



Please write clearly in block capitals.

Centre number

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Candidate number

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Surname

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Forename(s)

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Candidate signature

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I declare this is my own work.

# GCSE MATHEMATICS

# F

Foundation Tier

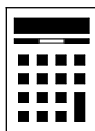
Paper 3 Calculator

Monday 11 November 2024 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	
<b>TOTAL</b>	



N 0 V 2 4 8 3 0 0 3 F 0 1

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

Do not write  
outside the  
box

1 (a) Work out  $\frac{1}{4}$  of 780

[1 mark]

Answer \_\_\_\_\_

1 (b) Work out the value of  $19^2$

[1 mark]

Answer \_\_\_\_\_

2 Simplify fully  $y + y + y$

[1 mark]

Answer \_\_\_\_\_



**3 (a)** 3 apples cost 96p

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

**[2 marks]**

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Answer £ \_\_\_\_\_

**3 (b)** In total, the cost of 40 cartons of apple juice and 20 cartons of orange juice is £21.50

Work out the cost of

4 cartons of apple juice and 2 cartons of orange juice.

**[2 marks]**

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Answer £ \_\_\_\_\_

**Turn over for the next question**

7

**Turn over ►**



- 4 (a) Write these numbers in order of size.  
Start with the **smallest** number.

2      1.8      -1      0

[2 marks]

Answer \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_

- 4 (b) Write these numbers in order of size.  
Start with the **smallest** number.

$\frac{1}{2}$        $3\frac{1}{10}$        $\frac{1}{4}$        $\frac{7}{8}$

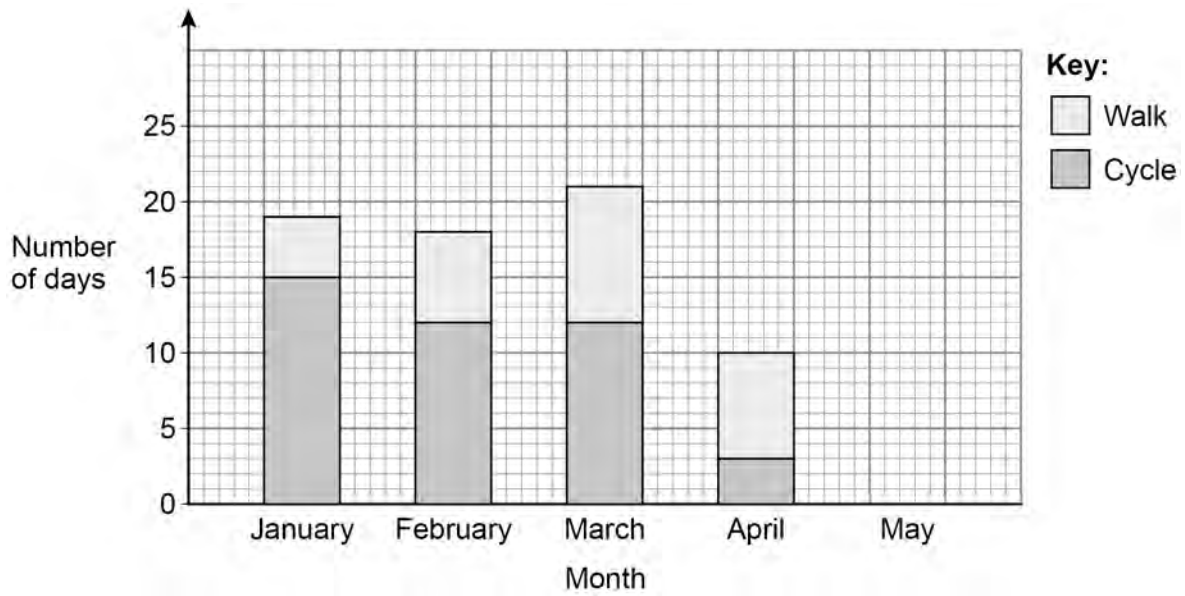
[2 marks]

Answer \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_



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5 The composite bar chart shows some information about how Calum travelled to school.



5 (a) In January, how many days did he walk to school?

[1 mark]

Answer \_\_\_\_\_

5 (b) In which month did he cycle on twice as many days as he walked?

[1 mark]

Answer \_\_\_\_\_

5 (c) In May, Calum went to school on 20 days.

He cycled on  $\frac{1}{4}$  of the days.

He walked on the other days.

Show this information on the bar chart.

[2 marks]

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Turn over ►



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box

**6** Paul leaves home at 7.15 am  
He travels to work in 20 minutes.  
Does Paul arrive at work by 7.30 am?  
Tick a box

Yes  No

Give a reason for your answer.

**[1 mark]**

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**7** Tyler has £20  
A notepad costs £1.30  
Work out the greatest number of notepads he can buy.

**[2 marks]**

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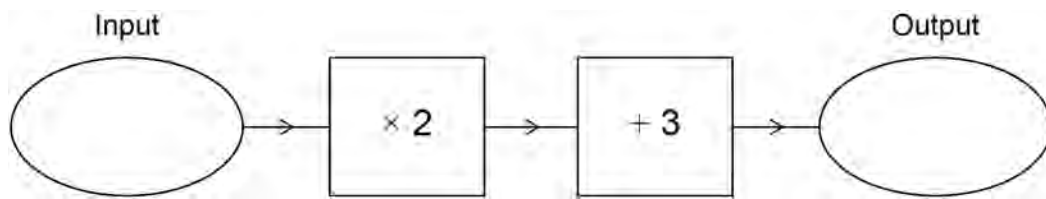
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Answer \_\_\_\_\_



8 Here is a number machine.



8 (a) Work out the **output** when the input is 10

[1 mark]

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Answer \_\_\_\_\_

8 (b) Work out the **input** when the output is 17

[1 mark]

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Answer \_\_\_\_\_

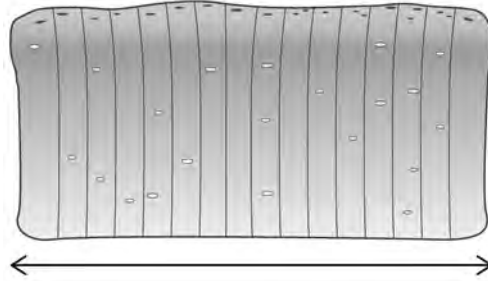
Turn over for the next question



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9

A loaf of bread has  
14 slices each 12 mm thick  
and  
2 crusts each 15 mm thick.



Not drawn  
accurately

Work out the total length of the loaf of bread.  
Give your answer in **centimetres**.

[3 marks]

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Answer \_\_\_\_\_ cm



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10 (a) Solve  $\frac{c}{3} = 15$

[1 mark]

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$c =$  \_\_\_\_\_

10 (b) Solve  $4(2d - 5) = 28$

[3 marks]

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$d =$  \_\_\_\_\_

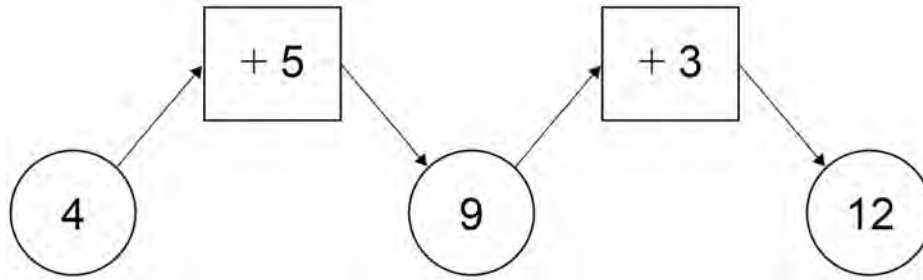
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Turn over ►

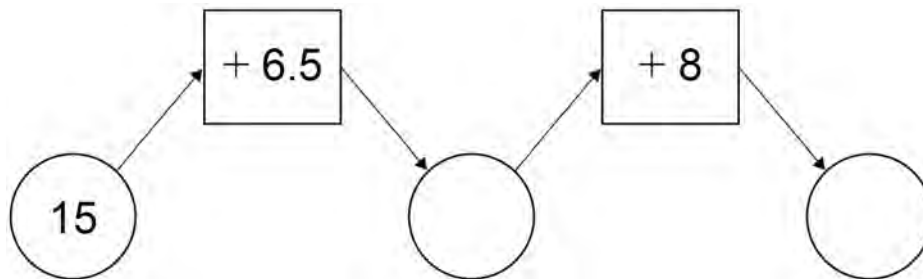


11 Here is a diagram.



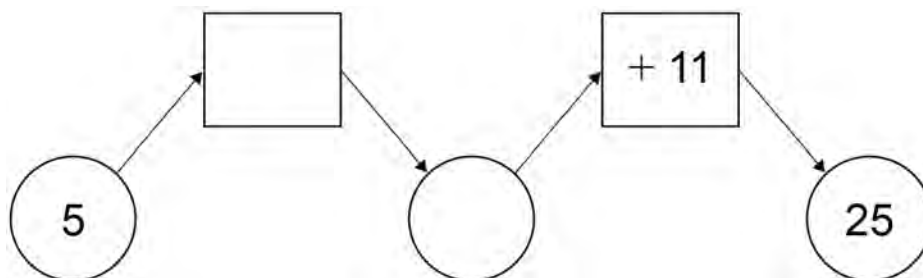
11 (a) Complete this diagram.

[1 mark]

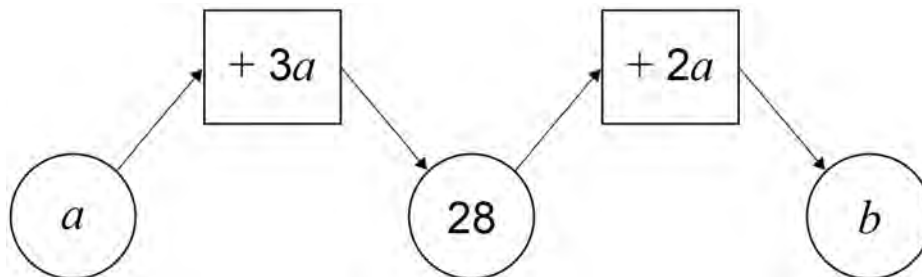


11 (b) Complete this diagram.

[2 marks]



11 (c)

Do not write  
outside the  
boxWork out the value of  $b$ .**[3 marks]**


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 $b =$  \_\_\_\_\_

12

Here are some numbers.

12    8    6    11    2    7    7    18    10

Work out the median.

**[2 marks]**


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Answer \_\_\_\_\_

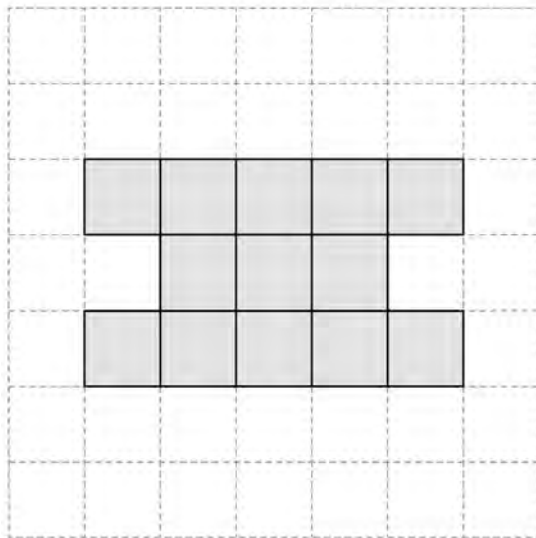
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Turn over ►



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

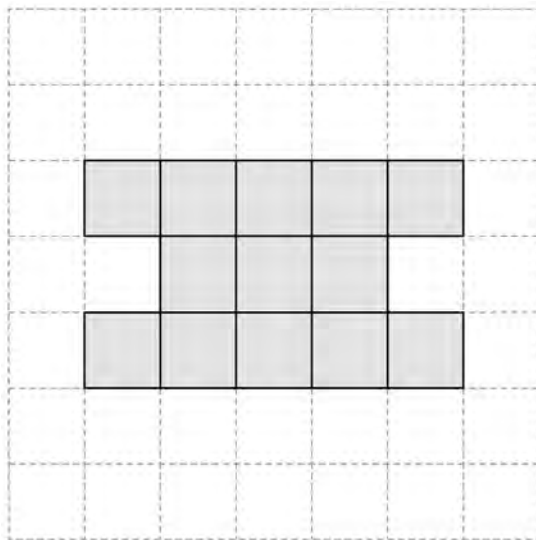
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Draw the **two** lines of symmetry on the pattern.

[2 marks]

- 13 (b) Here is the pattern again.



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

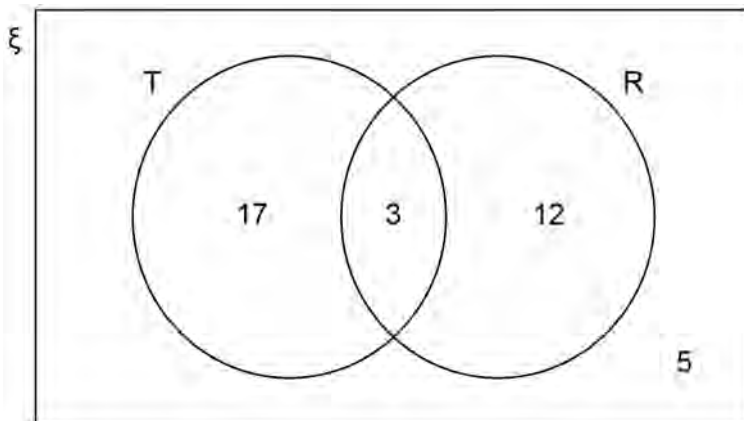
[1 mark]



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

T = people who can work as a trainer.

R = people who can work in reception.



14 (a) How many people can work as a trainer **and** in reception?

[1 mark]

Answer \_\_\_\_\_

14 (b) How many people can work in reception but **not** as a trainer?

[1 mark]

Answer \_\_\_\_\_

14 (c) What fraction of **all** the people can work as a trainer?

[2 marks]

\_\_\_\_\_  
\_\_\_\_\_

Answer \_\_\_\_\_

      
7

Turn over ►



**15** To get to college, 120 students either walk, cycle or travel by car.

$\frac{3}{8}$  of the students walk.

students who cycle : students who travel by car = 1 : 2

How many students travel by car?

**[3 marks]**

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Answer \_\_\_\_\_

**16** The original value of a car is £8600

The value of the car decreases by

15% in the first year

then

10% in the second year.

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

**[3 marks]**

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Answer £ \_\_\_\_\_



17

Match the algebra to the correct description.

One has been done for you.

Do not write  
outside the  
box**[3 marks]****Algebra****Description**

$$5x + 10 = 2x + 4$$

Identity

$$3(b + 2c) \equiv 3b + 6c$$

Equation

$$A = 4r + 6t$$

Inequality

$$3L + 8M$$

Formula

$$20 < 7j + 13$$

Expression

Turn over for the next question

Turn over ►



18

Sunil has £25 to spend on game downloads.

He downloads 5 games, each costing £3.40

What percentage of the £25 does he spend?

**[3 marks]**

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Answer \_\_\_\_\_ %

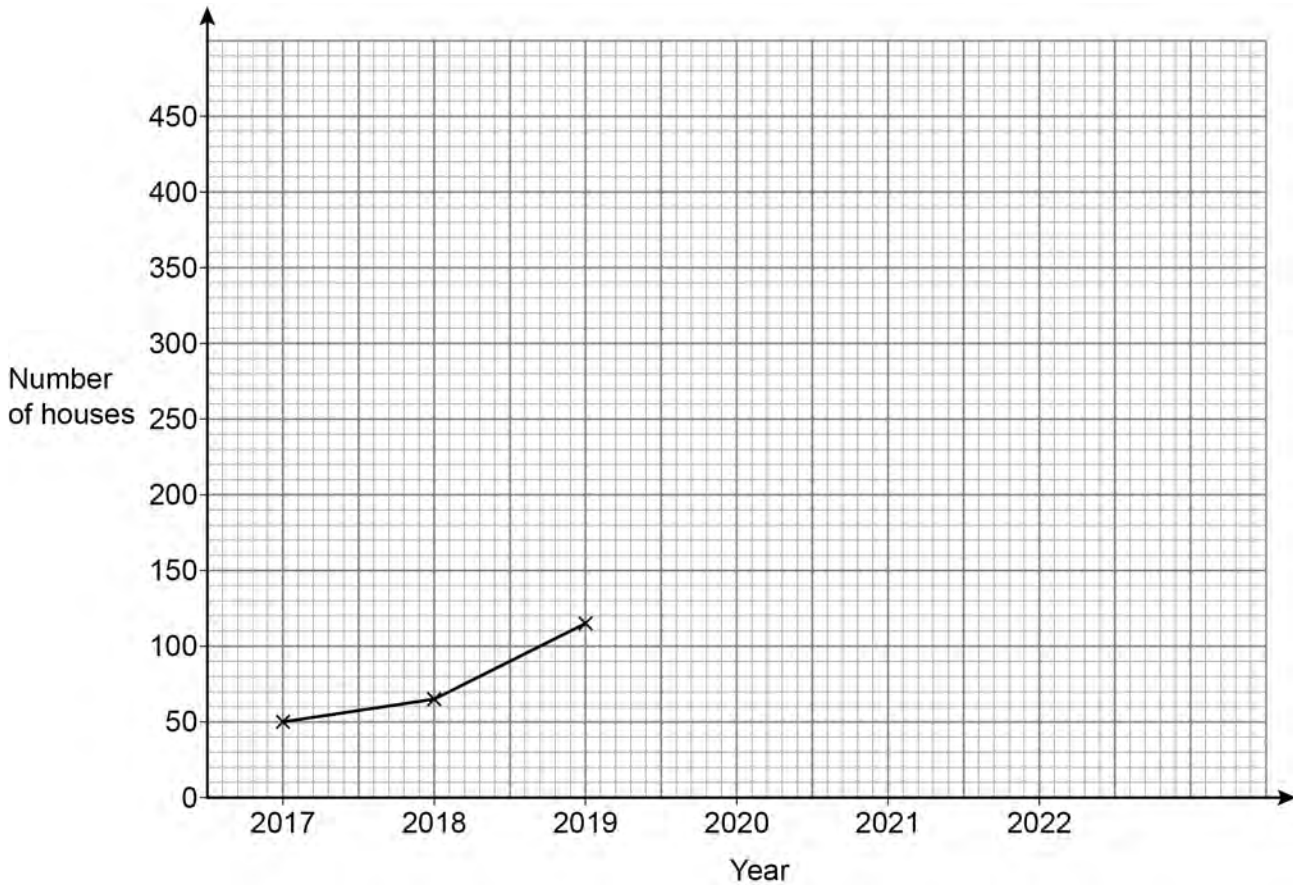
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**19** The table shows information about the number of houses with solar panels in a town.

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<b>Year</b>	2017	2018	2019	2020	2021	2022
<b>Number of houses</b>	50	65	115	210	275	350



**19 (a)** Complete the graph.

**[2 marks]**

**19 (b)** Use the graph to estimate the number of houses with solar panels in 2023

**[1 mark]**

Answer \_\_\_\_\_

6

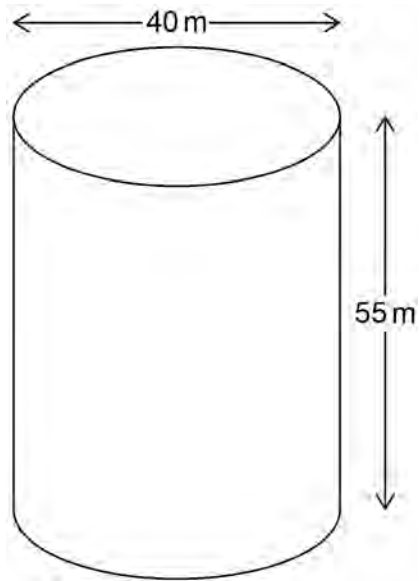
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20

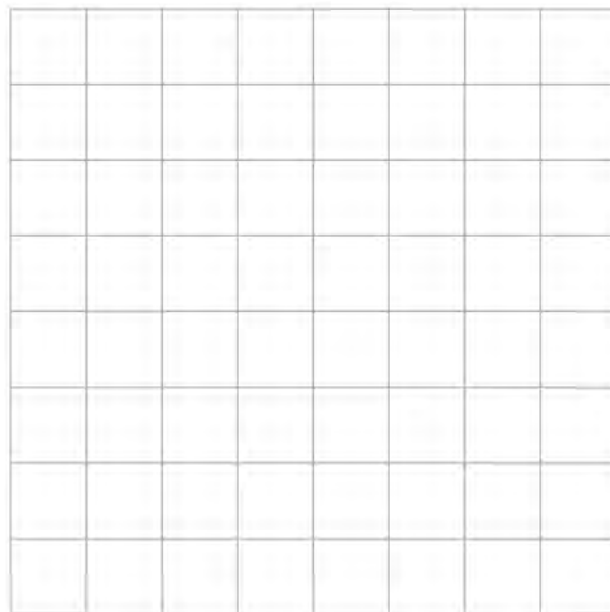
A building in the shape of a cylinder has diameter 40 m and height 55 m

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- 20 (a) On the centimetre grid, draw a **plan** of the building.  
Use a scale of 1 cm to 10 m

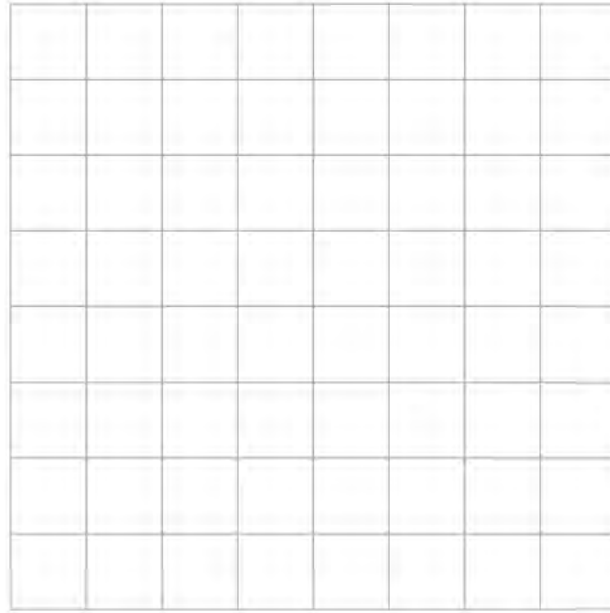
[2 marks]



**20 (b)** On this centimetre grid, draw the **front elevation** of the building.  
Use a scale of 1 cm to 10 m

*Do not write  
outside the  
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**[2 marks]**



**Turn over for the next question**

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4

**Turn over ►**





**22** To the **nearest pound**, Rosie has £12

She wants to buy 6 drinks.

Each drink costs £1.89

Show that Rosie **definitely** has enough money to buy the 6 drinks.

**[3 marks]**

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**23** The total cost of a taxi ride is calculated by adding

a fixed charge of £4

and

a charge of £2 per mile.

Write a formula to work out the total cost, £ $C$ , of a journey of  $m$  miles.

**[2 marks]**

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$$C = \underline{\hspace{10em}}$$

**Turn over for the next question**



- 24 (a)** At a school  
there are 912 students  
the ratio of students to teachers is 15.2 : 1

The number of students stays the same.  
The number of teachers increases by 2  
Work out the new ratio of students to teachers.  
Give your answer in the form  $n : 1$

**[3 marks]**

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Answer \_\_\_\_\_ : 1

- 24 (b)** On a school trip, one teacher is needed for every group of 10 or fewer students.  
72 students want to go on the trip.  
Lexi tries to work out how many teachers are needed.

$72 \div 10 = 7.2$   
7 teachers are needed.

What is wrong with her answer?

**[1 mark]**

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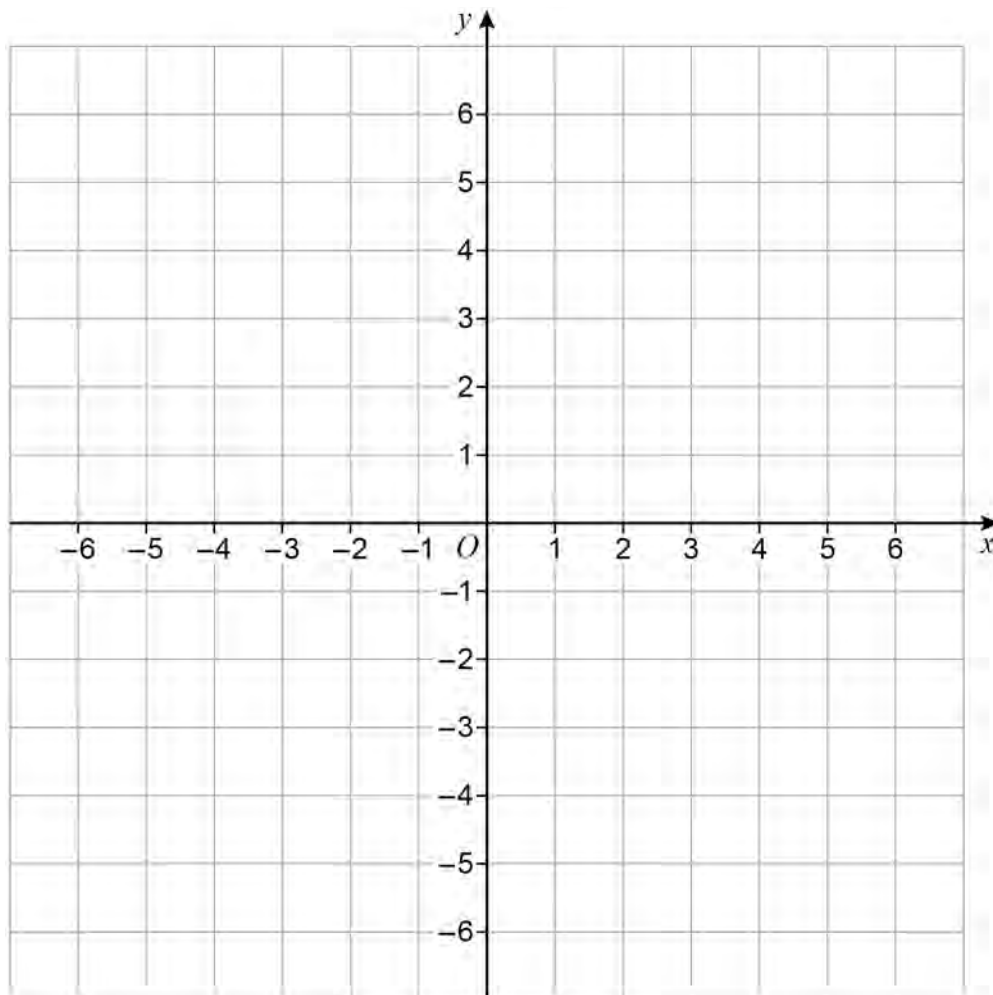
25

A triangle is drawn using the lines

$$y = x$$

$$x = -2$$

$$y = 4$$

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outside the  
boxWork out the coordinates of the **three** vertices of the triangle.**[4 marks]**

Answer ( \_\_\_\_\_ , \_\_\_\_\_ )

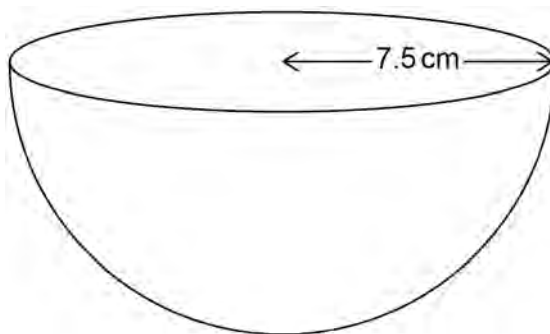
( \_\_\_\_\_ , \_\_\_\_\_ )

( \_\_\_\_\_ , \_\_\_\_\_ )

Turn over ►



26

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

where  $r$  is the radius

Ria works out the volume of this **hemisphere** in terms of  $\pi$   
Here is her work.

$$\text{Volume of a hemisphere} = \frac{4}{3} \times 7.5 \times 3 \div 2 = 15$$

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

[2 marks]

Mistake 1 \_\_\_\_\_

\_\_\_\_\_

Mistake 2 \_\_\_\_\_

\_\_\_\_\_

**END OF QUESTIONS**

2
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ANSWER IN THE SPACES PROVIDED**







