

AQA • GCSE MATHEMATICS 8300

Higher Tier — Paper 3

Calculator

June 2025 exam series

QUESTION PAPER

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Please write clearly in block capitals.

Centre number

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Candidate number

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Surname

Forename(s)

Candidate signature

I declare this is my own work.

GCSE MATHEMATICS

H

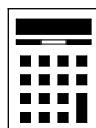
Higher Tier Paper 3 Calculator

Wednesday 11 June 2025 Morning Time allowed: 1 hour 30 minutes

Materials

For this paper you must have:

- a calculator
- mathematical instruments
- the Formulae Sheet (enclosed).



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	
22–23	
24–25	
TOTAL	



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

Do not write
outside the
box

1 Convert 8.25 pounds into kilograms.

Use 2.2 pounds = 1 kilogram

[2 marks]

Answer _____ kg

2 Here are the temperatures in six cities in degrees Celsius.

0°C -3°C 0°C 1.5°C 23°C 4°C

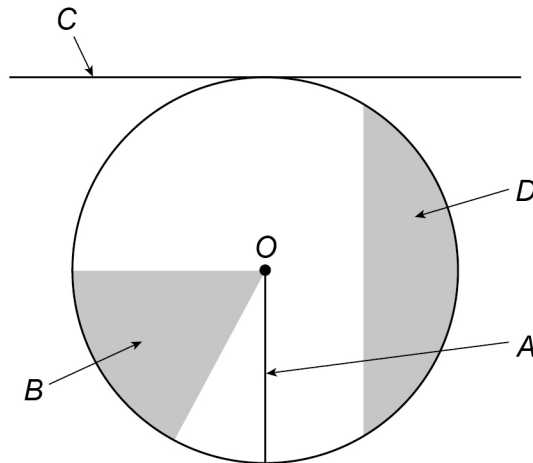
Write down the outlier.

[1 mark]

Answer _____ °C



3 Here is a circle, centre O



Match each letter to the correct word.

One has been done for you.

[3 marks]

A B C D		Arc Chord Diameter Radius Sector Segment Tangent
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Turn over ►

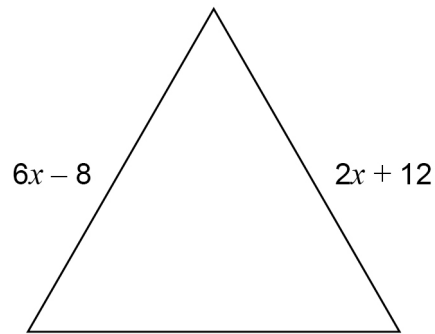


4

Here is an equilateral triangle.

All measurements are in centimetres.

Not drawn
accurately



Work out the value of the perimeter of the triangle.

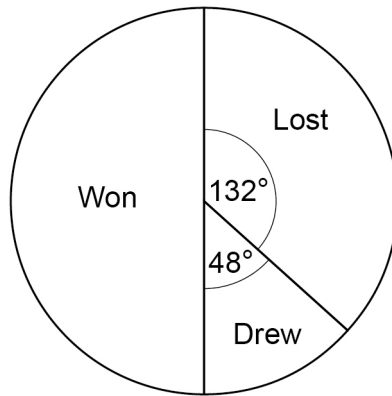
[4 marks]

Answer _____ cm



5

The pie chart represents the results of matches played by a team.



30 matches were **won**.

How many matches were lost?

[3 marks]

Answer _____

Turn over for the next question

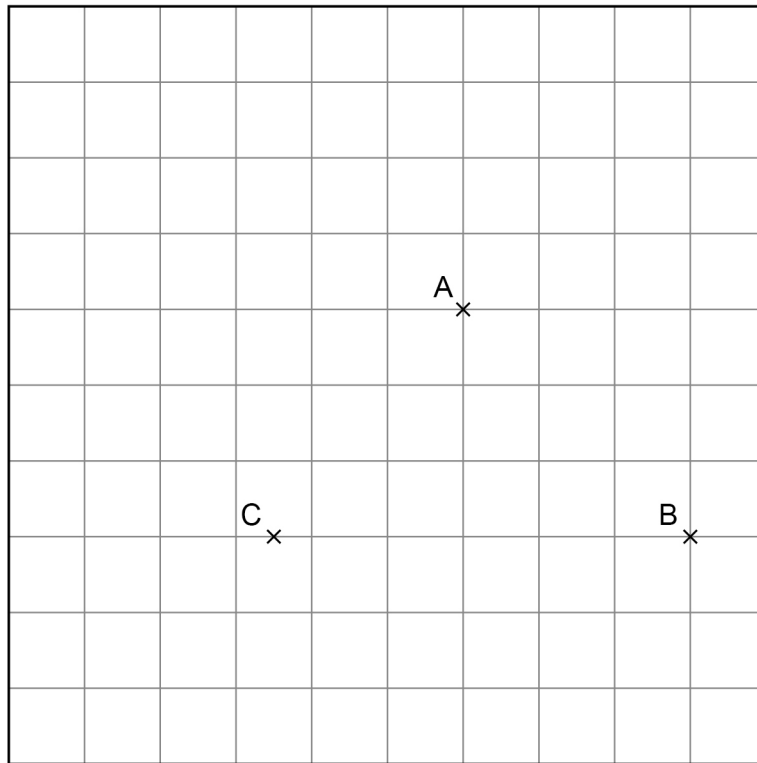
Turn over ►



6

Here is a scale diagram showing towns A, B and C on a centimetre grid.

Scale 1 : 200 000



- 6 (a)** Work out the **actual** distance from B to C.
Give your answer in kilometres.

[4 marks]

Answer _____ km



- 6 (b)** B is South East of A.

Write down the bearing of B from A.

[1 mark]

Answer _____ °

- 7 (a)** Write 2 weeks as a fraction of 8 days.
Give your answer in its simplest form.

[1 mark]

Answer _____

- 7 (b)** Write 56 centimetres : 2.73 metres as a ratio in the form 1 : n

[1 mark]

Answer 1 : _____

- 7 (c)** $A : B = \frac{1}{5} : \frac{7}{10}$

Write A as a fraction of B.

[2 marks]

Answer _____

Turn over ►



8

A linear sequence has

- 2nd term = 6
- 5th term = 18

Work out the n th term of the sequence.**[3 marks]**

Answer _____

9

Ary, Bea and Cat each have an amount of money.

Cat has £280

- Cat's amount is $\frac{2}{3}$ of Bea's amount.
- Ary's amount : Bea's amount = 5 : 12

Work out how much money Ary has.

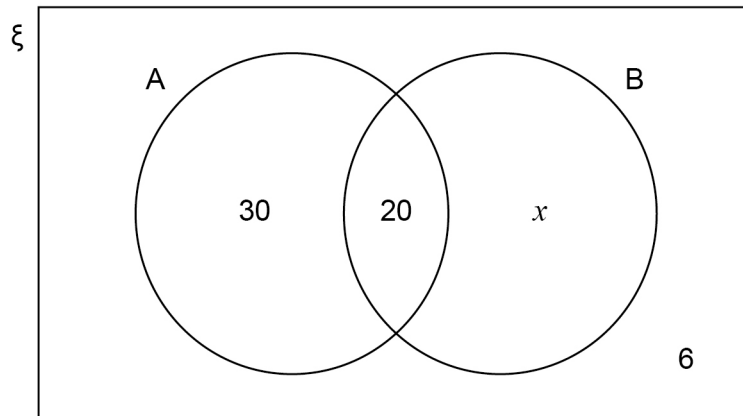
[3 marks]

Answer £ _____



10

The Venn diagram shows some of the **numbers** of items in each set.



$$P(A) = \frac{1}{2}$$

Work out the value of x .

[2 marks]

$$x = \underline{\hspace{4cm}}$$

Turn over for the next question

Turn over ►



11 (a) Write down the equation of a straight line parallel to $y - 2x = 9$

[1 mark]

Answer _____

11 (b) A straight line

- has gradient 5
- passes through the point (3, 7)

Circle the equation of the line.

[1 mark]

$$y = 3x - 2$$

$$y = 3x + 7$$

$$y = 5x$$

$$y = 5x - 8$$



12

Rob records the time he takes to drive to work every day for 80 days.
The table shows information about the results.

Time, t (minutes)	Frequency
$20 \leq t < 25$	16
$25 \leq t < 30$	32
$30 \leq t < 40$	24
$40 \leq t < 60$	8
	Total = 80

Last year, the **mean** time Rob took to drive to work was 25 minutes.

Estimate the percentage increase in the **mean** driving time for these 80 days.

[4 marks]

Answer _____ %



- 13** The table shows information about the salary of 90 employees.

Salary, s (£)	Frequency
$0 < s \leq 20\,000$	44
$20\,000 < s \leq 40\,000$	22
$40\,000 < s \leq 60\,000$	14
$60\,000 < s \leq 80\,000$	5
$80\,000 < s \leq 100\,000$	2
$100\,000 < s \leq 120\,000$	3

- 13 (a)** Complete the cumulative frequency table.

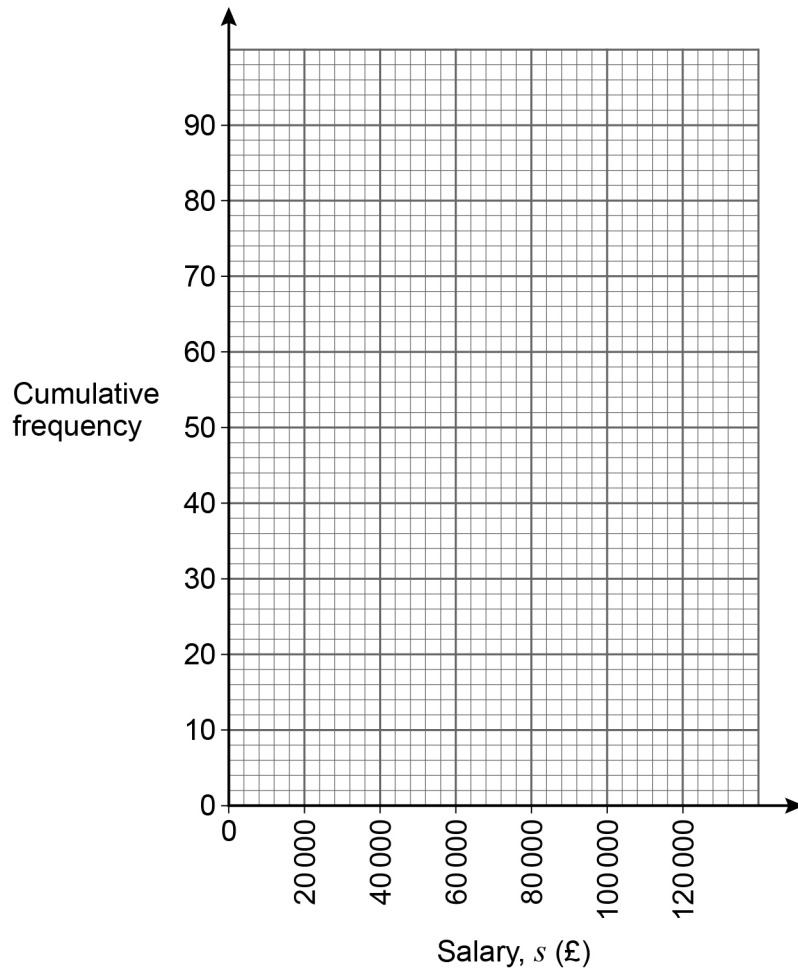
[1 mark]

Salary, s (£)	Cumulative Frequency
$s \leq 20\,000$	44
$s \leq 40\,000$	66
$s \leq 60\,000$	
$s \leq 80\,000$	
$s \leq 100\,000$	
$s \leq 120\,000$	



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

[2 marks]



13 (c) Estimate the number of employees with a salary **less** than £32 000

[2 marks]

Answer _____

Turn over ►



- the mass of the empty plane is 800 kg, to the nearest 100 kg
- the mass of fuel is 190 kg, to the nearest 5 kg
- the mass of the passengers is 163 kg, to the nearest kg

The **maximum** mass for the plane to take off safely is 1200 kg

Tick a box.

11

11

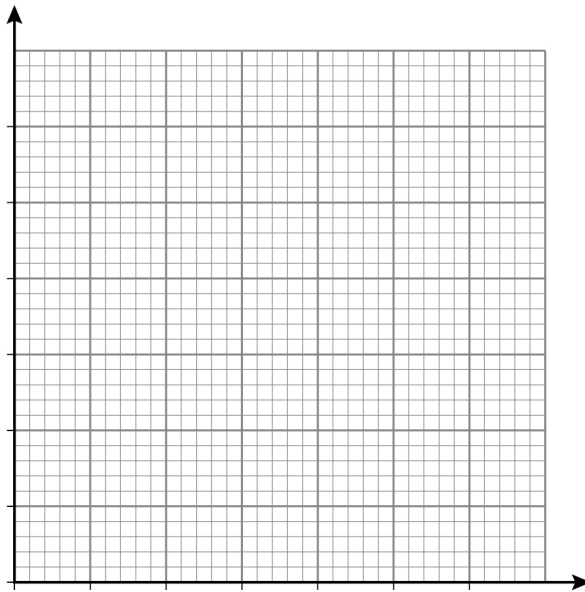
[4 marks]



- 14 (b)** A different plane travels 1250 miles in 2 hours 30 minutes at a constant speed.

On the grid, draw a **speed/time** graph to represent this information.

[3 marks]



Turn over for the next question

Turn over ►



15

Amy and Becky each make integers using **three** single digits.

In any integer, digits may be repeated.

- Amy makes **even** integers with a first digit greater than 7
- Becky makes **odd** integers with a first digit that is non-zero.

They each make as many different integers as possible.

How many **more** integers than Amy does Becky make?

[3 marks]

Answer _____

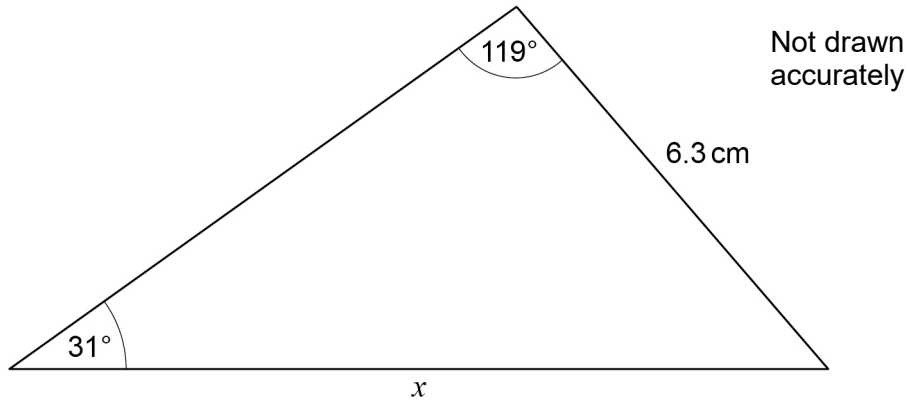


[3 marks]

6



17



Use the sine rule to work out x .

[2 marks]

$x =$ _____ cm



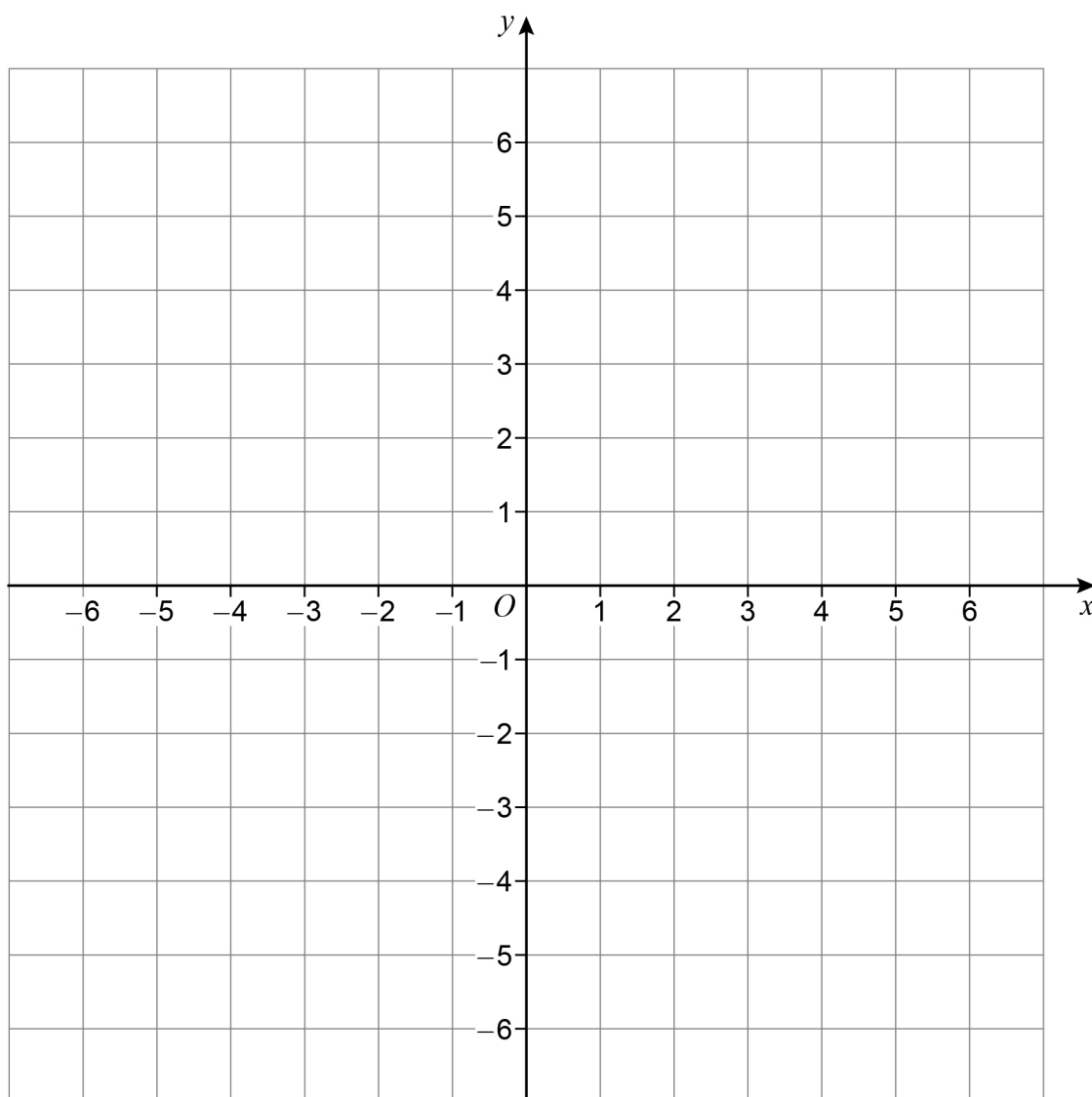
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19 On the grid, identify the region represented by

$$x + y < 5 \quad \text{and} \quad y < 2x + 4 \quad \text{and} \quad y \geq 1$$

Label the region R.

[4 marks]



20 (a) Factorise fully $3n^2 + 5n + 2$

[2 marks]

Answer _____

20 (b) A sequence has n th term $3n^2 + 5n + 2$

Are any of the terms in the sequence a prime number?

Tick a box.

Yes

☐

No

☐

Give a reason for your answer.

[1 mark]

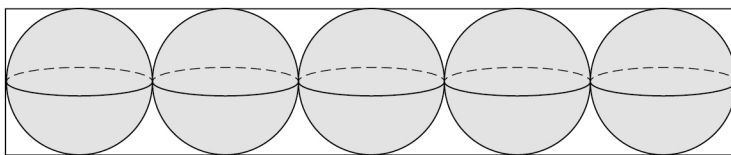
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7

Turn over ►



21

Five identical spheres just fit inside a **cylinder**.Each sphere has radius r .

$$\text{Volume of a sphere} = \frac{4}{3}\pi r^3$$

What fraction of the space inside the **cylinder** is filled by the spheres?You **must** show your working.**[4 marks]**

Answer _____



Solve $2x^2 > 12 - 5x$

Answer _____

Turn over for the next question

8

Turn over ►



23

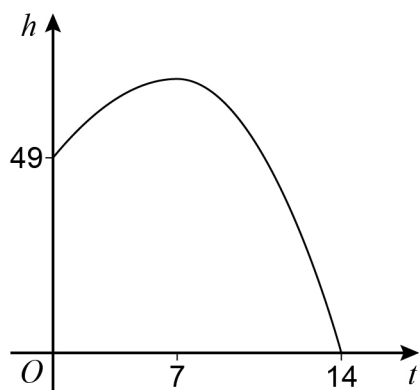
A roller coaster starts at ground level.

The height above ground level, h , in metres, of the roller coaster is given by

$$h = -(t - 7)^2 + 49$$

where t is the time in seconds after the roller coaster starts.

Sam draws a graph of h against t for $0 \leq t \leq 14$



Make **two** criticisms of Sam's graph.

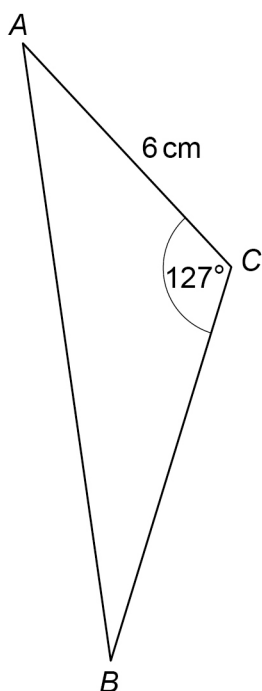
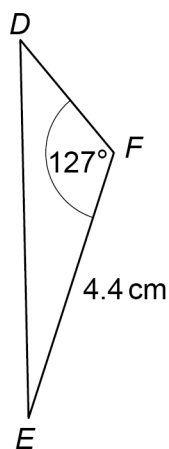
[2 marks]

Criticism 1 _____

Criticism 2 _____



24

Triangles ABC and DEF are similar.Not drawn
accuratelyThe area of ABC is 26.355 cm^2 Work out the area of DEF .**[4 marks]**

Answer _____ cm^2 **END OF QUESTIONS**

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outside the
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ANSWER IN THE SPACES PROVIDED**



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[illegible]

2 8



2 5 6 G 8 3 0 0 / 3 H