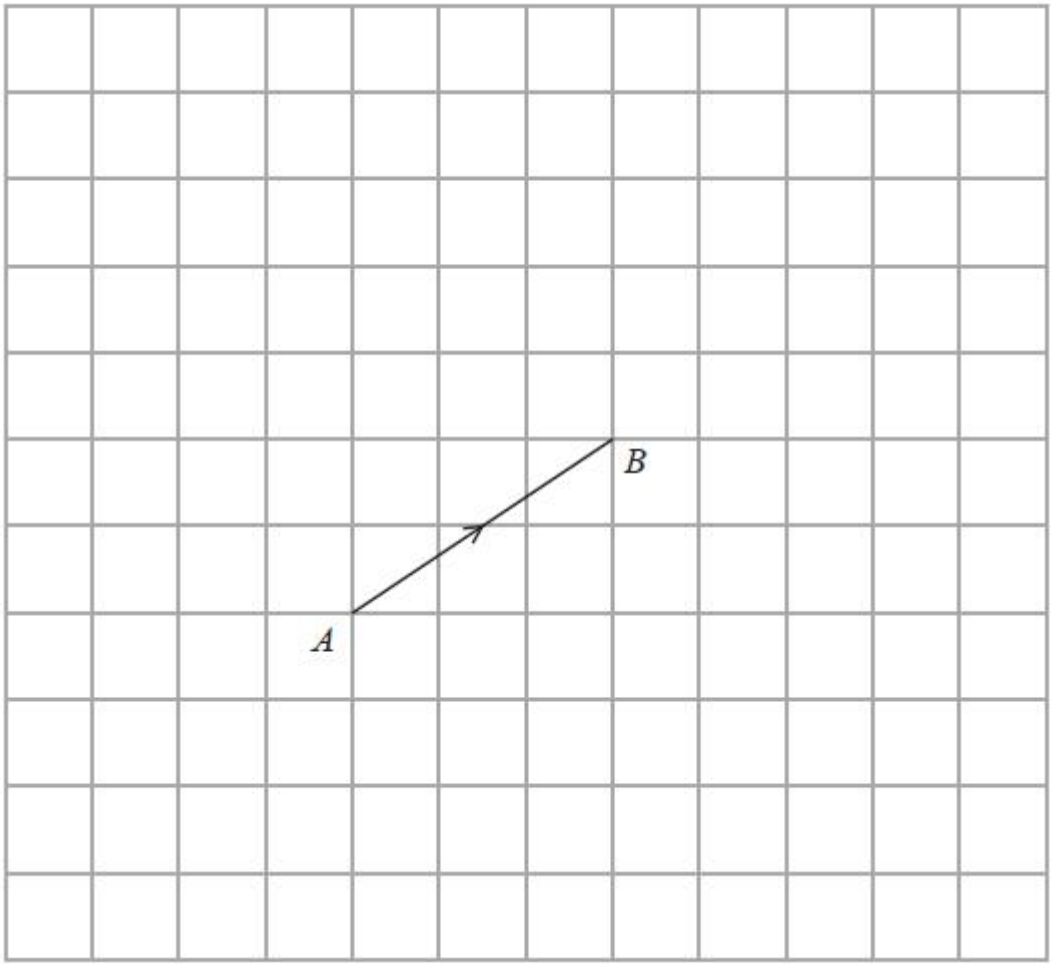
$5b : 6c = 25 : 18$

Show that $a + b : b + c = 25 : 28$

(3 marks)

17. $\overrightarrow{AB} = \begin{pmatrix} 3 \\ 2 \end{pmatrix}$ and $\overrightarrow{BC} = \begin{pmatrix} -4 \\ 2 \end{pmatrix}$

$\overrightarrow{AB}$ is shown on the grid



(a) On the grid draw $\overrightarrow{BC}$

(1 mark)

$$\overrightarrow{AD} = \overrightarrow{AB} - \frac{1}{2}\overrightarrow{BC}$$

(b) On the grid, mark with a cross (x) the position of D.
Label this point D.

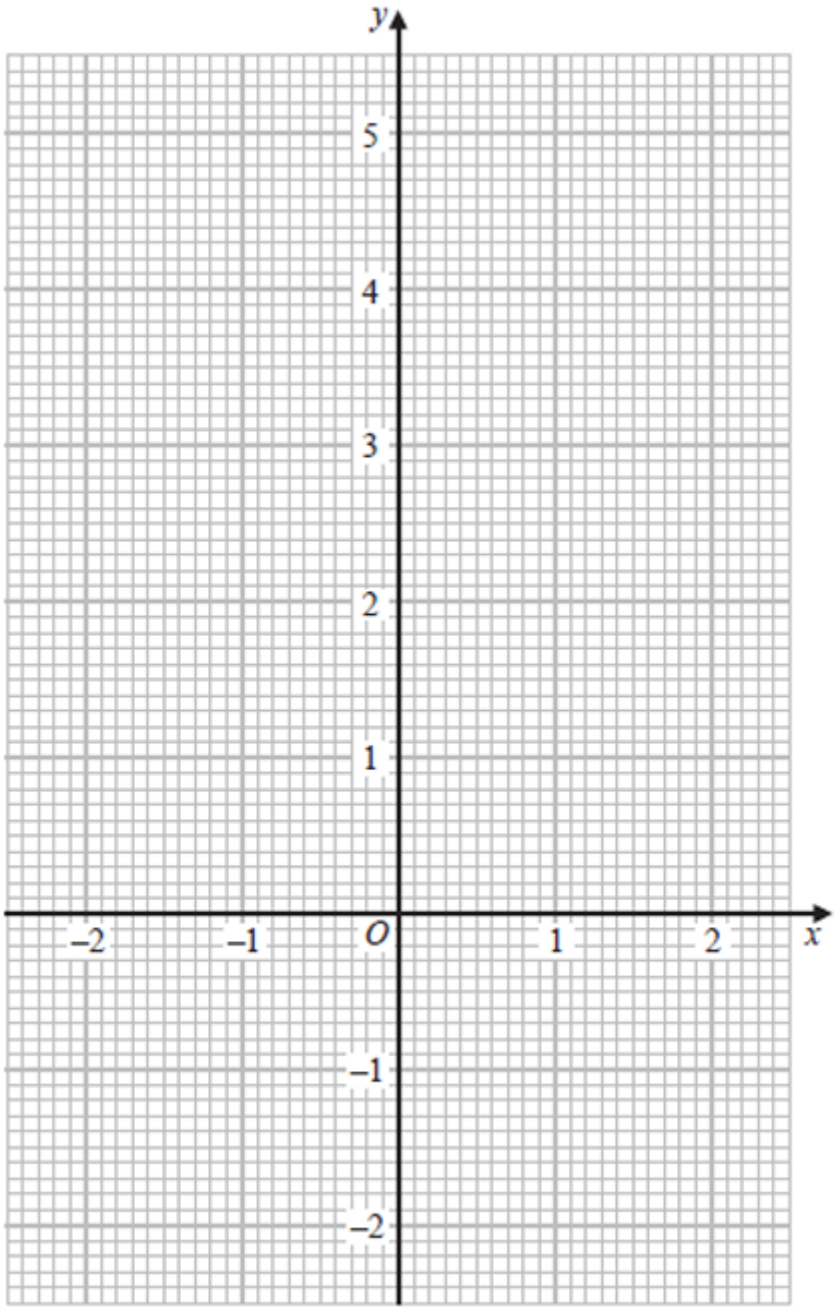
(2 marks)

18. (a) Complete the table of values for $y = x^3 - 3x + 2$

x	-2	-1	-0.5	0	1	1.5	2
y			3.4			0.9	

(2 marks)

(b) On the grid, draw the graph of $y = x^3 - 3x + 2$ for the values of x from -2 to 2



(2 marks)

(c) By drawing a suitable straight line on the grid, use your graph to find an estimate for the solution of

$$x^3 - 2x - 2 = 0$$

Give your answer correct to one decimal place.

.....

(3 marks)

19. Prove algebraically that the recurring decimal $0.3\dot{1}\dot{8}$ can be written as $\frac{7}{22}$

.....

(2 marks)

20. The function f is such that

$$f(x) = \frac{3}{4x-5} \text{ where } x \neq \frac{5}{4}$$

(a) Find $f\left(\frac{1}{4}\right)$

.....

(1 mark)

(b) Find $f^{-1}(x)$

$f^{-1}(x) =$ .....

(2 marks)

The function g is such that

$$g(x) = 2x^2 - 8x - 5$$

(c) Express $g(x)$ in the form $a(x-b)^2 + c$ where a, b and c are integers

.....

(3 marks)

21. $\dfrac{3+\sqrt{2}}{5+\sqrt{8}}$ can be written in the form $a + b\sqrt{2}$

Find the value of a and b

$a =$ .....

$b =$ .....

(4 marks)

22. y is directly proportional to the square root of t.
$y = 20$ when $t = 16$

t is inversely proportional to the cube of x.
$t = 32$ when $x = 2$

Find a formula for y in terms of x.
Give your answer in its simplest form.

.....

(4 marks)

23. Write

$$4 - \left[(x+3) \div \frac{x^2+5x+6}{x-2}\right]$$

as a single fraction in its simplest form.
You must show your working.

.....

(4 marks)

24. Solve algebraically the simultaneous equations

$$x^2 - 4y^2 = 9$$

$$3x + 4y = 7$$

.....

(5 marks)

End of Paper