AQA

Please write clearly in block capitals.

Centre number | | | | | | Candidate number | | | | |

Surname _____

Forename(s) _____

Candidate signature _____

I declare this is my own work.

GCSE MATHEMATICS

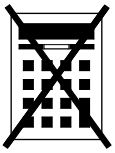
H

Higher Tier Paper 1 Non-Calculator

Wednesday 5 November 2025 Morning Time allowed: 1 hour 30 minutes

Materials

For this paper you must have:
- mathematical instruments
- the Formulae Sheet (enclosed).



You must **not** use a calculator.

Instructions
- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- If you need extra space for your answer(s), use the lined pages at the end of this book. Write the question number against your answer(s).
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information
- The marks for questions are shown in brackets.
- The maximum mark for this paper is 80.
- You may ask for more answer paper, graph paper and tracing paper. These must be tagged securely to this answer book.

Advice

In all calculations, show clearly how you work out your answer.

For Examiner's Use	
Pages	Mark
2–3	
4–5	
6–7	
8–9	
10–11	
12–13	
14–15	
16–17	
18–19	
20–21	
22	
TOTAL	

Answer **all** questions in the spaces provided.

Do not write outside the box

1 (a) Write 834 000 in standard form.

[1 mark]

Answer _____

1 (b) Write 7.9×10^{-2} as an ordinary number.

[1 mark]

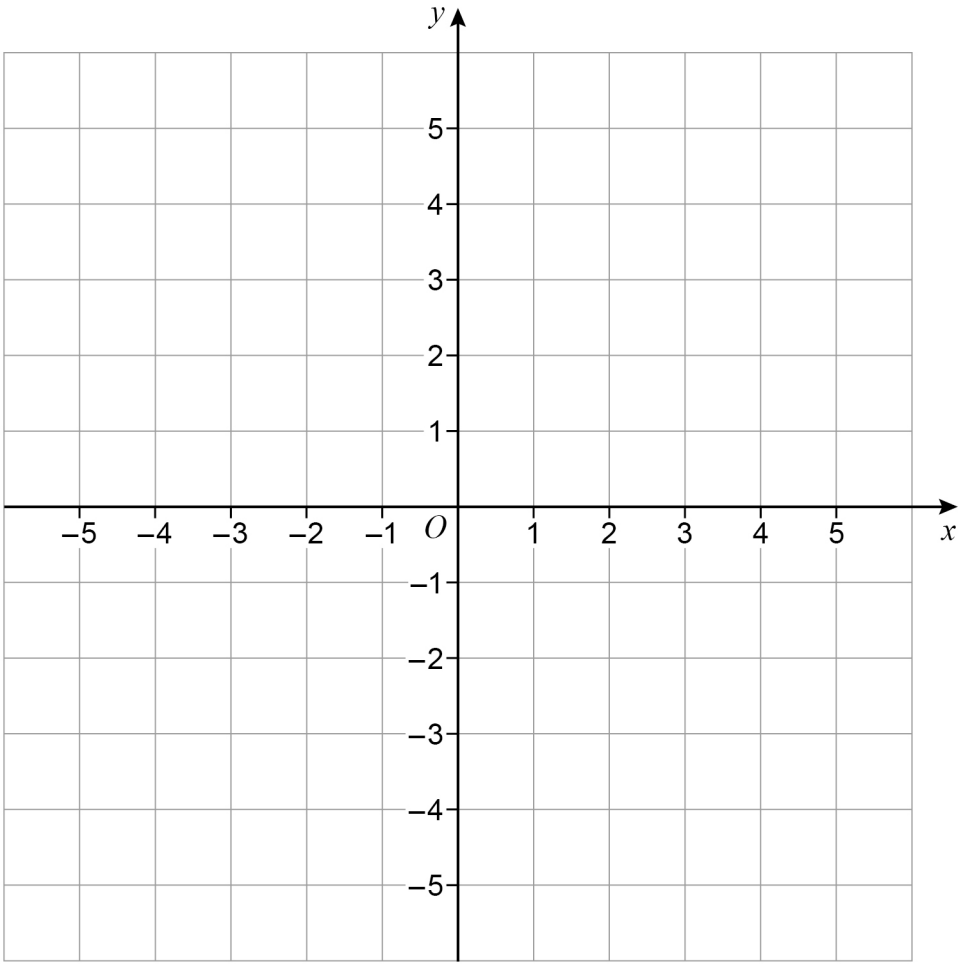
Answer _____

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2 A circle, centre O, has **diameter** 8 units.

Draw the circle on the grid.

[1 mark]



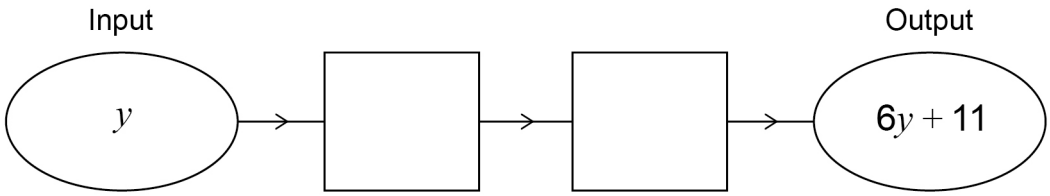
Turn over for the next question

3

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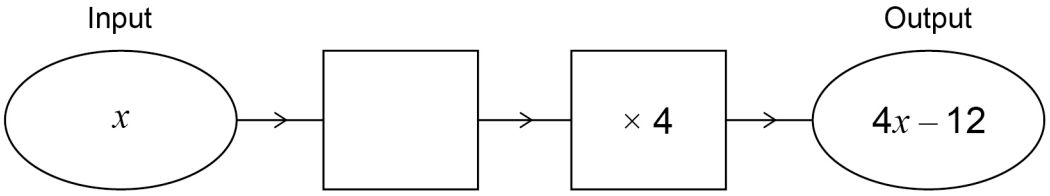
3 (a) Complete the number machine.

[1 mark]



3 (b) Complete the number machine.

[1 mark]



4 The **total surface area** of a cube is 54 cm^2

Work out the side length of the cube.

[3 marks]

Answer _____ cm

Do not write outside the box

5 120 students study a language.

- 40% of the students are in Group A.
- Twice as many from Group A study German as study French.
- Three eighths of the Group B students study French.

	German	**French**	**Total**
Group A			
Group B			
Total			120

5 (a) Complete the two-way table.

[3 marks]

5 (b) A student who studies French is chosen at random.

Work out the probability that they are from **Group B**.

[2 marks]

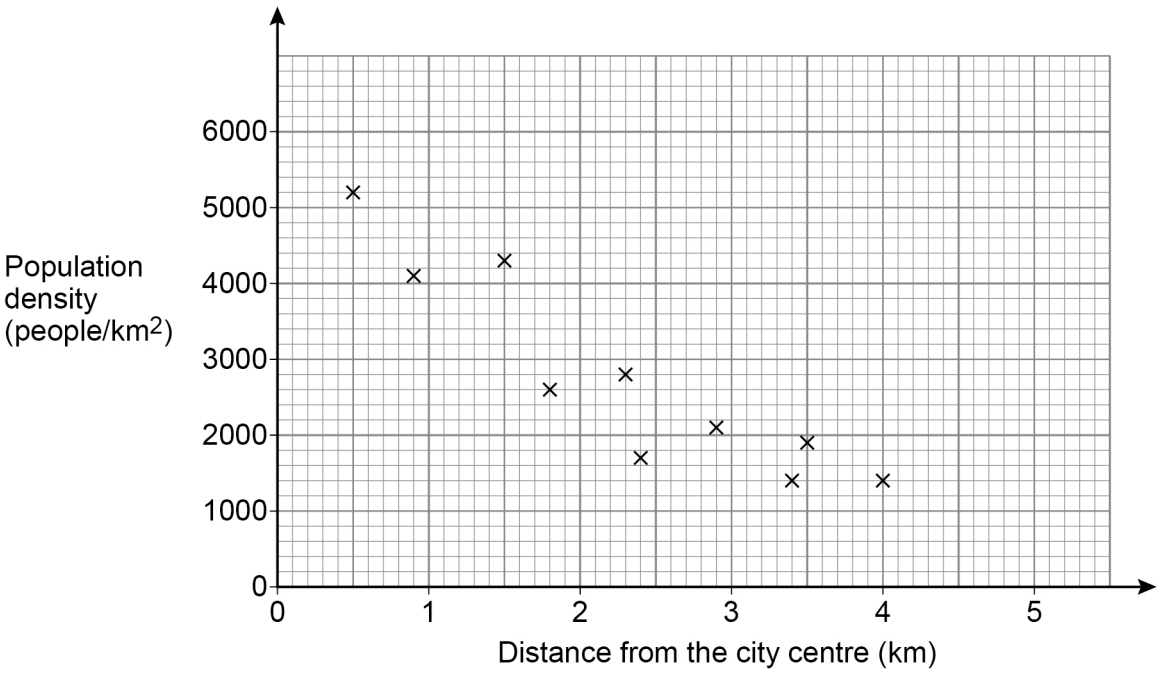
Answer _____

10

Turn over ►

Do not write outside the box

6 The scatter graph shows the population density of ten areas in a city and the distance of the area from the city centre.



6 (a) The scatter graph shows negative correlation.

Describe the relationship between the population density and the distance of the area from the city centre.

[1 mark]

6 (b) Use a straight **line of best fit** to estimate the population density of an area 2 km from the city centre.

[2 marks]

Answer _____ people/km^2

Do not write outside the box

7 (a) Work out $\frac{2}{5} + \frac{7}{20}$

Give your answer as a **decimal**.

[2 marks]

Answer _____

7 (b) x is an integer and $\frac{1}{x}$ converts to a **terminating** decimal.

Kelly says,

"There must be only **one** digit after the decimal point, because $\frac{1}{2} = 0.5$"

Is she correct?

Tick a box.

Yes ☐ No ☐

Give a reason for your answer.

[1 mark]

6

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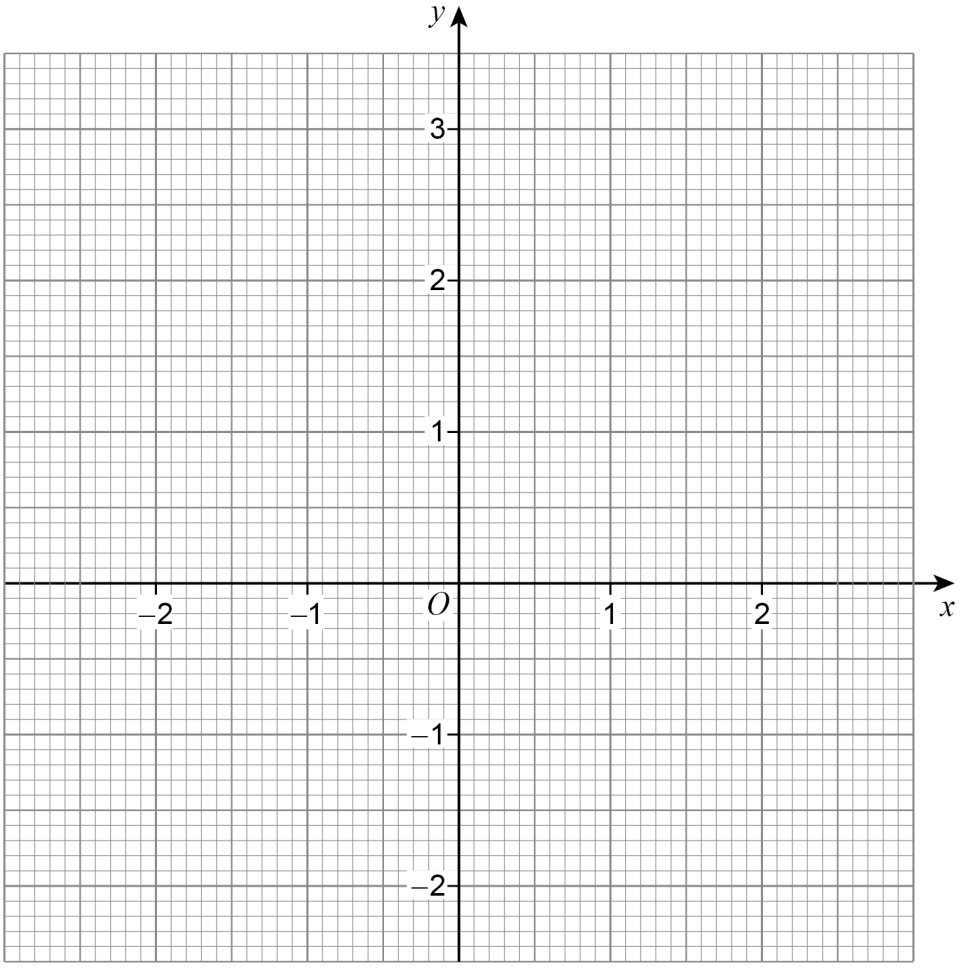
8 (a) Complete the table of values for $x + 2y = 3$

[2 marks]

x	–2	–1	0	1	2
y	2.5			1	0.5

8 (b) Draw the graph of $x + 2y = 3$ for values of x from –2 to 2

[2 marks]

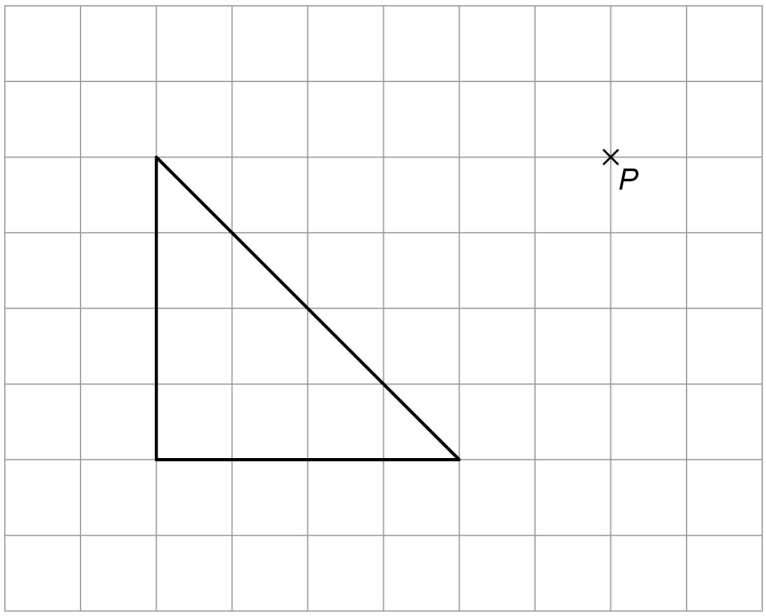


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9 On the grid, draw an enlargement of the triangle with

- scale factor $\frac{1}{2}$
- centre of enlargement P

[3 marks]



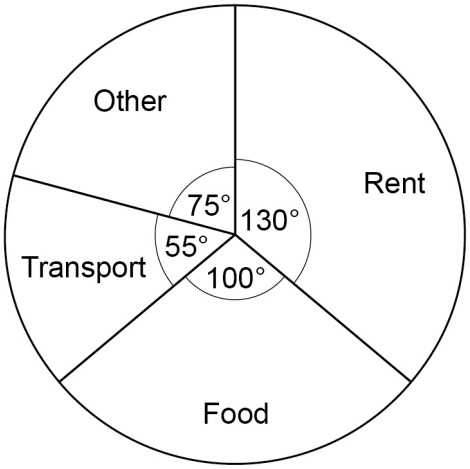
Turn over for the next question

7

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10 The pie chart below shows what Jane spent her money on last month.

Not drawn accurately



10 (a) Write the ratio Transport : Other : Food in its simplest form.

[2 marks]

Answer _____ : _____ : _____

10 (b) Jane spent £390 on rent.

Work out how much she spent on transport.

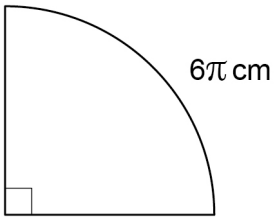
[3 marks]

Answer £ _____

Do not write outside the box

11 A sector has perimeter $6\pi + 24$ cm

Not drawn accurately



Work out the area of the sector.

Give your answer in terms of π

[3 marks]

Answer _____ cm^2

Turn over for the next question

8

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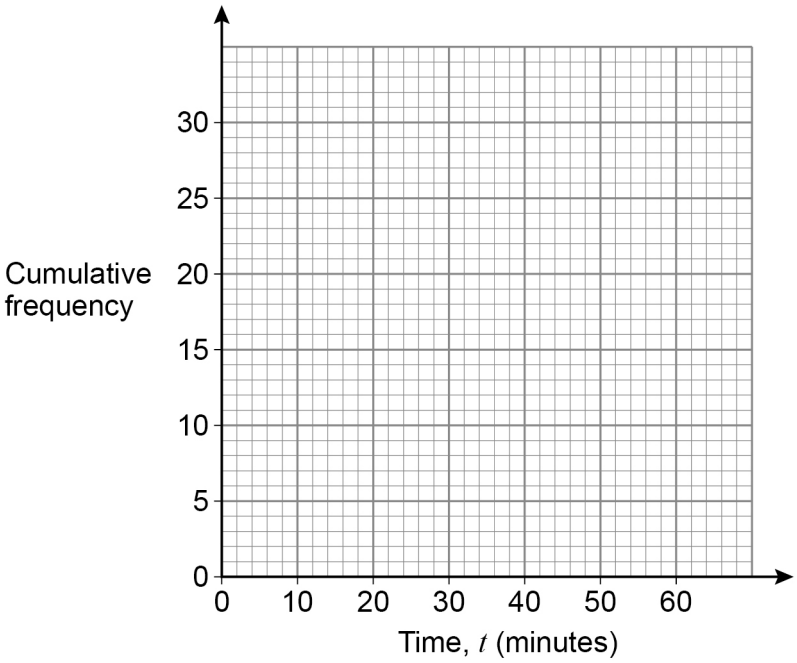
12 30 students each solved a puzzle.

The table shows information about the time, t minutes, that they took to solve the puzzle.

Time, t (minutes)	**Cumulative frequency**
$t \leqslant 10$	3
$t \leqslant 20$	9
$t \leqslant 30$	16
$t \leqslant 40$	20
$t \leqslant 50$	27
$t \leqslant 60$	30

12 (a) Draw a cumulative frequency diagram to represent the data.

[2 marks]



Do not write outside the box

12 (b) Use your graph to estimate the interquartile range.

[2 marks]

Answer _____ minutes

13 At a dance school, students study one of Jazz, Tap or Ballet.

- The ratio of Jazz students to Tap students is 5 : 7
- The ratio of Tap students to Ballet students is 3 : 2

Work out the percentage of students that study Tap.

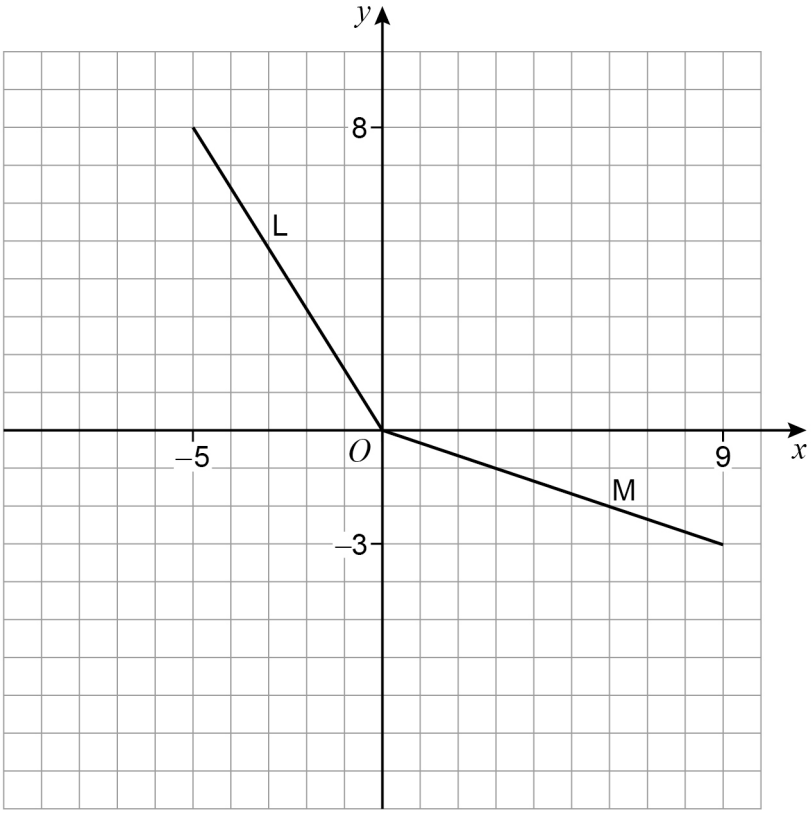
[3 marks]

Answer _____ %

7

Do not write outside the box

14 Here are two lines, L and M.



Mark says that the lines L and M have the same length.

Is he correct?

Show **calculations** to support your answer.

[3 marks]

Do not write outside the box

15 A cafe sells small, medium and large coffees.

One weekend, the numbers of coffees sold are in the ratio

small : medium : large = 2 : 7 : 3

The cafe sold 300 **more** medium than small coffees.

Three fifths of **all** coffees sold were to take away.

15 (a) Estimate the number of **large** coffees that were sold to take away.

[3 marks]

Answer _____

15 (b) Give a reason why your answer is only an estimate.

[1 mark]

7

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16 4 apples and 3 bananas cost £2

3 apples and 5 bananas cost £1.94

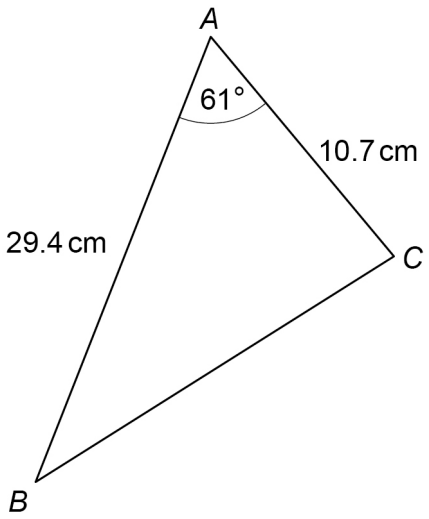
Work out the cost of **one** apple.

[4 marks]

Answer _____

Do not write outside the box

17



Not drawn accurately

By rounding each value to 1 significant figure,

use the cosine rule to estimate the length *BC*.

Give your answer in the form $\sqrt{a}$.

You **must** show your working.

[4 marks]

Answer _____ cm

8

Turn over ►

Do not write outside the box

18 $\frac{1}{2}ax^2 + bx = c$

Work out the **two** possible values of x when $a = 10$, $b = 4$ and $c = 28$

[4 marks]

$x =$ _____ and _____

Do not write outside the box

19 (a) Work out $0.8\dot{1}\dot{6} - 0.3\dot{2}\dot{4}$

[1 mark]

Answer _____

19 (b) Show that $0.07\dot{4}$ can be written as a fraction.

You **must** show your working.

[3 marks]

8

Do not write outside the box

20 Solve the simultaneous equations

$y = 12 - 4x$

$y = x^2 + 2x + 5$

Do **not** use a graphical method or trial and improvement.

You **must** show your working.

[5 marks]

Answer _____

Do not write outside the box

21 (a) Rationalise the denominator of $\dfrac{4}{3\sqrt{6}}$

Simplify your answer fully.

[3 marks]

Answer _____

21 (b) Write $8 : \left(3\sqrt{2}+\sqrt{50}\right)^2$ in the form $1 : n$ where n is an integer.

[4 marks]

Answer 1 : _____

12

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22 The nth term of a sequence is $\dfrac{n+1}{n^2+6n+5}$

Prove that the maximum sum of any two consecutive terms is $\dfrac{13}{42}$

[4 marks]

END OF QUESTIONS

4

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