AQA - F - Nov '24

8300/3F ✓

Do not write outside the box

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

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

780 ÷ 4

[1 mark]

Answer 195 ✓

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

19 x 19

[1 mark]

Answer 361 ✓

2 Simplify fully $y + y + y$

[1 mark]

Answer 3y ✓

Do not write outside the box

3 (a) 3 apples cost 96p

×4

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

[2 marks]

$96 \times 4 = 384p$

Answer £ 3·84

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

÷10

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

[2 marks]

Answer £ 2·15

Turn over for the next question

7

Do not write outside the box

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

2 1.8 −1 0

[2 marks]

Answer -1, 0, 1·8, 2 ✓✓

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

0·5 $\frac{1}{2}$ $3\frac{1}{10}$ 3·1 0·25 $\frac{1}{4}$ $\frac{7}{8}$ 0·875

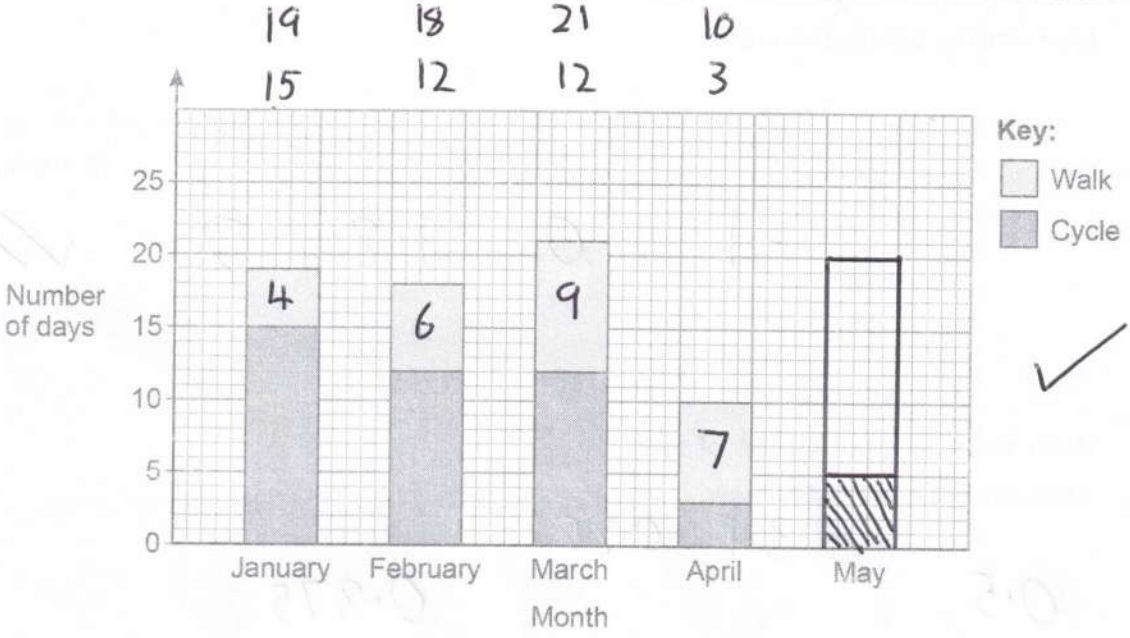
[2 marks]

Answer 1/4, 1/2, 7/8, 3 1/10 ✓✓

[✓ for either smallest/largest correct]

Do not write outside the box

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? 19 - 15

[1 mark]

Answer 4

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

[1 mark]

Answer February

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

He cycled on $\frac{1}{4}$ of the days. = 5

He walked on the other days. = 15

Show this information on the bar chart.

[2 marks]

8

Do not write outside the 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]

Arrives at 7.35am

7 Tyler has £20

A notepad costs £1.30

Work out the greatest number of notepads he can buy.

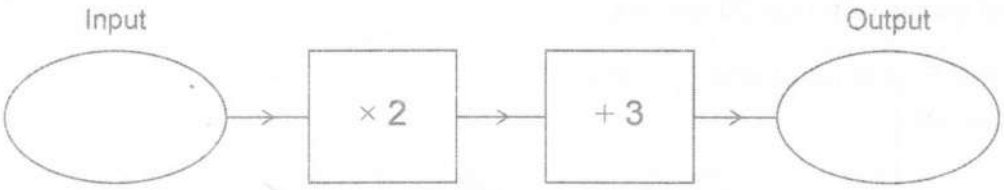
[2 marks]

20 ÷ 1.3 = 15.38... ✓

Answer 15 ✓

Do not write outside the box

8 Here is a number machine.



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

[1 mark]

= 10 x 2 + 3

= 20 + 3

Answer 23 ✓

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

[1 mark]

17 - 3 = 14

14 ÷ 2

Answer 7 ✓

Turn over for the next question

5

Do not write outside the box

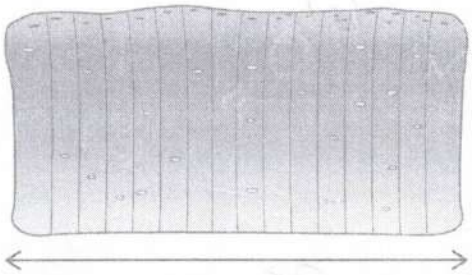
9 A loaf of bread has

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]

$14 \times 12 + 2 \times 15$ ✓either

$168 + 30$

198 mm ✓

÷10

Answer 19.8 cm ✓

Do not write outside the box

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

[1 mark]

$C = 15 \times 3$

$c =$ 45 ✓

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

[3 marks]

$8d - 20 = 28$ ✓

$8d = 48$ ✓

$d = 48 \div 8$

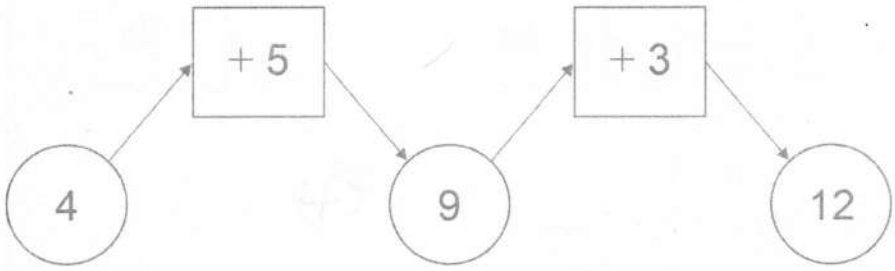
$d =$ 6 ✓

Turn over for the next question

7

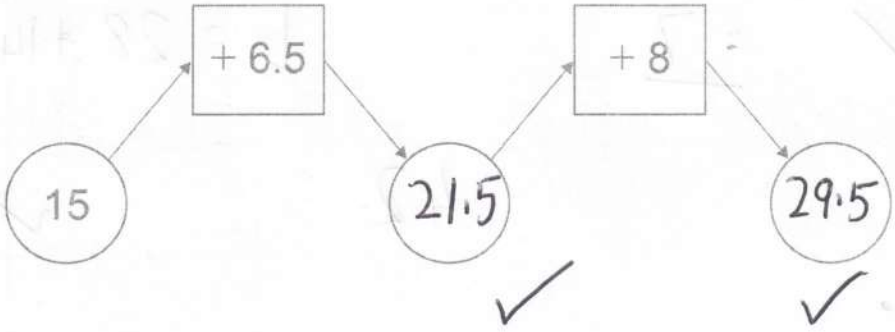
Do not write outside the box

11 Here is a diagram.



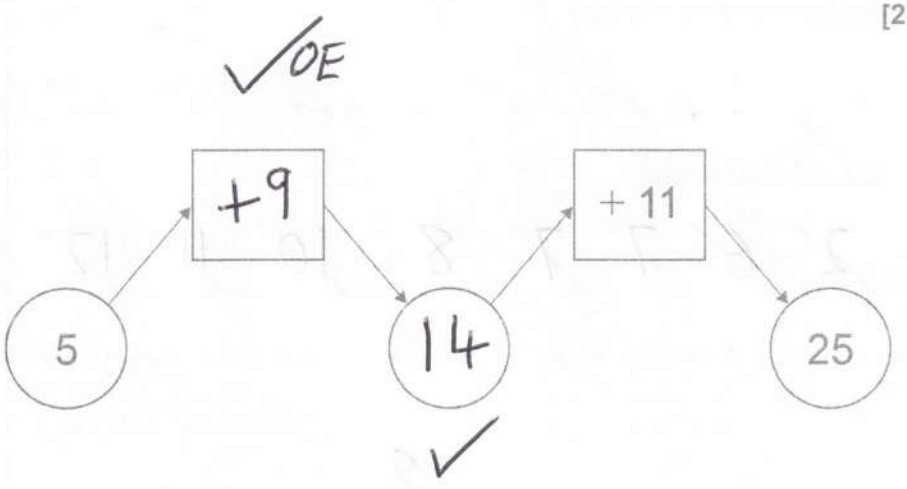
11 (a) Complete this diagram.

[1 mark]



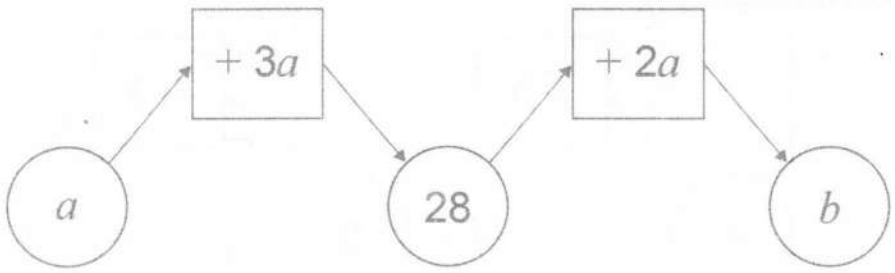
11 (b) Complete this diagram.

[2 marks]



Do not write outside the box

11 (c)



Work out the value of b.

[3 marks]

$4a = 28$ m ✓

$a = 28 \div 4$

✓ $= 7$

$2a = 14$

$b = 28 + 14$

$b =$ 42 ✓

12 Here are some numbers.

12 8 6 11 2 7 7 18 10

Work out the median.

[2 marks]

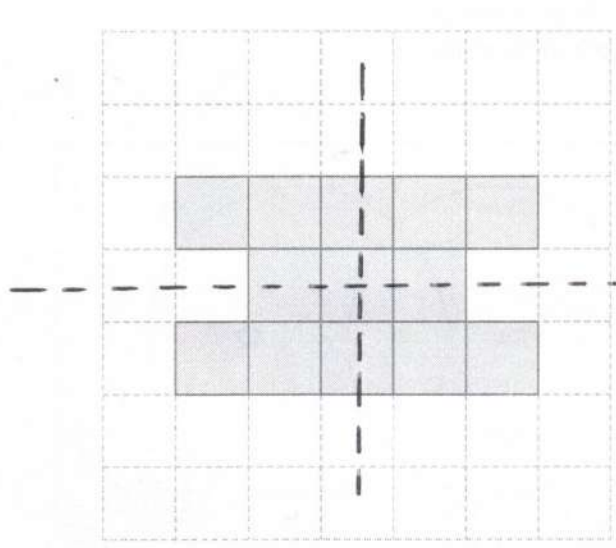
2 6 7 7 8 10 11 12 18 ✓

Answer 8 ✓

8

Do not write outside the box

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

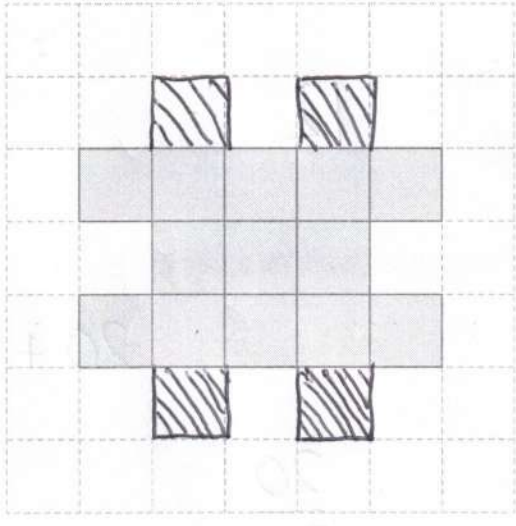


no (additional)

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

[2 marks]

13 (b) Here is the pattern again.



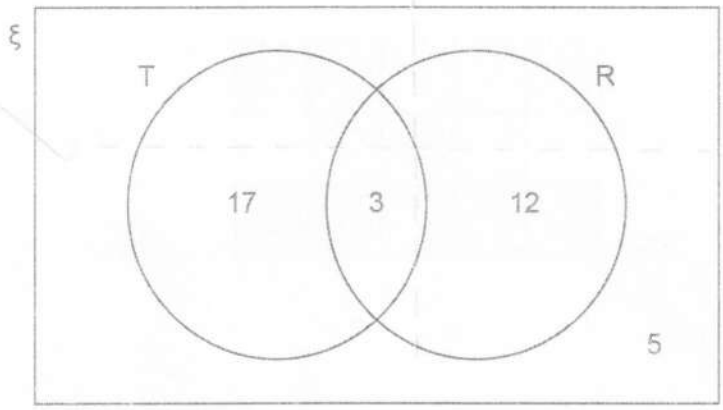
Shade **four** more squares so that the pattern has **rotational** symmetry of order 4

[1 mark]

Do not write outside the box

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 3 ✓

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

[1 mark]

Answer 12 ✓

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

[2 marks]

17+3 20+12+5

Answer $\frac{20}{37}$ ✓ ✓

7

Do not write outside the box

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]

$\frac{3}{8} \times 120 = 45$ ✓ so 75 others

m ✓

Car $= \frac{2}{3} \times 75$

Answer 50 ✓

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]

$8600 \times 0.85 \times 0.90$ ✓✓

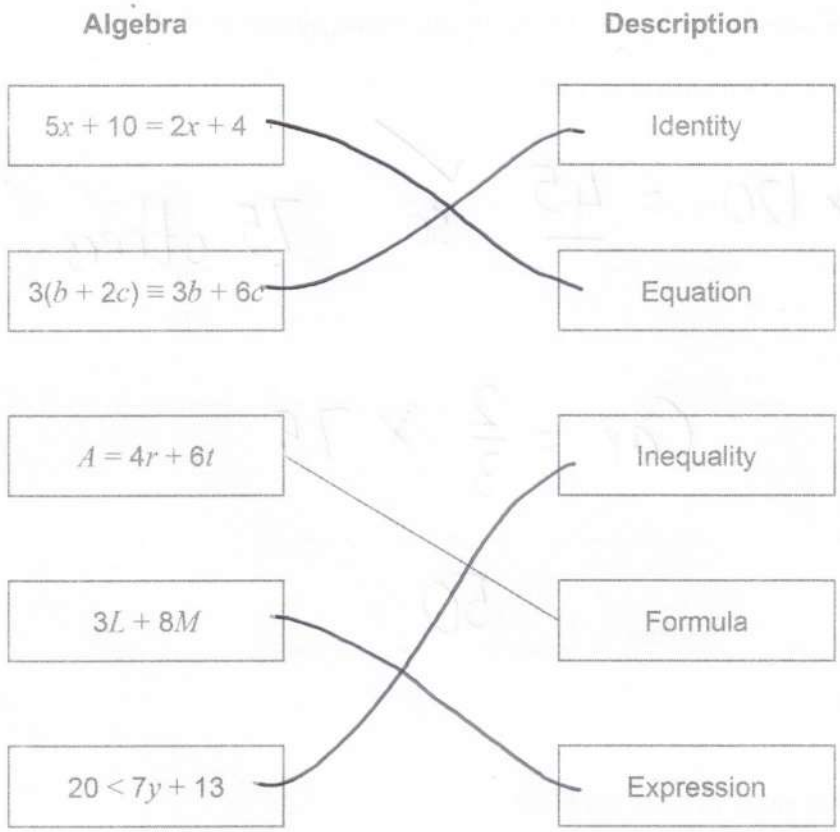
Answer £ 6579 ✓

Do not write outside the box

17 Match the algebra to the correct description.

One has been done for you.

[3 marks]



Turn over for the next question

9

Do not write outside the box

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]

$5 \times 3.40 = £17$ ✓

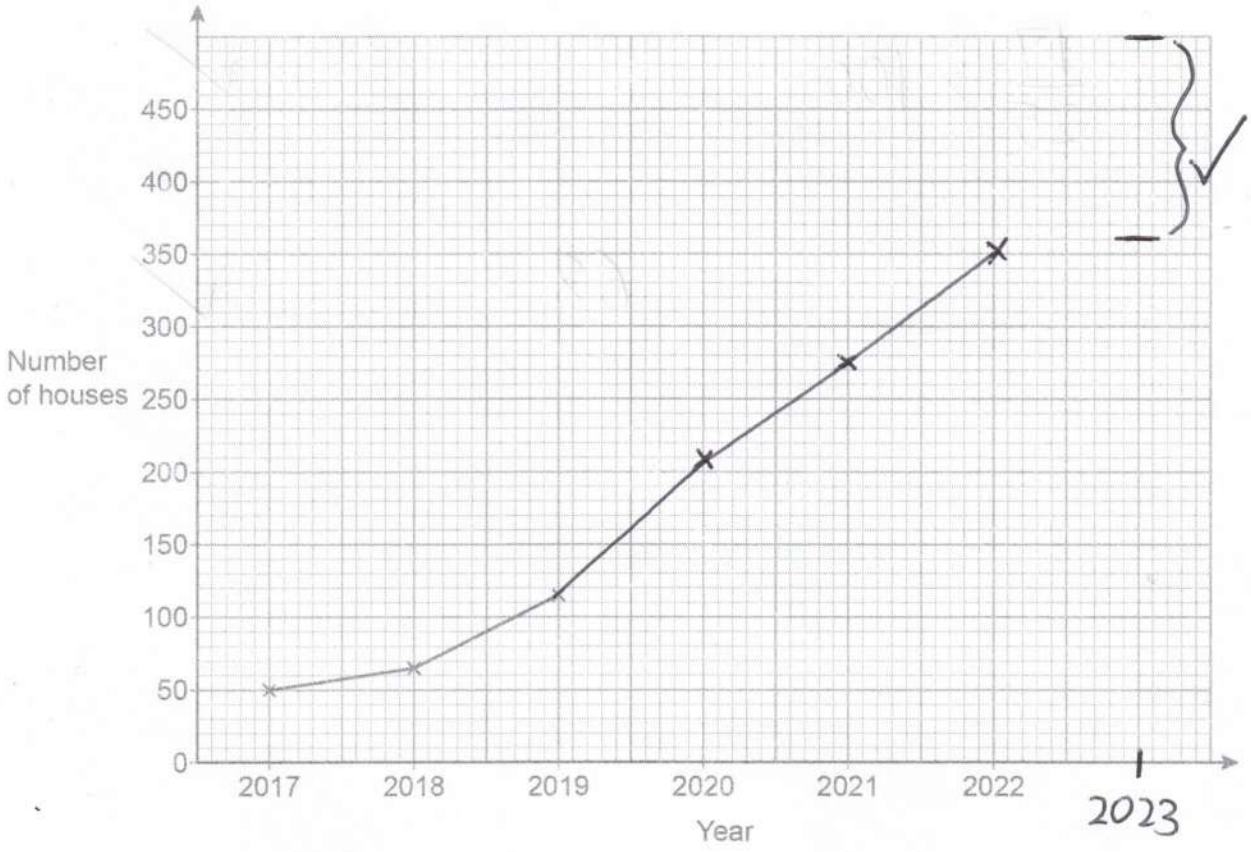
$\frac{17}{25} \times 100$ ✓

Answer 68 % ✓

Do not write outside the box

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

Year	2017	2018	2019	2020	2021	2022
Number of houses	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

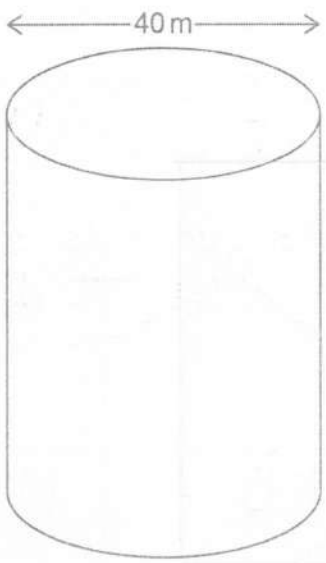
[1 mark]

Answer ms 360 → 500

6

Do not write outside the box

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



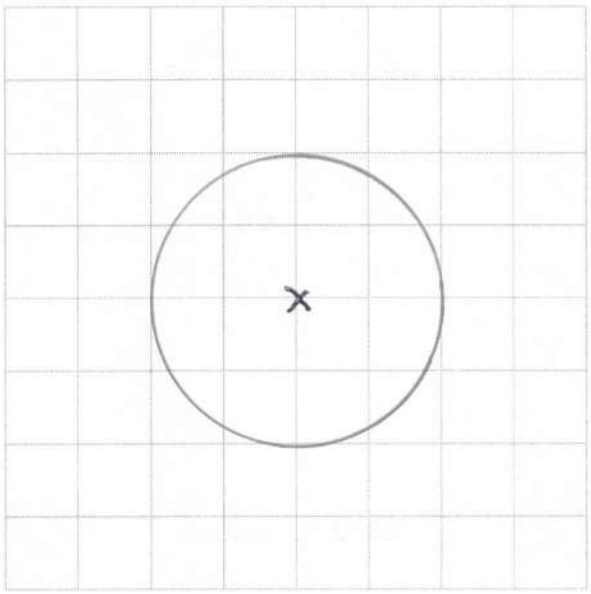
= 4cm

= 5.5cm

Plan

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

[2 marks]

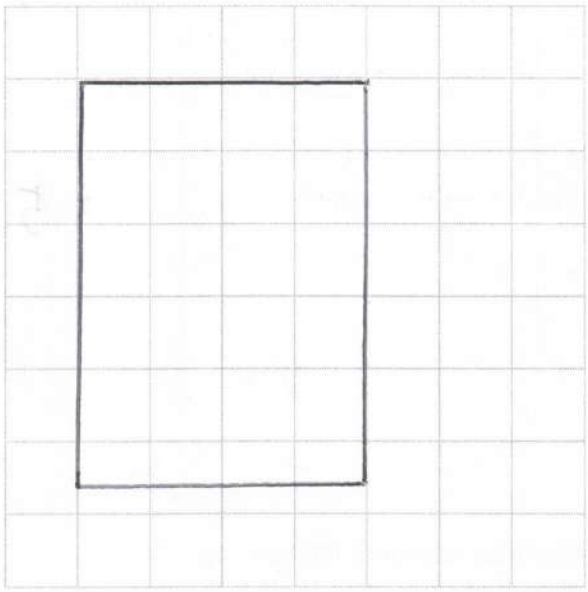


Do not write outside the box

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

Use a scale of 1 cm to 10 m

[2 marks]



✓5.5

✓

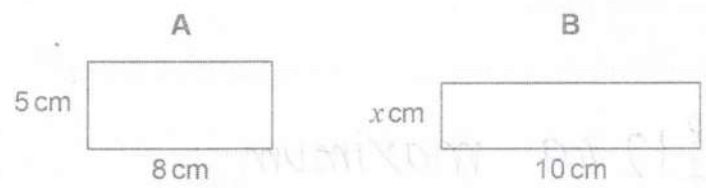
Turn over for the next question

4

Do not write outside the box

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

Not drawn accurately



Work out the ratio perimeter A : perimeter B

[4 marks]

Area

$A = 8 \times 5 = 40$ ✓

$B = 10x = 40$

$x = 4$ ✓

Perimeter

$A = 8 + 5 + 8 + 5 = 26$

$B = 10 + 4 + 10 + 4 = 28$ ✓

A : B

Answer 26 : 28 ✓

or

13 : 14

Do not write outside the box

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]

£12 < £12.49 maximum

£11.50 minimum ✓

✓ 1.89 × 6 = £11.34 ✓

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]

$C =$ 2m +4

✓ ✓

Turn over for the next question

9

Do not write outside the box

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]

S T

15·2 1

912 60

$\times \frac{912}{15.2}$

60 + 2 = 62

912 ÷ 62

Answer 14·7 : 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 ÷ 10 = 7.2
>
> 7 teachers are needed.

What is wrong with her answer?

[1 mark]

Need to round up to 8 teachers

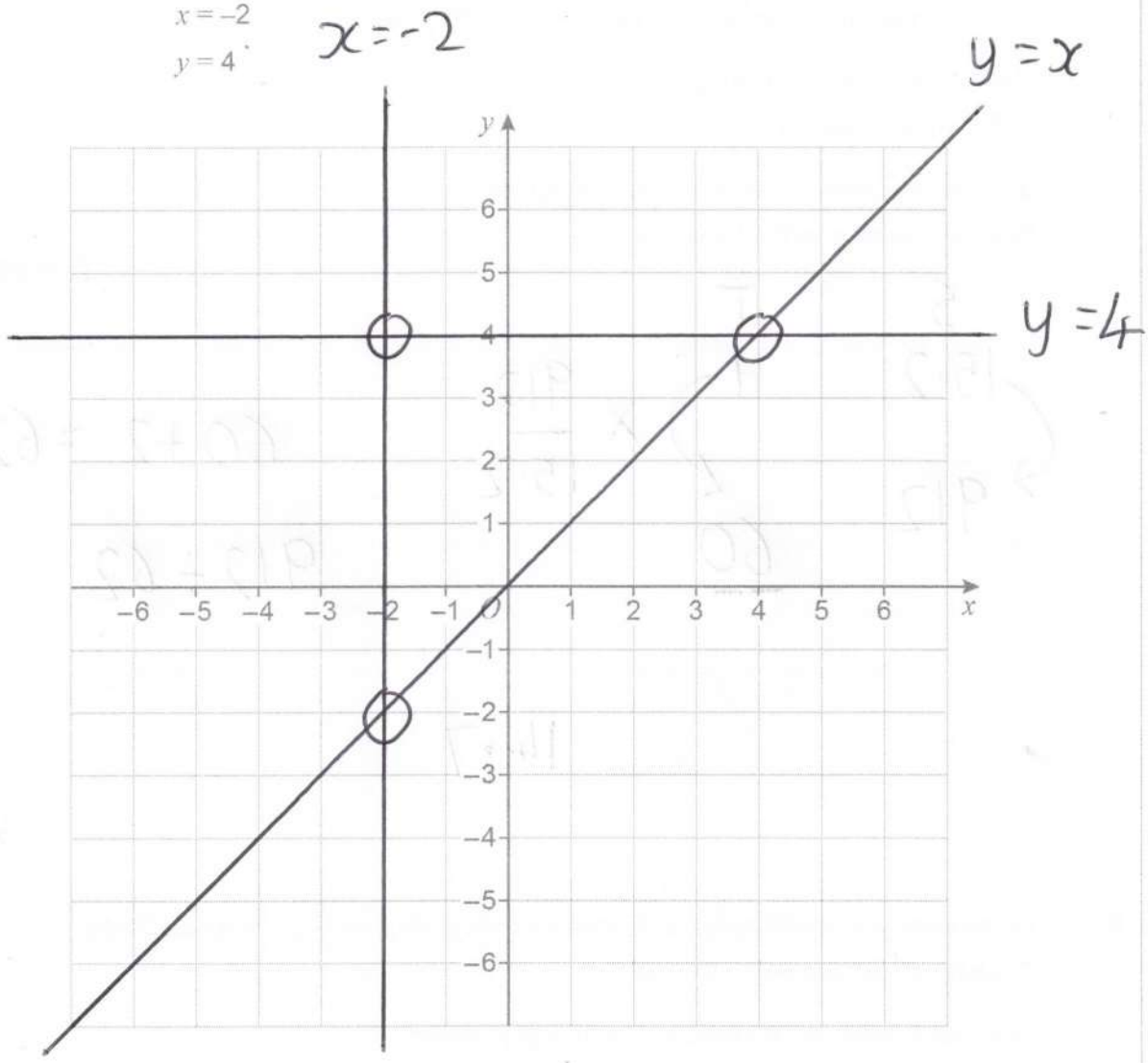
Do not write outside the box

25 A triangle is drawn using the lines

$y = x$

$x = -2$

$y = 4$



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

[4 marks]

Answer (4 , 4) ✓

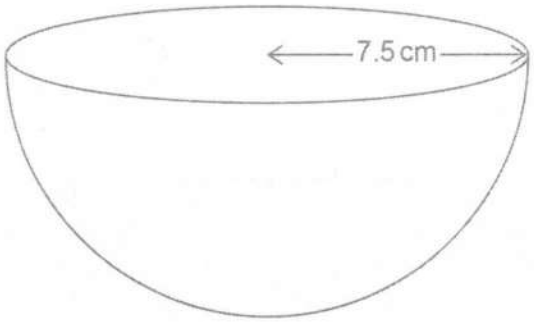
✓ (-2 , 4) ✓

(-2 , -2) ✓

8

Do not write outside the box.

26



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 π

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 She hasn't cubed the radius ✓

Mistake 2 She's missed out the π ✓

(also missing cm^3)

END OF QUESTIONS

2