Please write clearly in block capitals.

Centre number ☐☐☐☐☐ Candidate number ☐☐☐☐

Surname

Forename(s)

Candidate signature

I declare this is my own work.

GCSE
MATHEMATICS

Foundation Tier Paper 2 Calculator

F

Thursday 4 June 2020 Morning Time allowed: 1 hour 30 minutes

Materials

For this paper you must have:
- a calculator
- mathematical instruments.

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	
26–27	
28	
TOTAL	

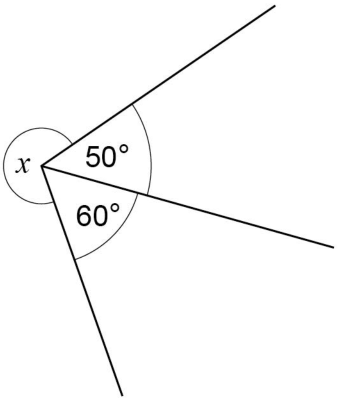
Answer **all** questions in the spaces provided.

1 Circle the ratio that is the same as 3 : 4

[1 mark]

6 : 7	6 : 8	6 : 9	6 : 16

2



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]

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

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

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]

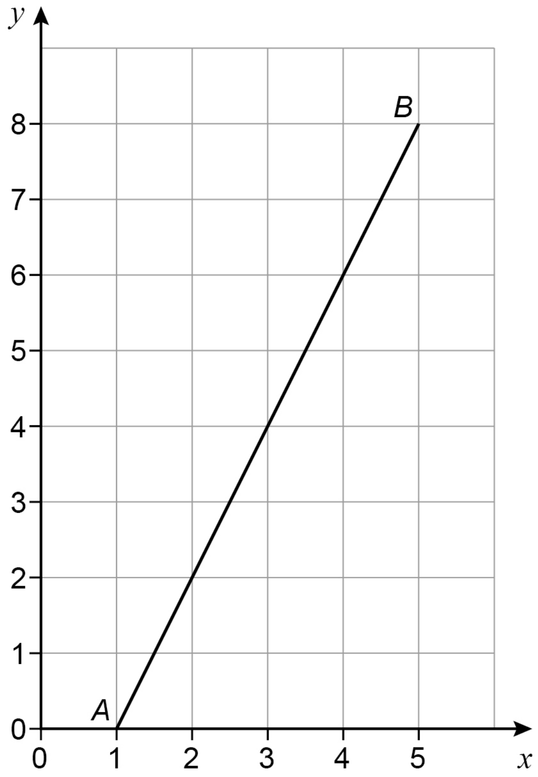
Answer ______________________________

6 (b) Work out the median.

[2 marks]

Answer ______________________________

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 (__________ , __________)

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 ____________________

8 (c) Write down **two** numbers that

are multiples of 3

and

multiply to make 216

[1 mark]

Answer __________ and __________

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.

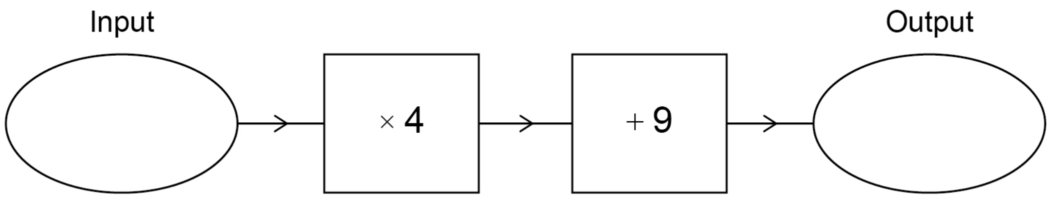
[3 marks]

Answer £ ____________________

8

Turn over ►

10 (a) Here is a number machine.

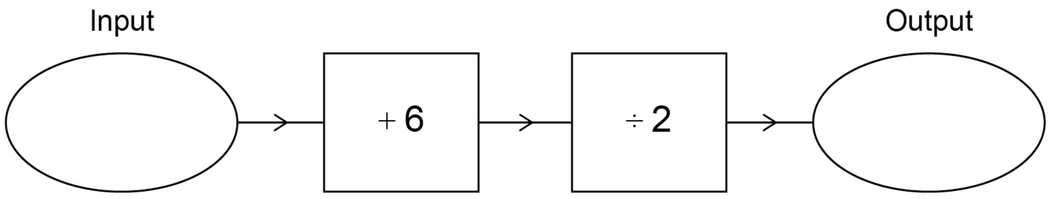

Input
× 4
+ 9
Output

Work out the output when the input is 16

[1 mark]

Answer ______________________________

10 (b) Here is a different number machine.


Input
+ 6
÷ 2
Output

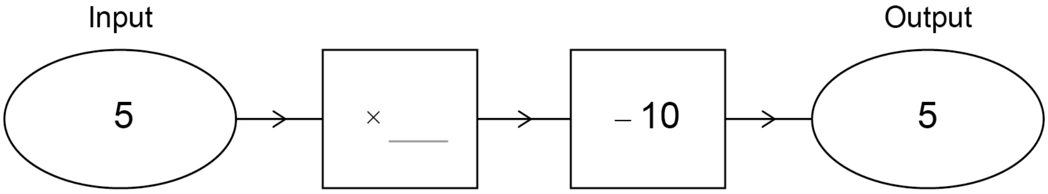
Work out the output when the input is –48

[1 mark]

Answer ______________________________

10 (c) Complete this number machine.

[1 mark]



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]

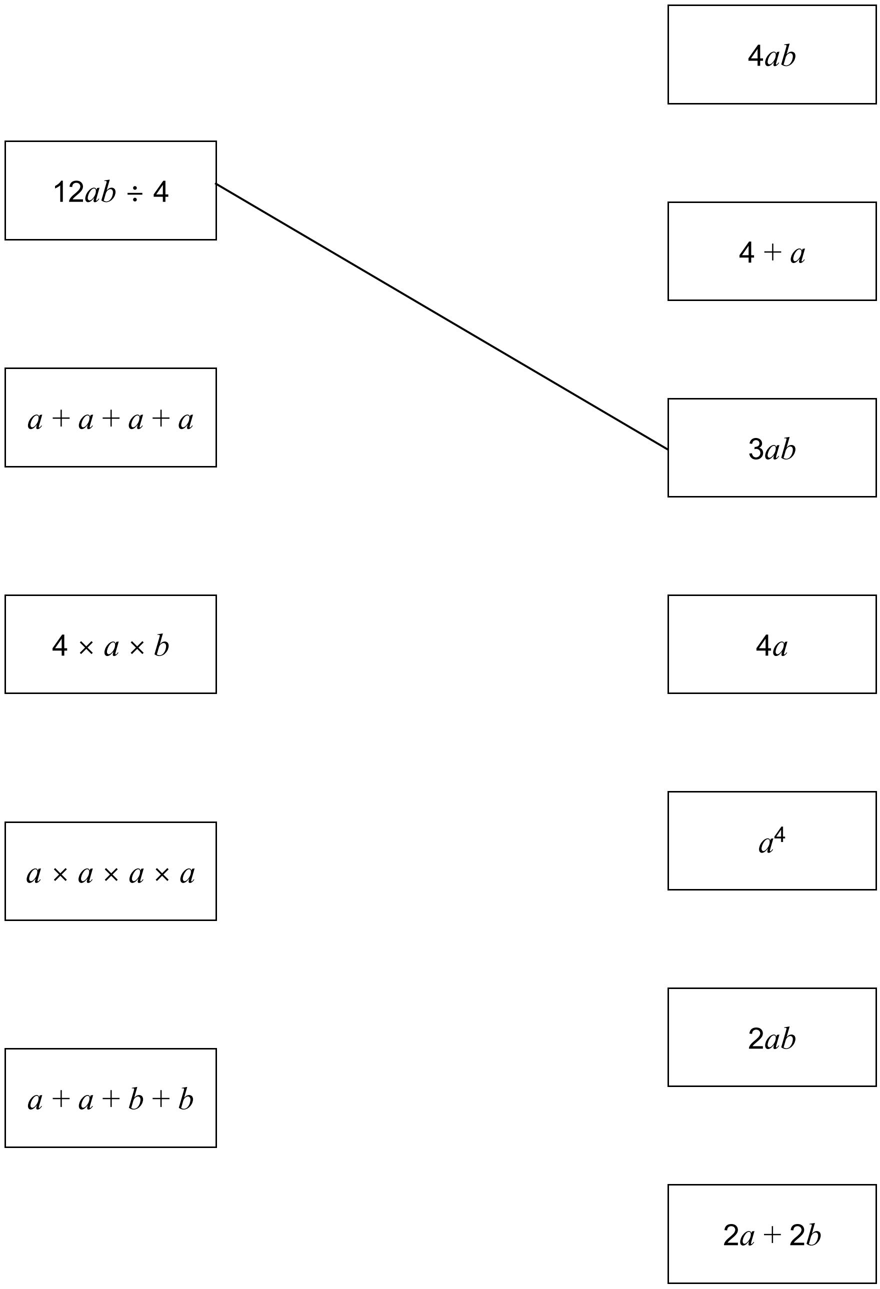
Answer ______________________________

5

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

One has been done for you.

[4 marks]


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

13 Jenny works for 30 hours and is paid £318

Calvin works for 28 hours and is paid £287

Jenny is paid more per hour than Calvin.

How much more?

[3 marks]

Answer ______________________________ pence

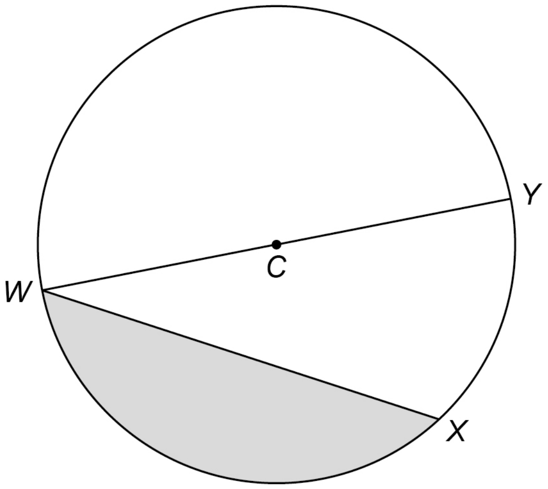
Turn over for the next question

7

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.	☐	☐

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.

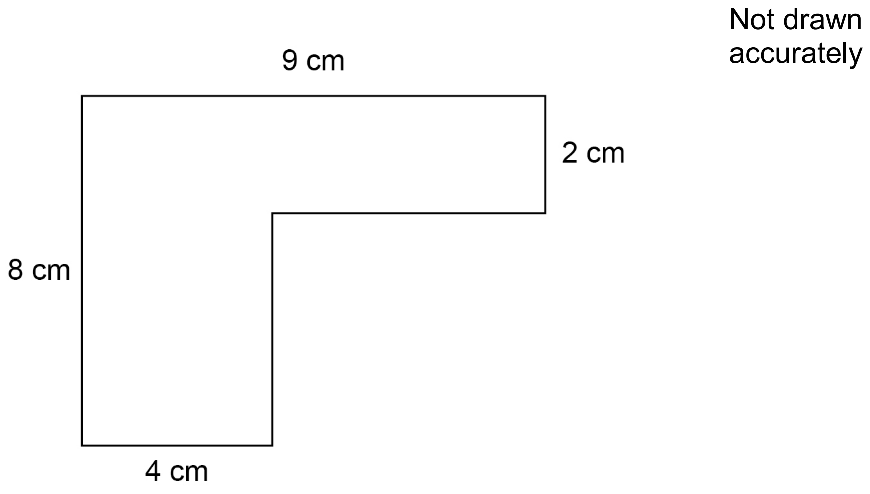
[3 marks]

Answer £ ____________________

Turn over for the next question

6

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

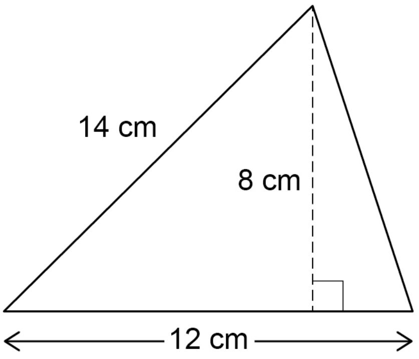

Not drawn accurately
9 cm
2 cm
8 cm
4 cm

Work out the area.

[3 marks]

Answer ______________________ cm^2

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



Not drawn accurately

Here is his working.

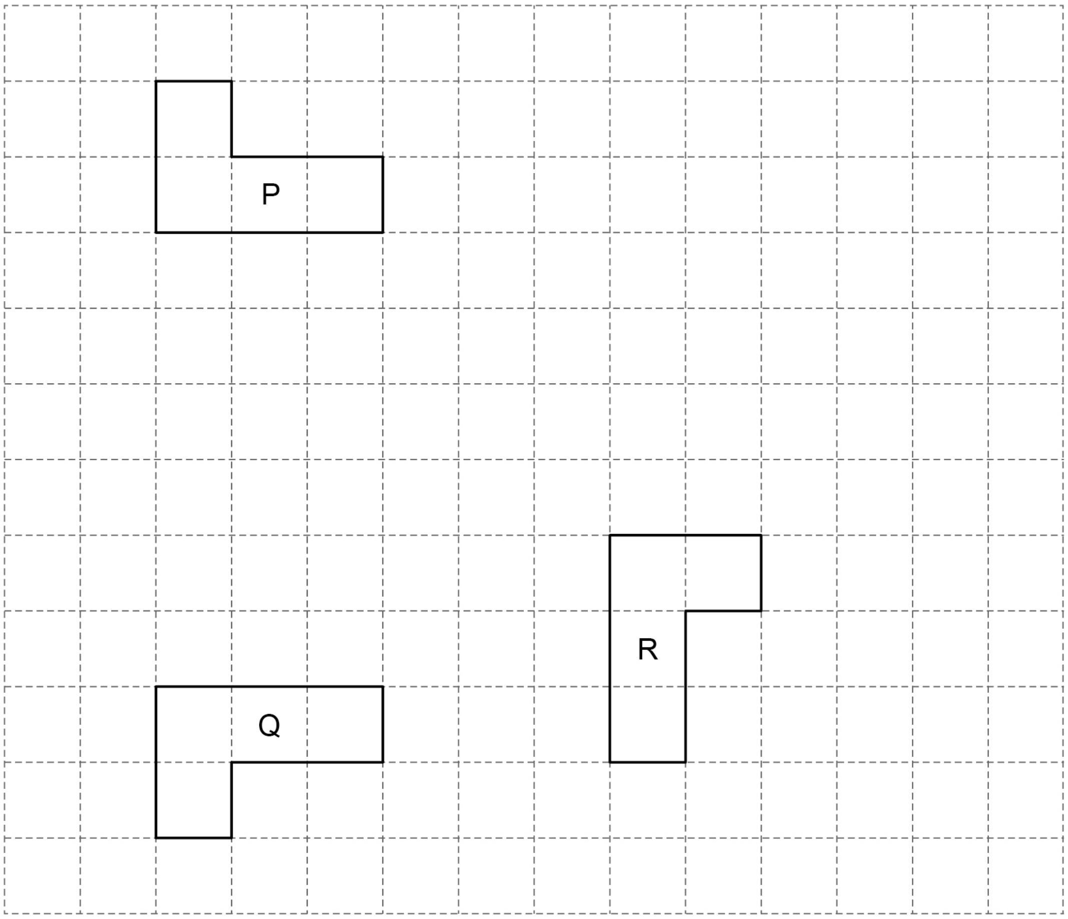
$12 \times 8 = 96$ cm^2

What is wrong with his method?

[1 mark]

Turn over for the next question

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

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.

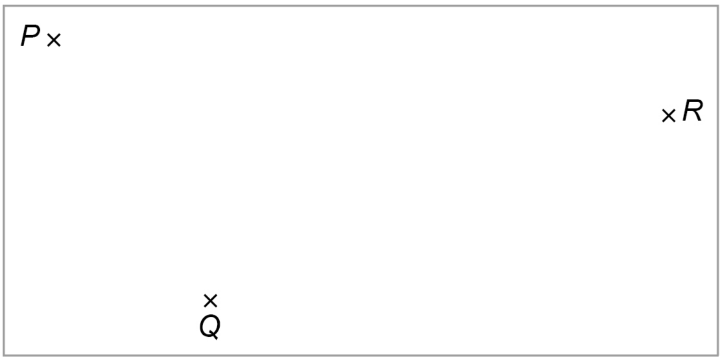
[4 marks]

Answer

Turn over for the next question

6

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



Not drawn accurately

On the scale drawing

PQ = 4 cm *QR* = 6.5 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

20 (a) a and b are whole numbers.

$a \leqslant 12 \qquad b < 9$

Work out the **largest** possible value of $2a + b$

[2 marks]

Answer ________________________________

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

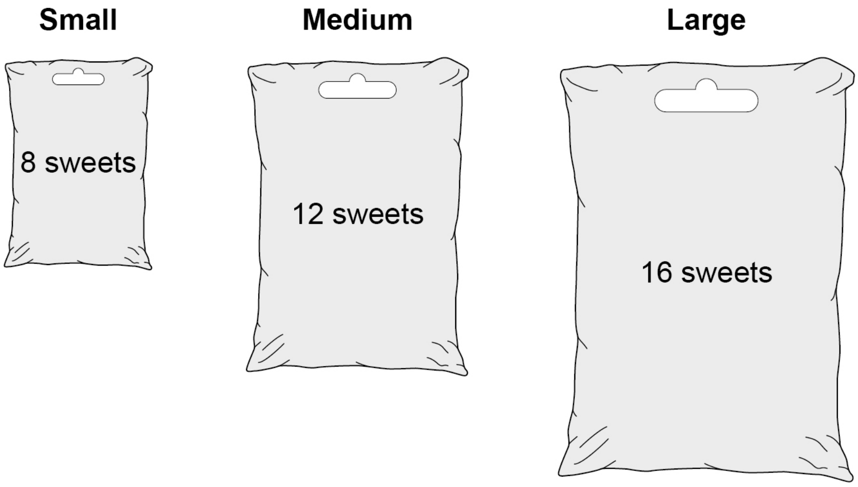
Show that $\frac{y}{x}$ could equal 4

[1 mark]

Turn over for the next question

6

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


Small
Medium
Large
8 sweets
12 sweets
16 sweets

She uses

30 small bags
twice as many medium bags as large bags.

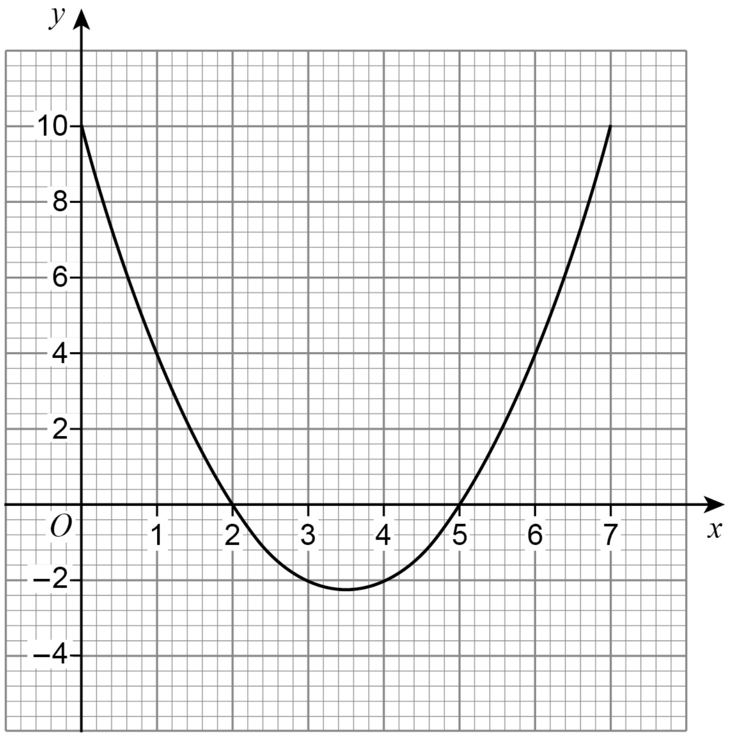
There are no sweets left over.

For the number of bags, work out the ratio small : medium : large

[4 marks]

Answer ____________ : ____________ : ____________

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 ________________________________

7

Turn over ►

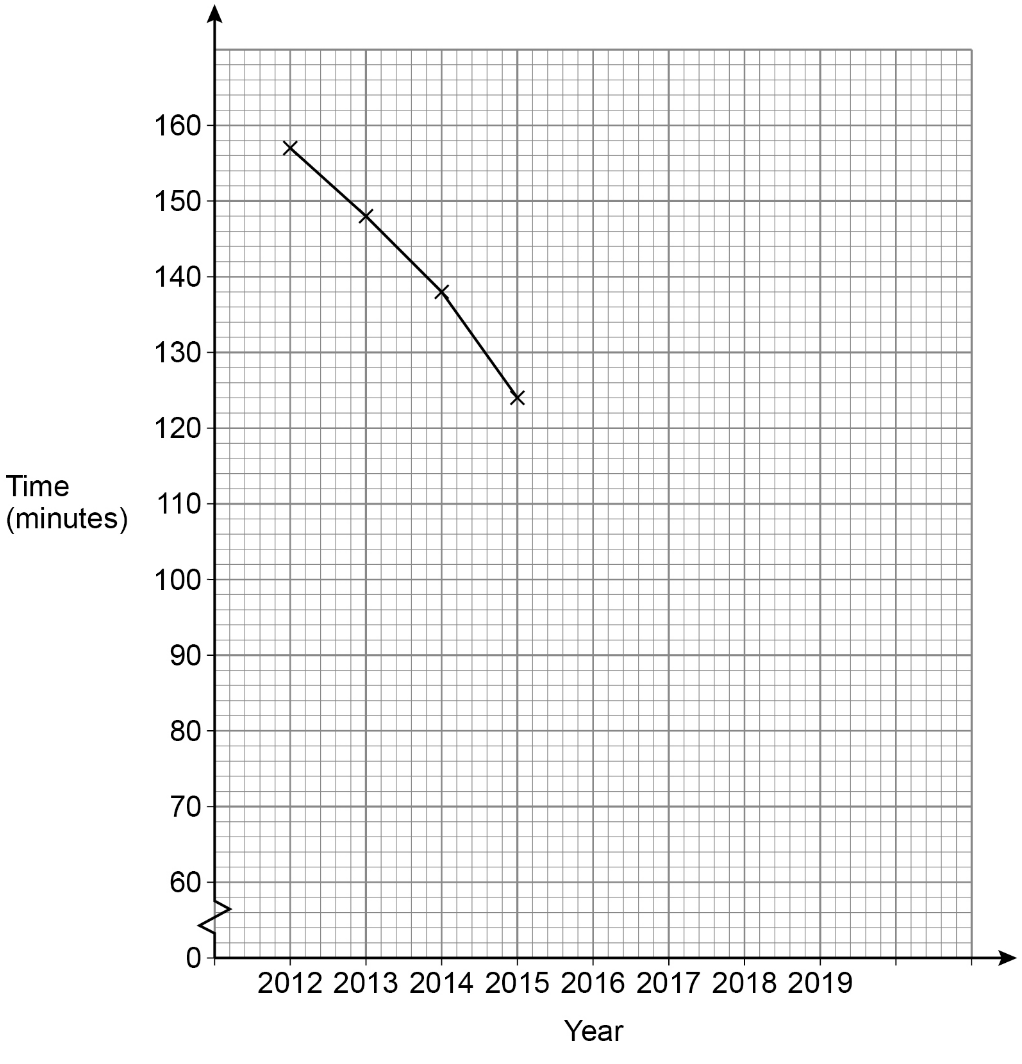
23 The time students spent watching TV was recorded.

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 is drawn to represent the data.

The first four points have been plotted.



23 (a) Complete the graph.

[2 marks]

23 (b) Use the graph to estimate the average daily time per student in 2020

[1 mark]

Answer ______________________ minutes

24 Work out the highest common factor (HCF) of 75 and 105

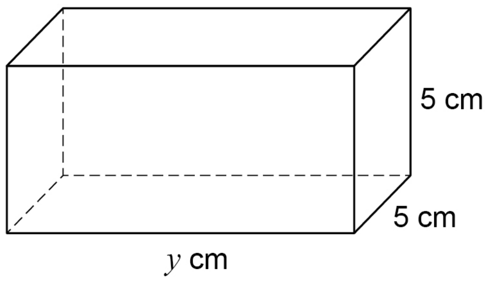
[2 marks]

Answer ______________________

Turn over for the next question

5

25 Here is a cuboid.



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

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

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

Circle the number of people who spent more than 30 minutes.

[1 mark]

9 11 31 39

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]

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 for the next question

6

29 A solid piece of silver has

mass 2.625 kilograms
volume 250 cm^3

Work out the density of the piece of silver.

Give your answer in grams per cubic centimetre.

[2 marks]

Answer ______________________ g/cm^3

30 Work out the gradient of the straight line through (–2, 3) and (1, 9)

[2 marks]

Answer ______________________

END OF QUESTIONS

4

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.**

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

Do not write outside the box

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

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