AQA

GCSE
MATHEMATICS

F

Foundation Tier   Paper 3 Calculator
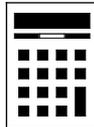## Shadow paper based on the November 2024 paper

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	
TOTAL	

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

1 (a) Work out $\dfrac{1}{5}$ of 455

[1 mark]

Answer _____

1 (b) Work out the value of 17^2

[1 mark]

Answer _____

2 Simplify fully $a + a + a + a$

[1 mark]

Answer _____

3 (a) 4 oranges cost 92p

Work out the cost, in pounds (£), of 12 of these oranges.

[2 marks]

Answer £ _____

3 (b) In total, the cost of 30 bananas and 50 apples is £48.50

Work out the cost of

3 bananas and 5 apples.

[2 marks]

Answer £ _____

Turn over for the next question

7

Turn over ▶

4 (a) Write these numbers in order of size.

Start with the **smallest** number.

$$3 \qquad 1.4 \qquad -2 \qquad 1$$

[2 marks]

Answer _____ , _____ , _____ , _____

4 (b) Write these numbers in order of size.

Start with the **smallest** number.

$$\frac{1}{5} \qquad 2\frac{1}{2} \qquad \frac{1}{10} \qquad \frac{5}{6}$$

[2 marks]

Answer _____ , _____ , _____ , _____

5 The composite bar chart shows some information about how Carter travelled to work.
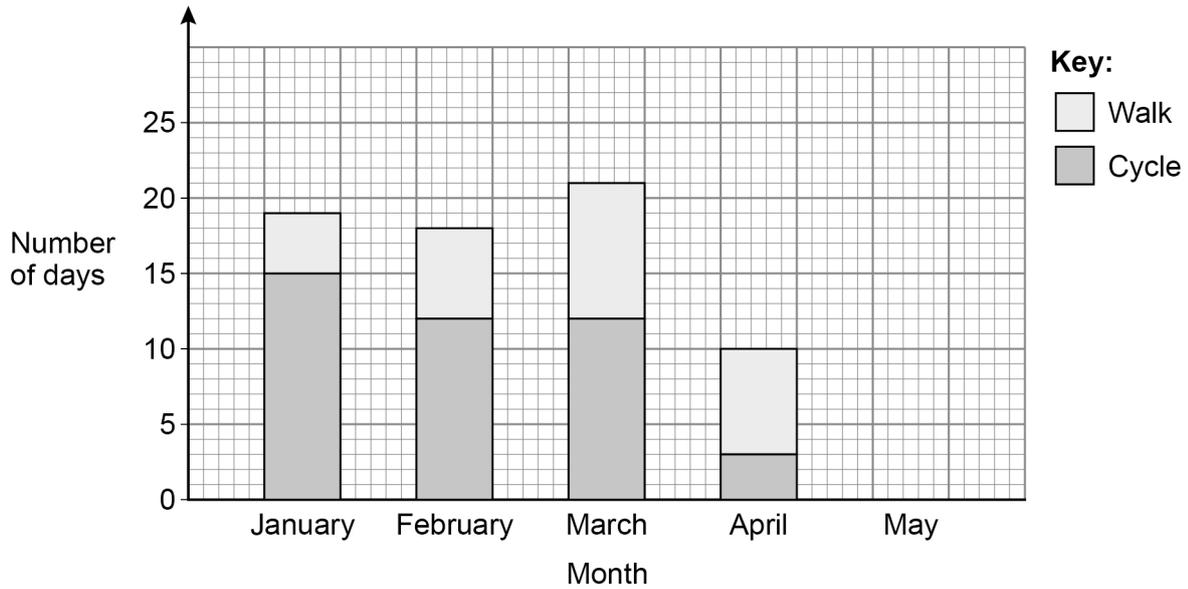
5 (a) In April, how many days did he walk to work?

[1 mark]

Answer _____

5 (b) In which two months did he cycle to work on the same number of days?

[1 mark]

Answer _____ and _____

5 (c) In May, Carter went to work on 18 days.

He cycled on $\frac{1}{3}$ of the days.

He walked on the other days.

Show this information on the bar chart.

[2 marks]

8

Turn over ▶

8300/3F

6 Jamie leaves college at 4.30 pm

He travels home in 25 minutes.

Does Jamie arrive home by 5.00 pm?

Tick a box

Yes ☐   No ☐

Give a reason for your answer.

[1 mark]

_____

_____

_____

7 Ellis has £25

A drink costs £1.40

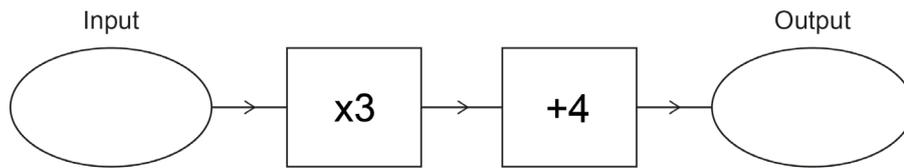Work out the greatest number of drinks Ellis can buy.

[2 marks]

_____

_____

_____

_____

_____

_____

Answer _____

8   Here is a number machine.

Input   x3   +4   Output

8 (a)   Work out the **output** when the input is 12

[1 mark]

Answer _____

8 (b)   Work out the **input** when the output is 28

[1 mark]

Answer _____

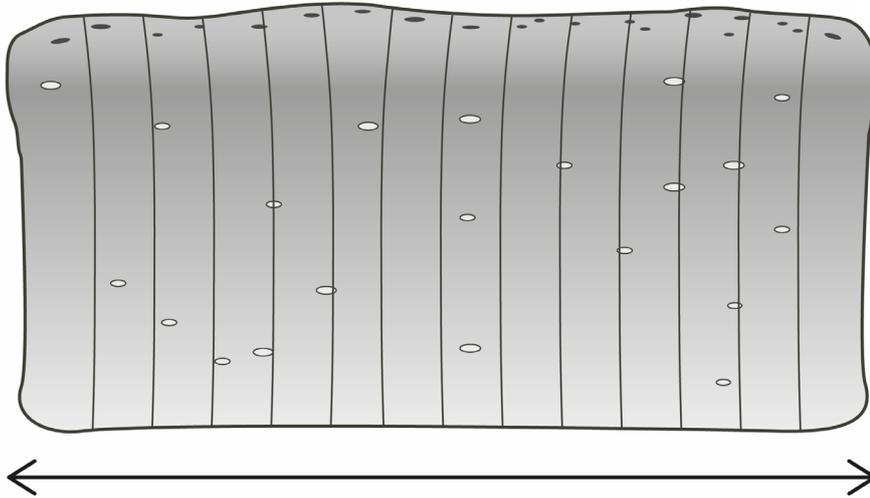**Turn over for the next question**

5

Turn over ▶

9 A loaf of bread has

12 slices each 13 mm thick

and

2 crusts each 16 mm thick.

Not drawn accurately

Work out the total length of the loaf of bread.

Give your answer in **centimetres**.

[3 marks]

Answer _____ cm

10 (a) Solve $\dfrac{a}{5} = 20$

[1 mark]

$a =$ _____

10 (b) Solve $5(3b - 2) = 50$

[3 marks]

$b =$ _____

Turn over for the next question

Turn over ▶

11 Here is a diagram.

$$4 \xrightarrow{+5} 9 \xrightarrow{+3} 12$$
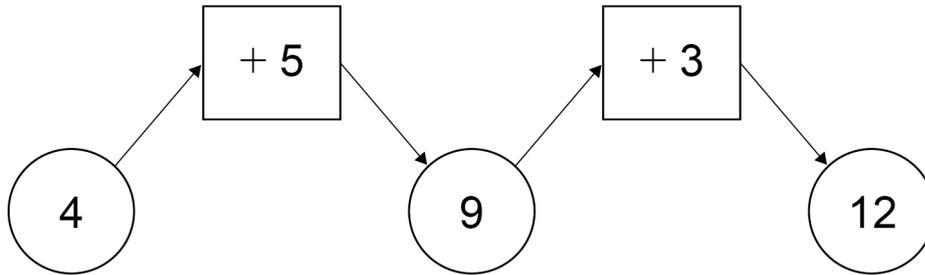
11 (a) Complete this diagram.

[1 mark]

$$15 \xrightarrow{+5.4} \bigcirc \xrightarrow{+9} \bigcirc$$
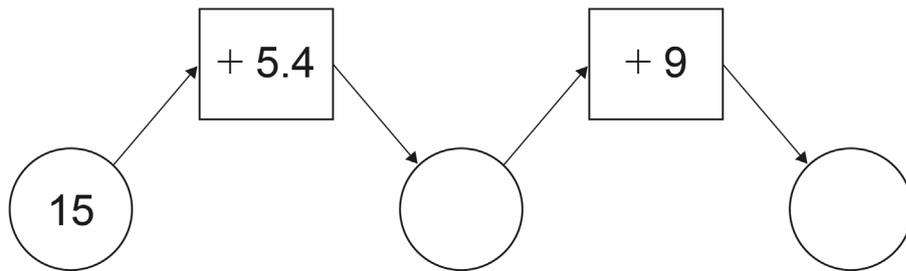
11 (b) Complete this diagram.

[2 marks]

$$4 \xrightarrow{\square} \bigcirc \xrightarrow{+7} \bigcirc$$
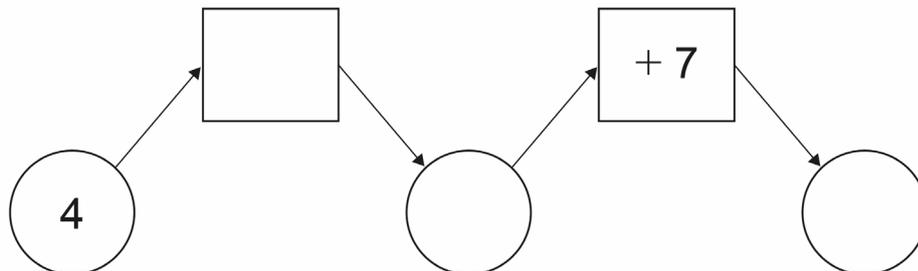
7

11 (c)
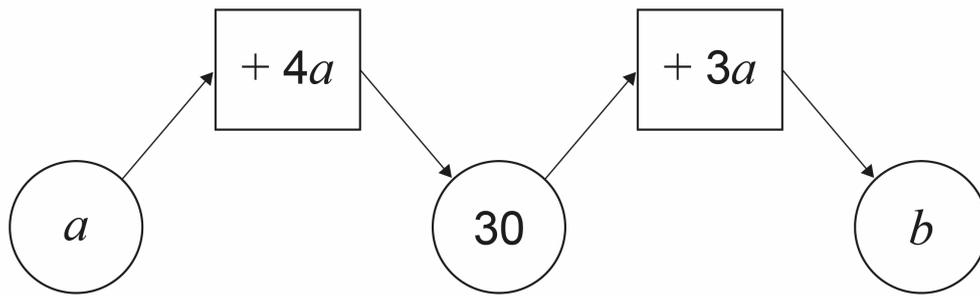
Work out the value of b.

[3 marks]

$b =$ _____

12 Here are some numbers.

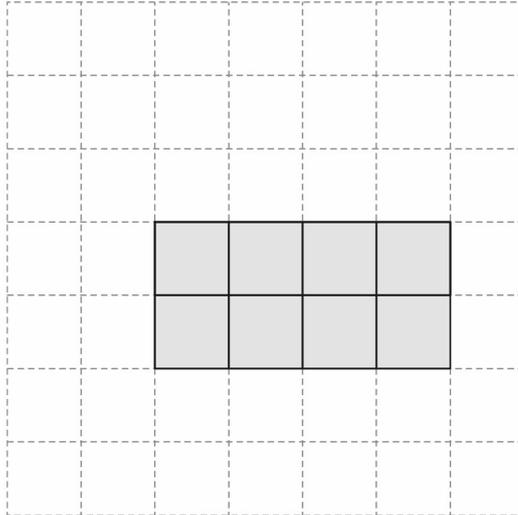20   15   6   4   18   6   7   3   11

Work out the median.

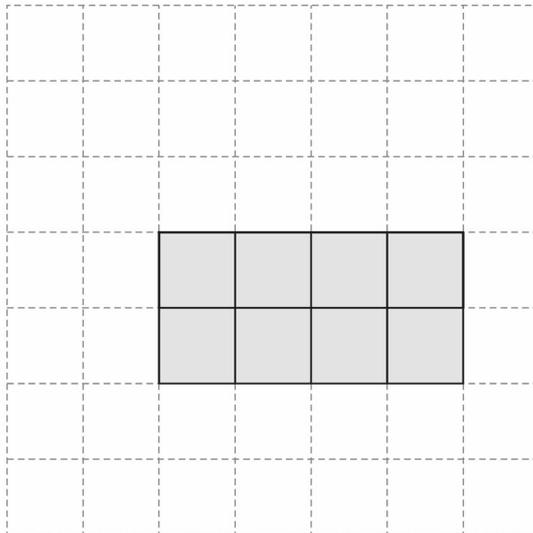[2 marks]

Answer _____

8

Turn over ▶

13 (a) Here is a pattern of squares on a grid.

Draw the **two** lines of symmetry on the pattern.
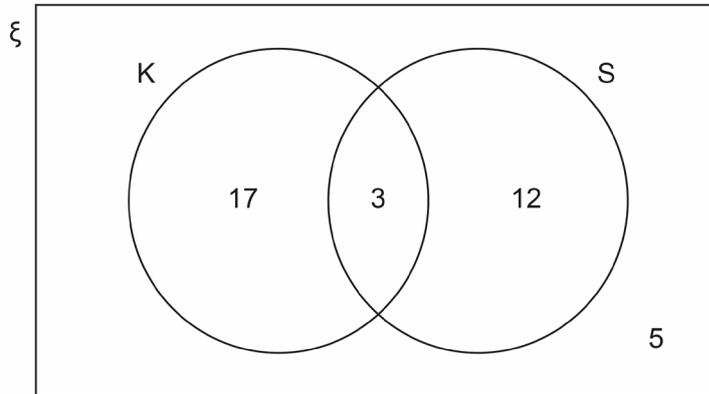
[2 marks]

13 (b) Here is the pattern again.

Shade **four** more squares so that the pattern has **rotational** symmetry of order 4

[1 mark]

14 The Venn diagram shows information about people who work in a restaurant.

K = people who can work in the kitchen.
S = people who can serve customers.

14 (a) How many people can work in the kitchen?

[1 mark]

Answer _____

14 (b) How many people can serve customers but **not** work in the kitchen?

[1 mark]

Answer _____

14 (c) What fraction of **all** the people can serve customers?

[2 marks]

_____

_____

Answer _____

7

Turn over ▶

15 To get to college, 140 students either walk or travel by bus or by train

$\frac{2}{7}$ of the students walk.

students who travel by bus : students who travel by train $= 1 : 3$

How many students travel by train?

[3 marks]

Answer _____

16 The original value of a motorbike is £5400

The value of the motorbike decreases by

    20% in the first year

    then

    15% in the second year.

Work out the value of the motorbike after these two years.

[3 marks]

Answer £ _____

17 Match the algebra to the correct description.

One has been done for you.

[3 marks]

Algebra

Description

| $5x + 7 > 3$ |

| Formula |

| $A = \pi r^2$ |

| Equation |

| $5x + 3 = 2x + 9$ |

| Inequality |

| $4(a + 2b) \equiv 4a + 8b$ |

| Expression |

| $3c + d$ |

| Identity |

Turn over for the next question

9

Turn over ▶

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18 Syed has £20 to spend on pizzas.

He buys 4 pizzas, each costing £4.20

What percentage of the £20 does he spend?

[3 marks]

Answer _____ %

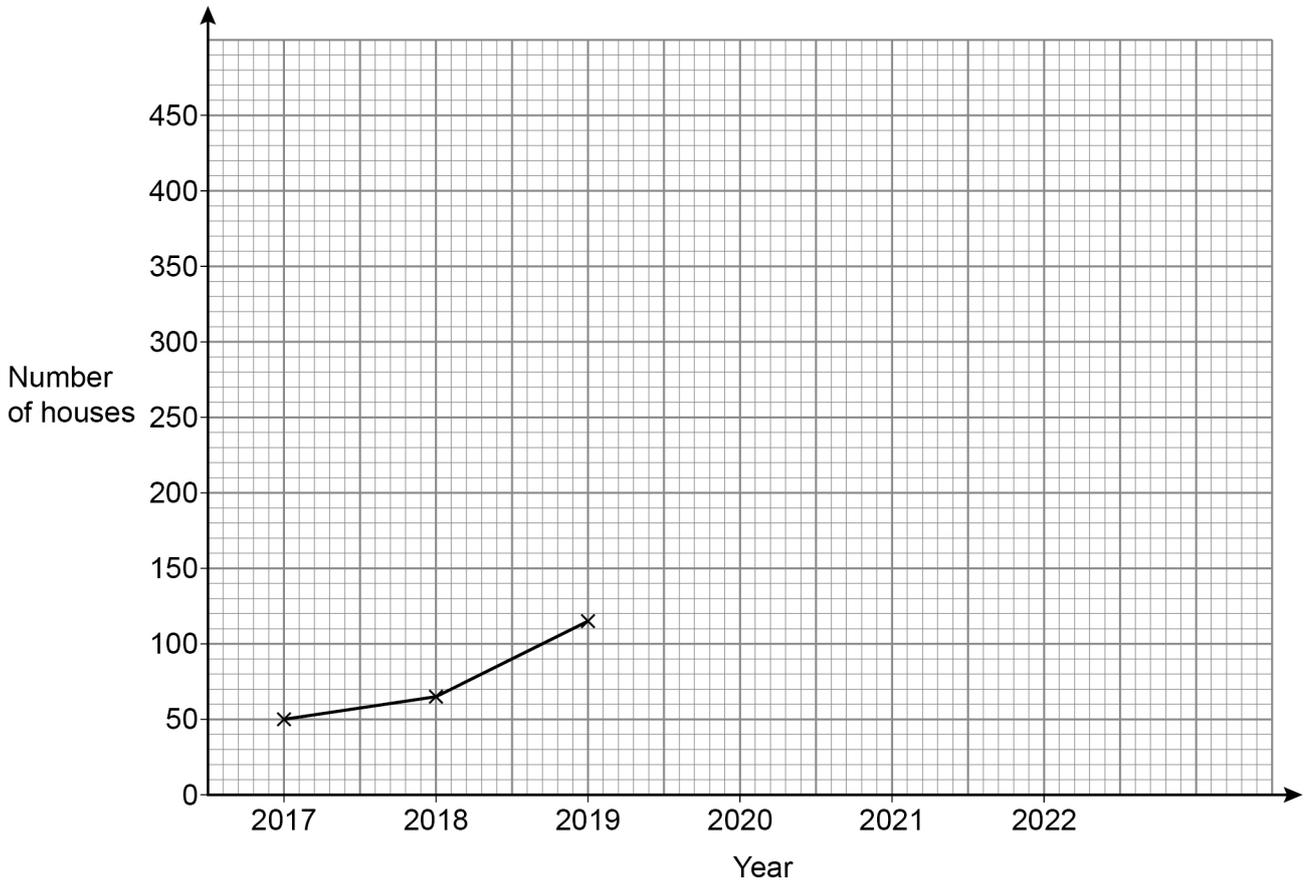**19** The table shows information about the number of houses in a town with an electric car.

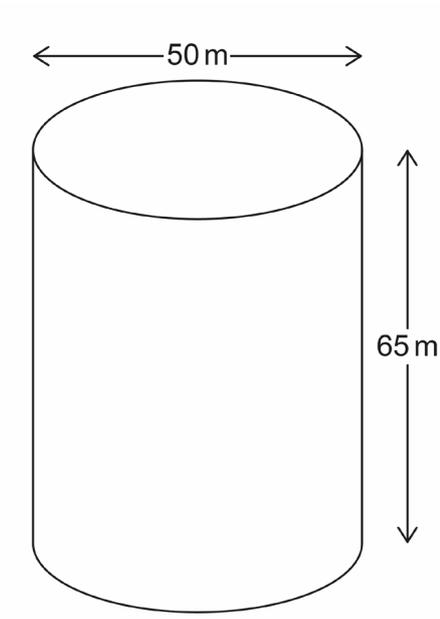| Year	2017	2018	2019	2020	2021	2022
Number of houses	50	65	115	170	245	330

19 (a) Complete the graph.

[2 marks]

19 (b) Use the graph to estimate the number of houses with electric cars in 2023

[1 mark]

Answer _____

6

Turn over ▶

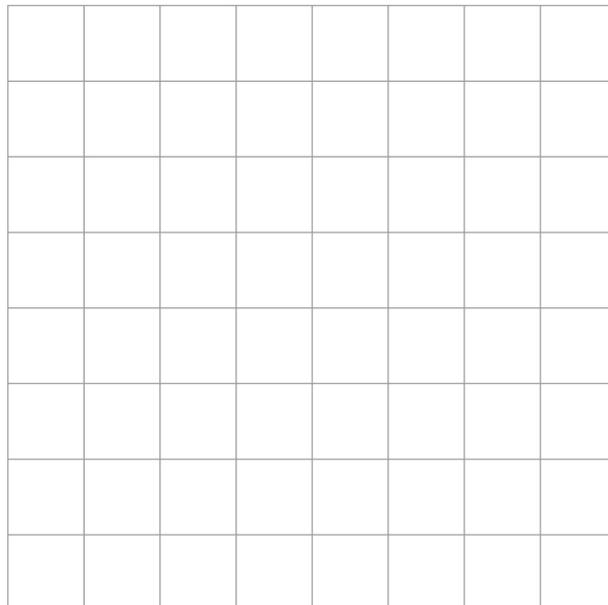**20** A building in the shape of a cylinder has diameter 50 m and height 65 m

←——50 m——→

65 m

20 (a) On the centimetre grid, draw a **plan** of the building.

Use a scale of 1 cm to 10 m

[2 marks]

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20 (b) On this centimetre grid, draw the **front elevation** of the building.

Use a scale of 1 cm to 10 m

[2 marks]

Turn over for the next question

21 These two rectangles have the **same perimeter.**

Not drawn accurately

A B

5 cm [rectangle]

8 cm

x cm [rectangle]

10 cm

Work out the ratio   area A : area B

[4 marks]

Answer _____ : _____

22 To the **nearest pound**, Posy has £13

She wants to buy 5 ice creams.

Each ice cream costs £2.45

Show that Posy **definitely** has enough money to buy the 5 ice creams.

[3 marks]

23 The total cost of a hiring a gardener is calculated by adding

a fixed charge of £20

and

a charge of £17 per hour.

Write a formula to work out the total cost, £C, of hiring a gardener for h hours.

[2 marks]

$C =$ _____

Turn over for the next question

9

Turn over ▶

24 (a) At a nursery school

there are 124 children

the ratio of children to adults is   6.2 : 1

The number of children stays the same.

The number of adults decreases by 2

Work out the new ratio of children to adults.

Give your answer in the form n : 1

[3 marks]

Answer _____ : 1

24 (b) To go to the park one adult is needed for every group of 4 or fewer children.

One day there are 21 children in a class.

Calum tries to work out how many adults are needed to take them to the park.

$21 \div 4 = 5.25$

5 adults are needed.

What is wrong with his answer?

[1 mark]

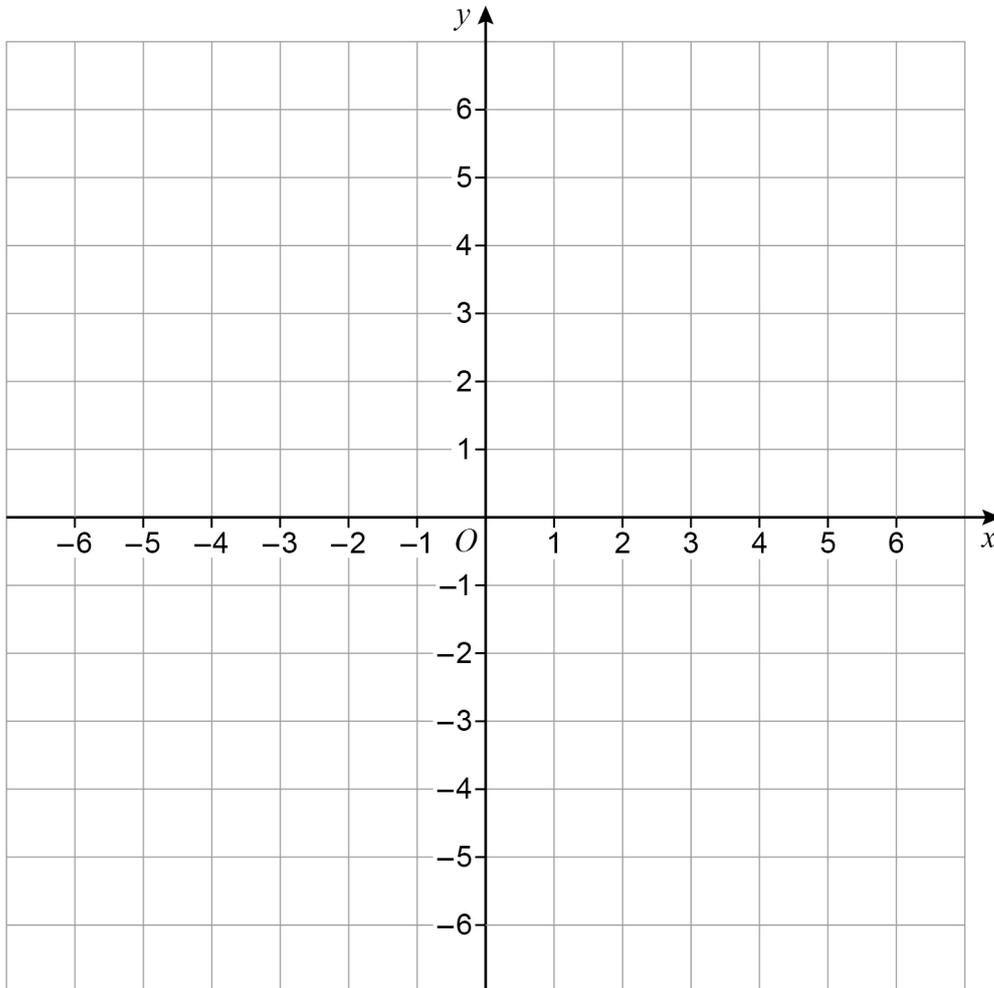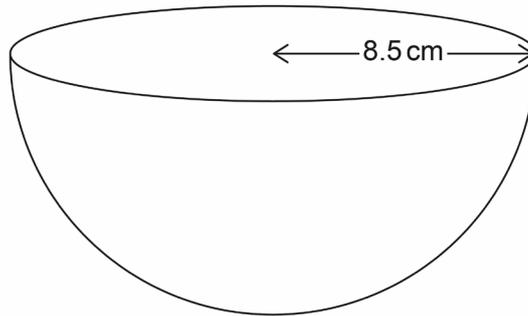**25** A triangle is drawn using the lines

$y = -x$

$x = 2$

$y = 5$

Work out the coordinates of the **three** vertices of the triangle.

[4 marks]

Answer (_____ , _____)

(_____ , _____)

(_____ , _____)

8

Turn over ▶

26

8.5 cm

Volume of a **sphere** $= \dfrac{4}{3} \times \pi \times r^3$

where r is the radius

Ria works out the volume of this **hemisphere** in terms of π

Here is her work.

Volume of a hemisphere $= \dfrac{4}{3} \times 8.5^3 = 818.83$

Write down **two** mistakes she has made.

[2 marks]

Mistake 1 _____

_____

_____

Mistake 2 _____

_____

_____

END OF QUESTIONS

2

There are no questions printed on this page

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED

Question number	Additional page, if required. Write the question numbers in the left-hand margin.

8300/3F

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Do not write outside the box

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