



Surname _____

Other Names _____

Centre Number _____

Candidate Number _____

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I declare this is my own work.

**GCSE
MATHEMATICS**

F

Foundation Tier Paper 2 Calculator

8300/2F

Thursday 4 June 2020 Morning

Time allowed: 1 hour 30 minutes

At the top of the page, write your surname and other names, your centre number, your candidate number and add your signature.

[Turn over]



For this paper you must have:

- a calculator
- mathematical instruments.



INSTRUCTIONS

- **Use black ink or black ball-point pen. Draw diagrams in pencil.**
- **Answer ALL questions.**
- **You must answer the questions in the spaces provided. Do not write 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.

DO NOT TURN OVER UNTIL TOLD TO DO SO



Answer ALL questions in the spaces provided.

- 1 Circle the ratio that is the same as $3 : 4$
[1 mark]

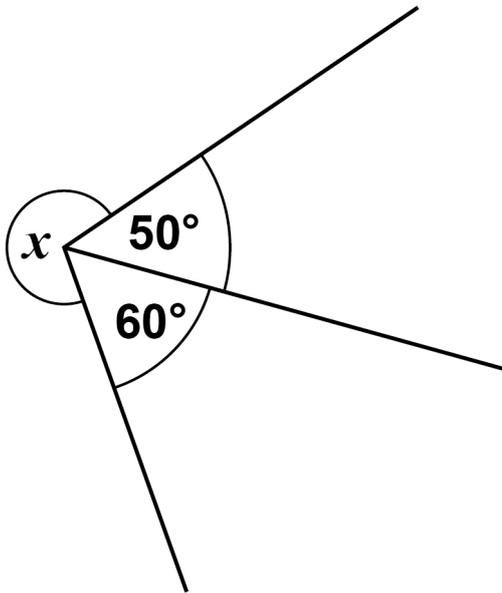
$6 : 7$

$6 : 8$

$6 : 9$

$6 : 16$

2



The diagram is not drawn accurately.

Circle the size of angle x . [1 mark]

70°

110°

250°

270°



- 3 Circle the expression that has the **SMALLEST** value when $x = 4$ [1 mark]

$$5 - x \qquad \frac{1}{2}x \qquad x + 1 \qquad x - 4$$

- 4 The term-to-term rule for a sequence is

add 1 then double

The first two terms are 2 and 6

Circle the next term. [1 mark]

9

13

14

18

[Turn over]



5 (a) Solve $7x = 56$ [1 mark]

$x =$ _____

5 (b) Solve $25 - y = 18$ [1 mark]

$y =$ _____

6



6 Eleven people play a game.

Here are their scores.

12 9 15 9 18 18 3 14

9 16 20

6 (a) Write down the mode. [1 mark]

Answer _____

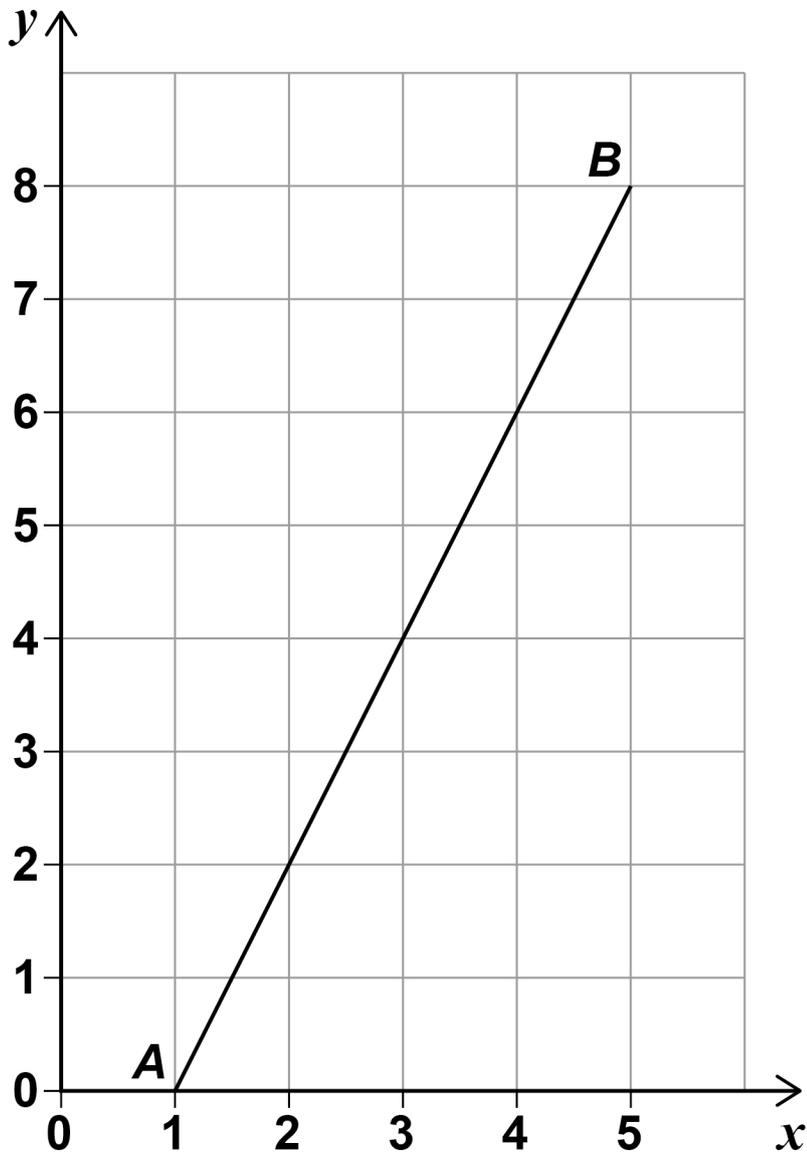
6 (b) Work out the median. [2 marks]

Answer _____

[Turn over]



- 7 Line AB is shown where A is the point $(1, 0)$ and B is the point $(5, 8)$



7 (a) P is a point on AB .

The distance AP is half the distance AB .

Work out the coordinates of P . [1 mark]

Answer (_____ , _____)

7 (b) A line is drawn from B that is
parallel to the x -axis
meets the y -axis at point Q .

Work out the coordinates of Q . [1 mark]

Answer (_____ , _____)

[Turn over]

5



8 (a) Write down an even whole number that is also a square number. [1 mark]

Answer _____

8 (b) Write down ALL the cube numbers between 100 and 400 [2 marks]

Answer _____

9 Members of a club are Senior, Adult or Junior.

9 (a) Here is a report about the members of the club.

18% are Senior

54% are Adult

38% are Junior

Give a reason why there MUST be a mistake in the report. [1 mark]

9 (b) An Adult membership fee is £120

A Junior membership fee is $\frac{1}{5}$ of the Adult fee.

Work out the TOTAL membership fee for
2 Adults and 3 Juniors. [3 marks]

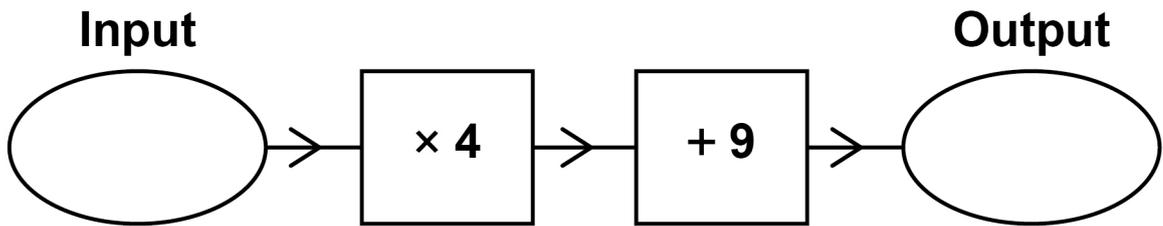
Answer £ _____

[Turn over]

8



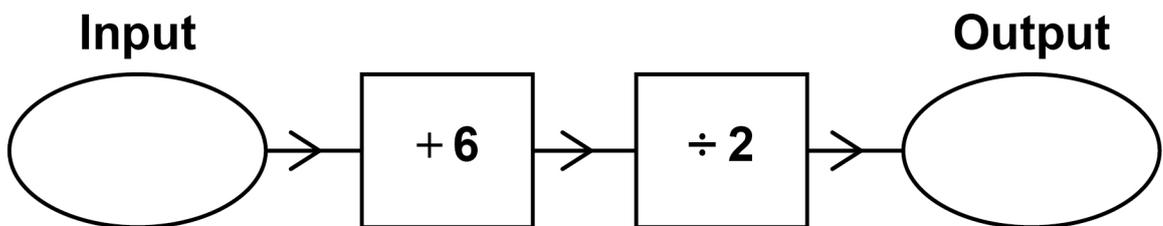
10 (a) Here is a number machine.



Work out the output when the input is 16
[1 mark]

Answer _____

10 (b) Here is a different number machine.

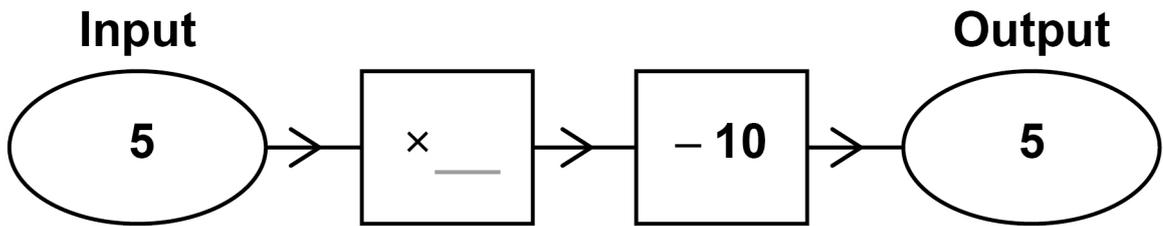


Work out the output when the input is -48
[1 mark]

Answer _____



10 (c) Complete this number machine. [1 mark]



[Turn over]



11 Here are two calculations.

A

$$17^2 - 300$$

B

$$47 \times 21 - 10^3$$

Which calculation has the smaller answer?

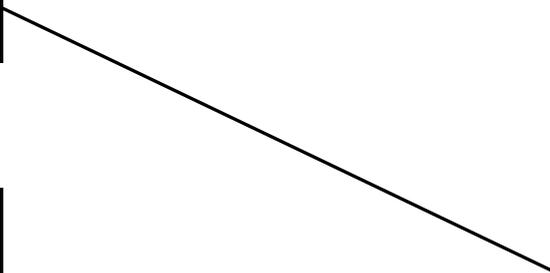
You **MUST** show the answer to each calculation.
[2 marks]

Answer _____



12 Match each expression on the left with one on the right.

One has been done for you. [4 marks]

		$4ab$
$12ab \div 4$		$4 + a$
$a + a + a + a$		$3ab$
$4 \times a \times b$		$4a$
$a \times a \times a \times a$		a^4
$a + a + b + b$		$2ab$
		$2a + 2b$

[Turn over]



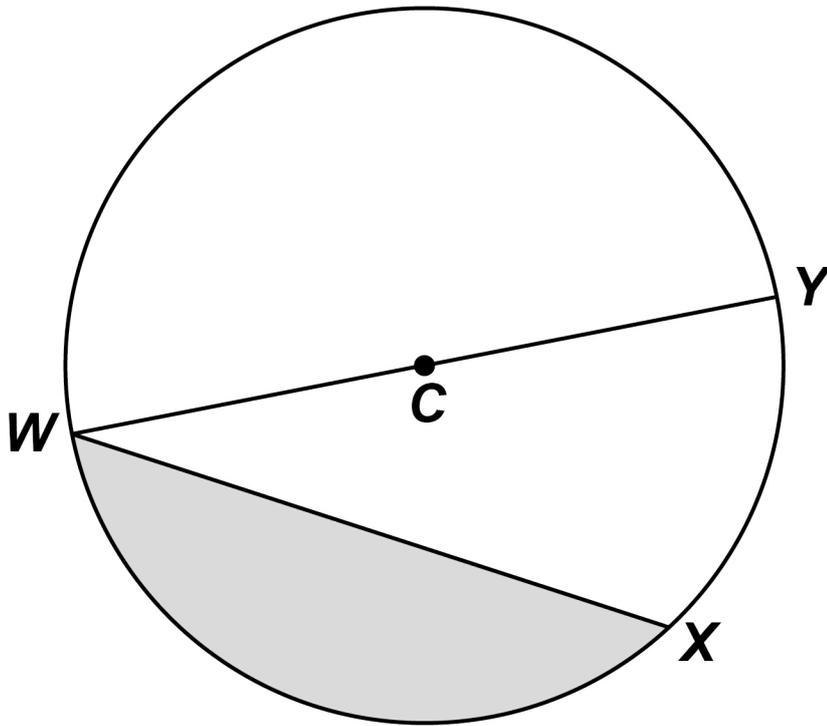
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14 This circle has centre C .

W , X and Y are points on the circle.

WY is a straight line.



Tick ONE box for each statement. [3 marks]

True

False

WY is a diameter.

WX is a radius.

The shaded section is a sector.

Arc *XY* is part of the circumference.

[Turn over]



15 Mortar is made by mixing cement and sand as shown.

For every 1 kg of cement used, add 4 kg of sand

Cement costs £0.19 per kg

Sand costs £0.07 per kg

Tomasz uses 150 kg of cement to make some mortar.

Work out the total cost of the mortar. [3 marks]

Answer £ _____

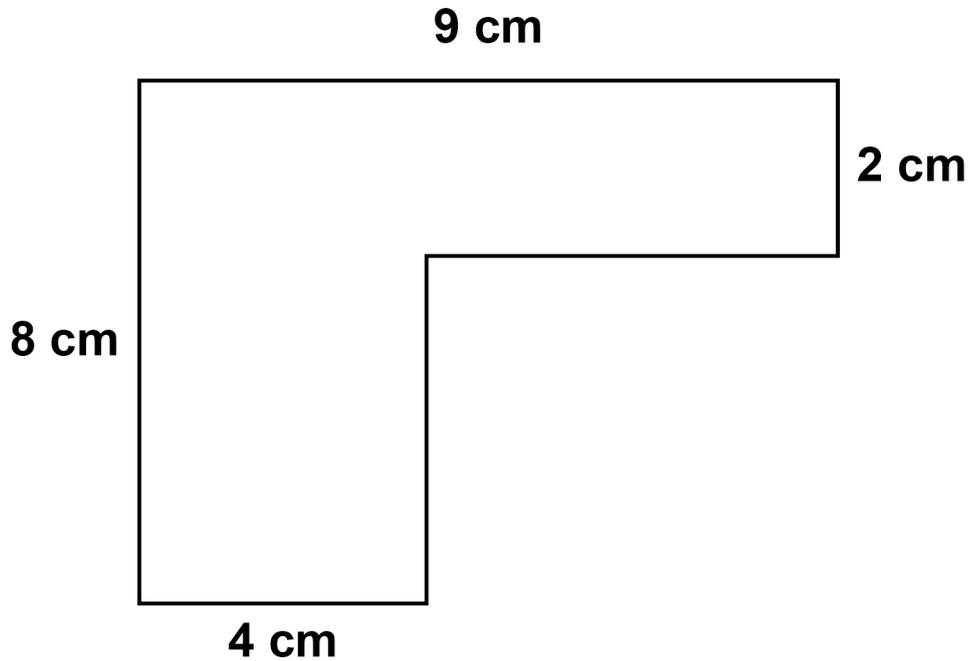
[Turn over]

6



16 (a) Here is a shape made from rectangles.

The diagram is not drawn accurately.



Work out the area. [3 marks]



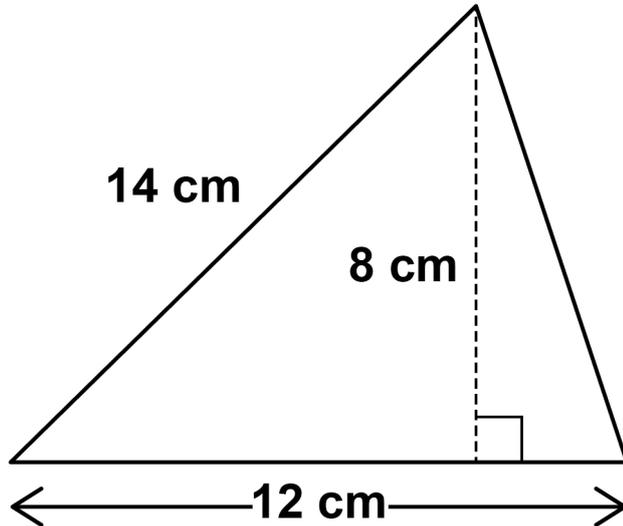
Answer _____ cm²

[Turn over]



16 (b) Zak wants to work out the area of this triangle.

The diagram is not drawn accurately.



Here is his working.

$$12 \times 8 = 96 \text{ cm}^2$$

What is wrong with his method? [1 mark]

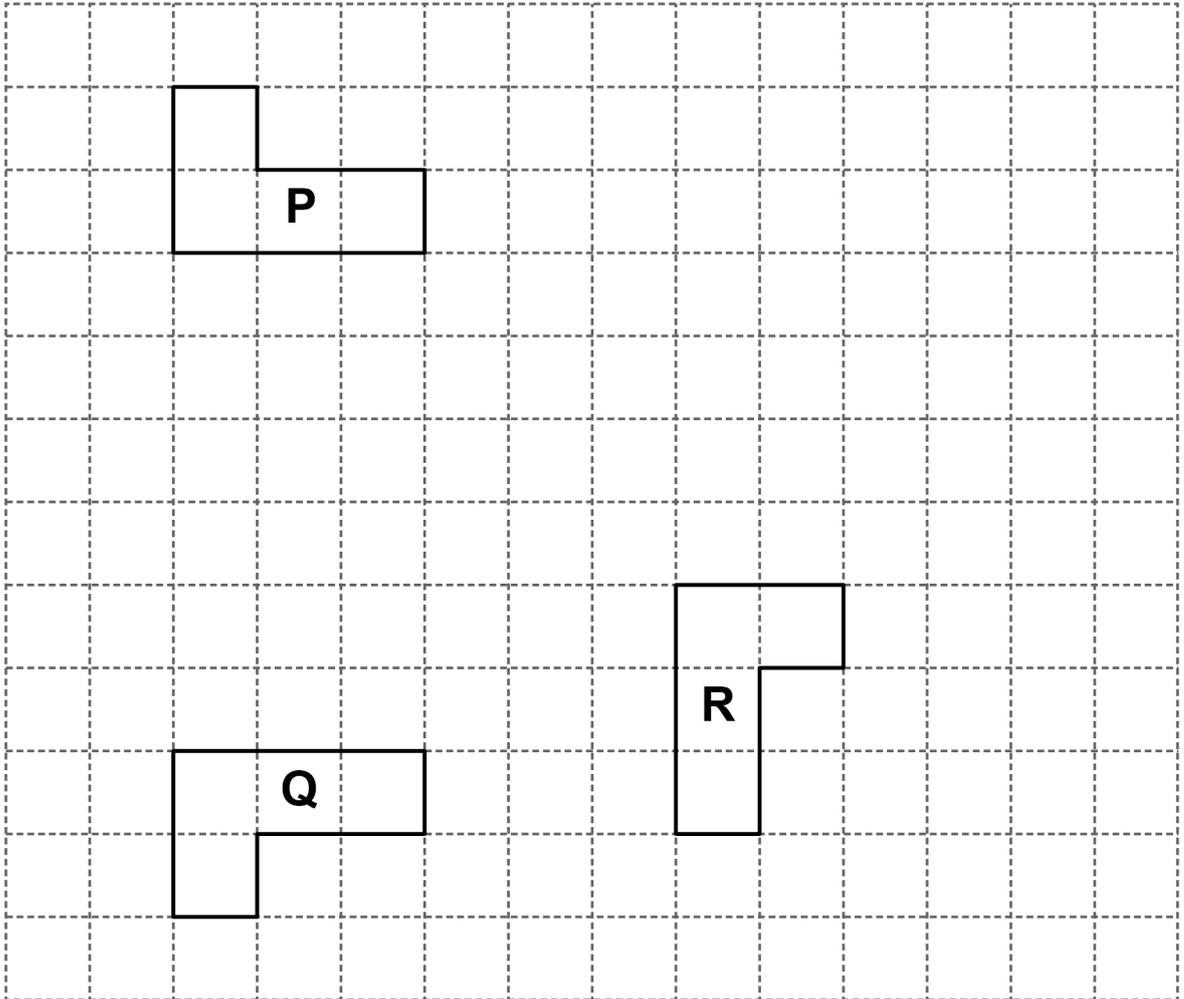


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[Turn over]



17 Here are shapes P, Q and R.



17 (a) P is mapped to Q by a single transformation.

Circle the type of transformation. [1 mark]

rotation

reflection

translation

enlargement



17 (b) P is mapped to R by a single transformation.

Circle the type of transformation. [1 mark]

rotation

reflection

translation

enlargement

[Turn over]



18 Kim buys pet food in 1.5 kg packs.

Her pet needs 0.8 kg of food each week.

She wants to have enough food for the next 14 weeks.

She already has two 1.5 kg packs.

Work out the smallest number of packs she needs to buy.

You **MUST** show your working. [4 marks]

Answer _____

[Turn over]

6



- 19 A scale drawing shows the positions of P , Q and R .

The diagram is not drawn accurately.



On the scale drawing

$$PQ = 4 \text{ cm}$$

$$QR = 6.5 \text{ cm}$$

The actual distance PQ is 50 metres less than the actual distance QR .

Work out the scale. [3 marks]



Answer 1 cm represents

_____ **metres**

[Turn over]



20 (a) a and b are whole numbers.

$$a \leq 12 \quad b < 9$$

Work out the **LARGEST** possible value of $2a + b$ [2 marks]

Answer _____



20 (b) x and y are both **NEGATIVE** numbers.

Show that $\frac{y}{x}$ could equal 4 [1 mark]

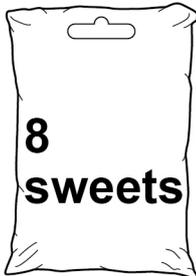
[Turn over]

6



- 21 Jill puts 440 sweets into small bags, medium bags and large bags.

Small



Medium



Large



She uses

30 small bags

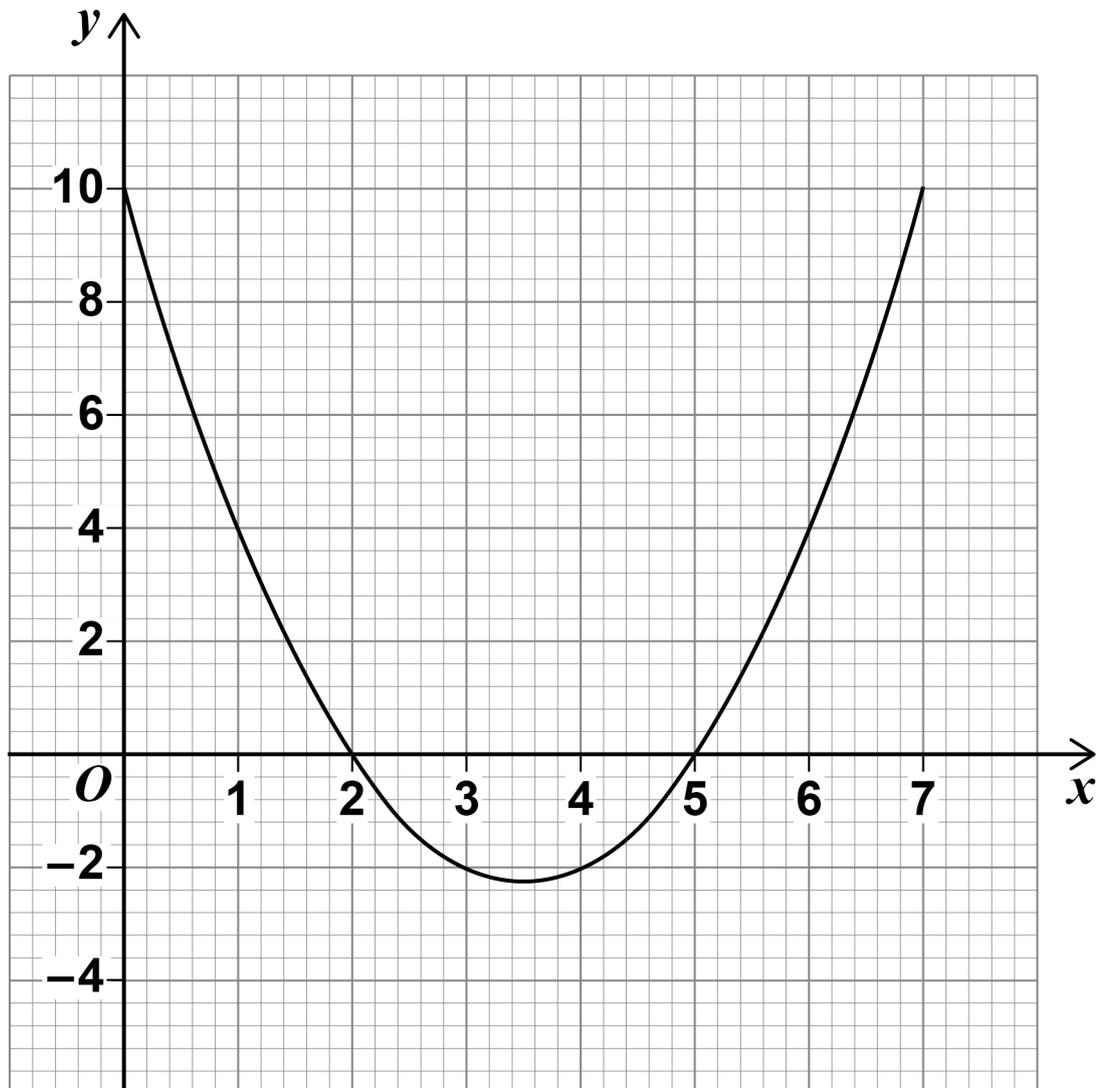
twice as many medium bags as large bags.

There are no sweets left over.

For the number of bags, work out the ratio

small : medium : large [4 marks]

- 22 Here is the graph of $y = x^2 - 7x + 10$ for values of x from 0 to 7



- 22 (a) Write down the roots of $x^2 - 7x + 10 = 0$
[2 marks]

Answer _____



22 (b) Write down the x -coordinate of the turning point of the curve. [1 mark]

Answer _____

[Turn over]

7



- 23** The time students spent watching TV was recorded.

The table shows the average daily time per student each year from 2012 to 2019

Year	2012	2013	2014	2015	2016	2017	2018	2019
Time (minutes)	157	148	138	124	113	100	90	82

A time series graph, on the opposite page, is drawn to represent the data.

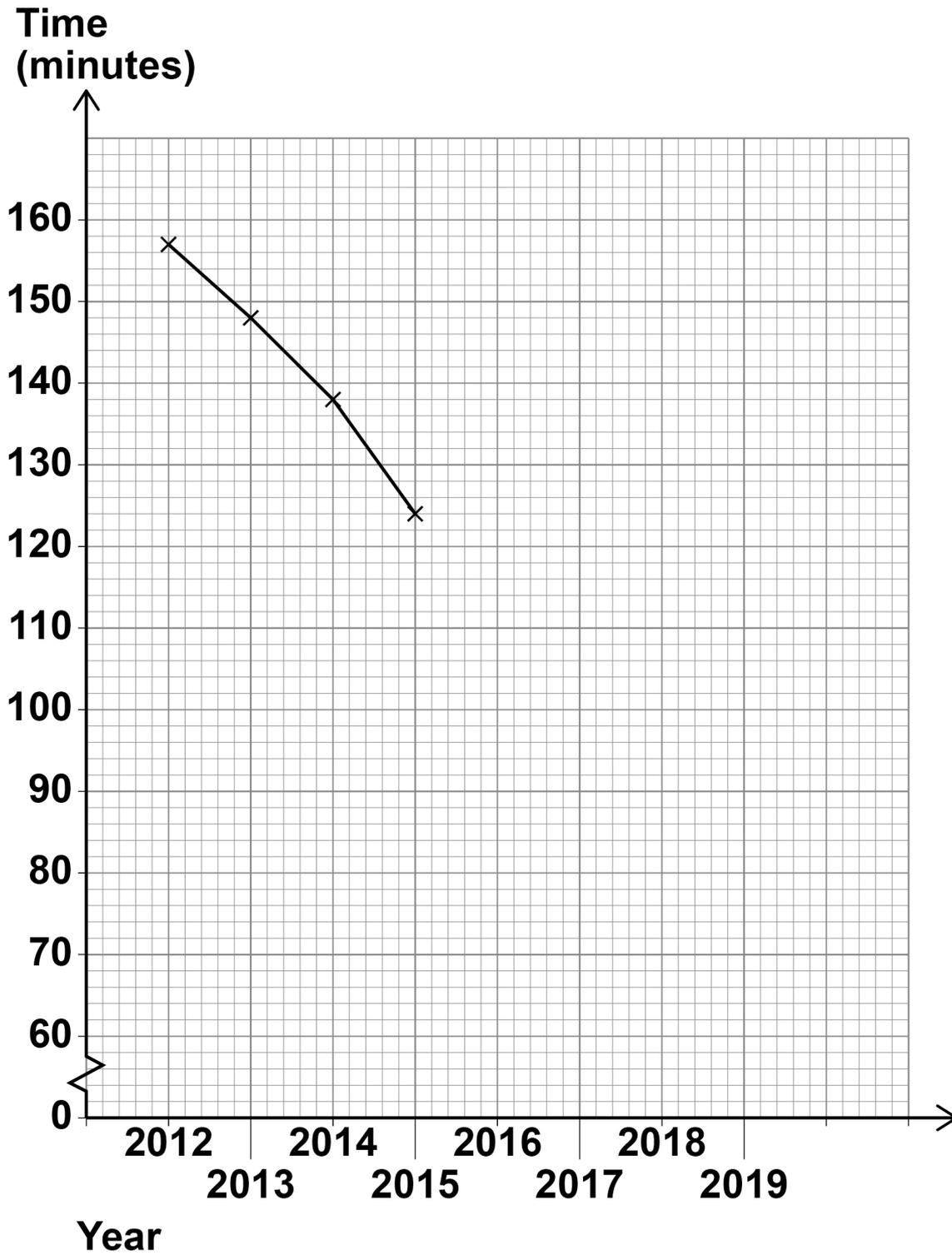
The first four points have been plotted.

- 23 (a)** Complete the graph, on the opposite page.
[2 marks]

- 23 (b)** Use the graph to estimate the average daily time per student in 2020 [1 mark]

Answer _____ **minutes**





[Turn over]



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- 24 Work out the highest common factor (HCF) of 75 and 105 [2 marks]

Answer _____

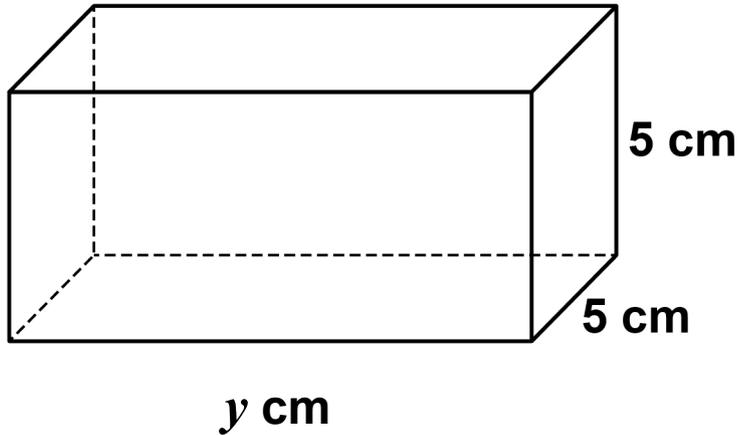
[Turn over]

5



25 Here is a cuboid.

The diagram is not drawn accurately.



25 (a) Assume that the total surface area of the cuboid is 200 cm^2

Work out the volume of the cuboid. [3 marks]



Answer _____ cm^3

- 25 (b) In fact, the total surface area of the cuboid is smaller than 200 cm^2**

What does this mean about the volume of the cuboid?

Tick ONE box. [1 mark]

It is smaller than the answer to part (a)

It is bigger than the answer to part (a)

It is the same as the answer to part (a)

It could be any of the above

[Turn over]



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- 26 Here is some information about the time spent on social media by 50 people.

Time, t minutes	Number of people
$0 < t \leq 15$	2
$15 < t \leq 30$	9
$30 < t \leq 45$	31
$45 < t \leq 60$	8

Circle the number of people who spent more than 30 minutes. [1 mark]

9

11

31

39

[Turn over]

5



27 At a party there are 90 people.

48 are women and 42 are men.

Some women leave.

Some men arrive.

The ratio of women to men is now 10 : 11

Are there now more than 90 people at the party?

Tick ONE box.

Yes

No

Cannot tell

Show working to support your answer.
[2 marks]



[Turn over]



28 Alex and Bev sat six tests, each with 50 marks.

The table shows their mean percentages after five tests.

Alex	60%
Bev	52%

After all six tests, their mean percentages were equal.

In the sixth test, Alex scored 24 out of 50

**Work out Bev's score, out of 50, in the sixth test.
[4 marks]**



Answer _____ out of 50

[Turn over]

6



- 29 A solid piece of silver has
mass 2.625 kilograms
volume 250 cm³

Work out the density of the piece of silver.

Give your answer in grams per cubic centimetre.
[2 marks]

Answer _____ g/cm³



- 30 Work out the gradient of the straight line through $(-2, 3)$ and $(1, 9)$ [2 marks]

Answer _____

END OF QUESTIONS

4



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For Examiner's Use	
Pages	Mark
4–6	
7–9	
10–13	
14–16	
17–19	
20–23	
24–26	
28–31	
32–35	
36–39	
40–43	
44–47	
48–51	
52–53	
TOTAL	

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