AQA

Please write clearly in block capitals.

Centre number | | | | | | Candidate number | | | | |

Surname _____

Forename(s) _____

Candidate signature _____

I declare this is my own work.

# GCSE MATHEMATICS

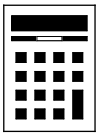
**F**

Foundation Tier Paper 2 Calculator

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.

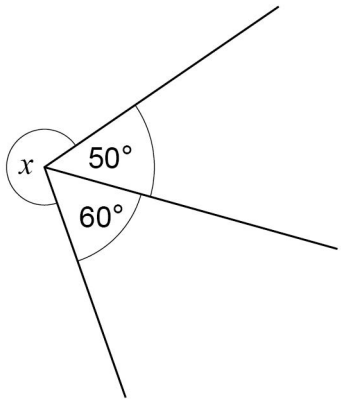
*Do not write outside the box*

**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]**

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

*Do not write outside the box*

**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

**Turn over ►**

*Do not write outside the box*

**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]**

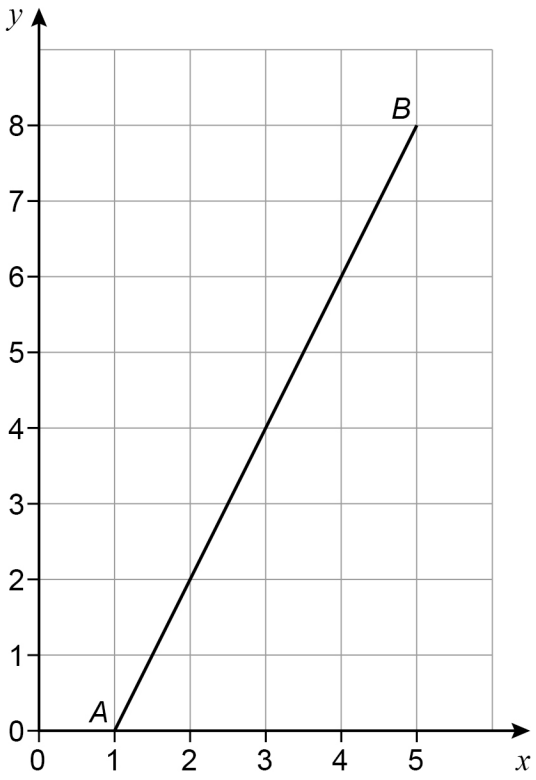
_____

_____

Answer _____

*Do not write outside the box*

**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**

*Do not write outside the box*

**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 _____

*Do not write outside the box*

**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.

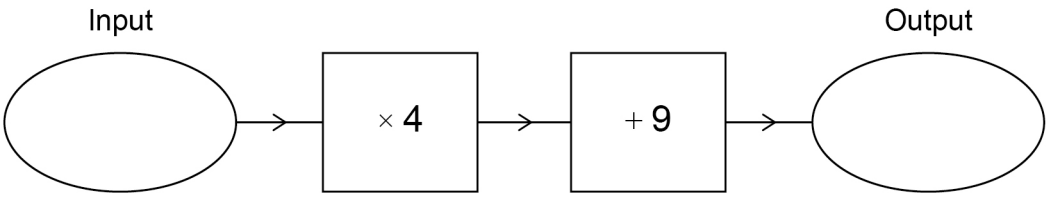
**[3 marks]**

Answer £ _____

**8**

*Do not write outside the box*

**10 (a)** Here is a number machine.

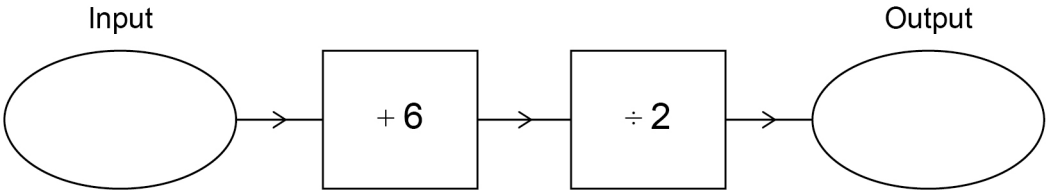



Work out the output when the input is 16

**[1 mark]**

Answer _____

**10 (b)** Here is a different number machine.




Work out the output when the input is –48

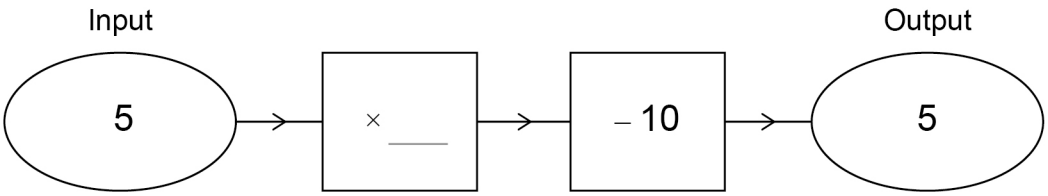
**[1 mark]**

Answer _____

*Do not write outside the box*

**10 (c)** Complete this number machine.

**[1 mark]**




**11** Here are two calculations.

| **A** | **B** |
|---|---|
| $17^2 - 300$ | $47 \times 21 - 10^3$ |

Which calculation has the smaller answer?

You **must** show the answer to each calculation.

**[2 marks]**

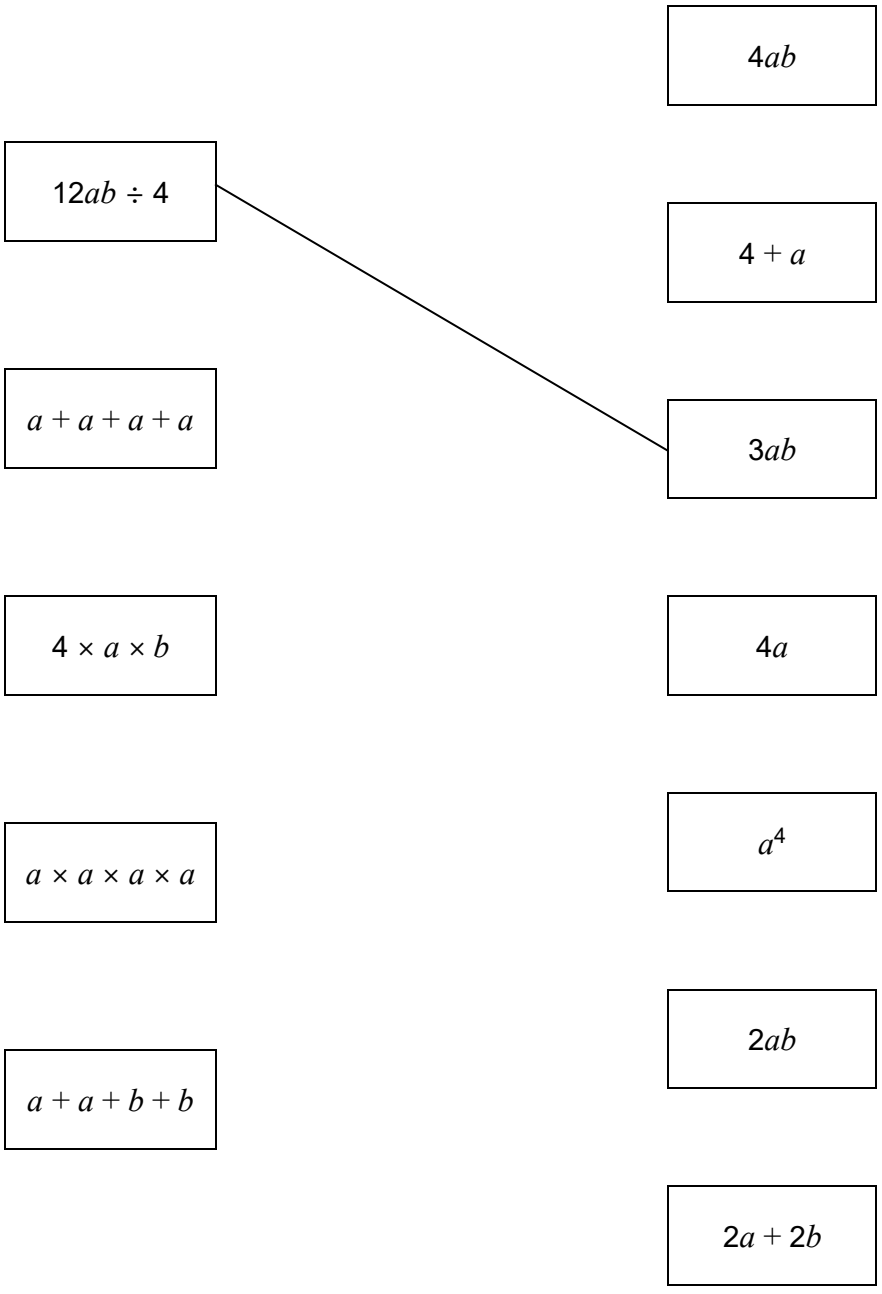
Answer _____

5

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

One has been done for you.

**[4 marks]**



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**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**

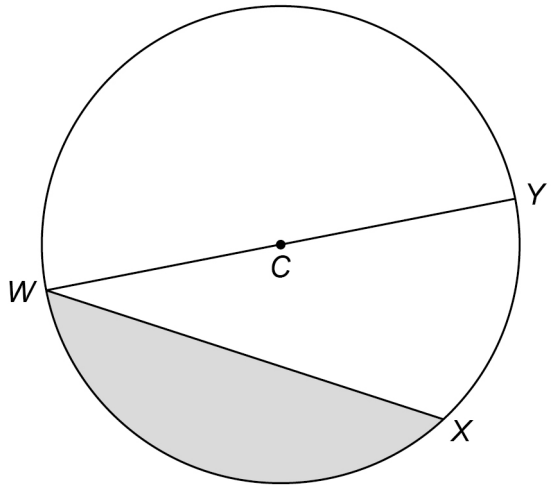
7

*Do not write outside the box*

**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. | ☐ | ☐ |

*Do not write outside the box*

**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 £ _____

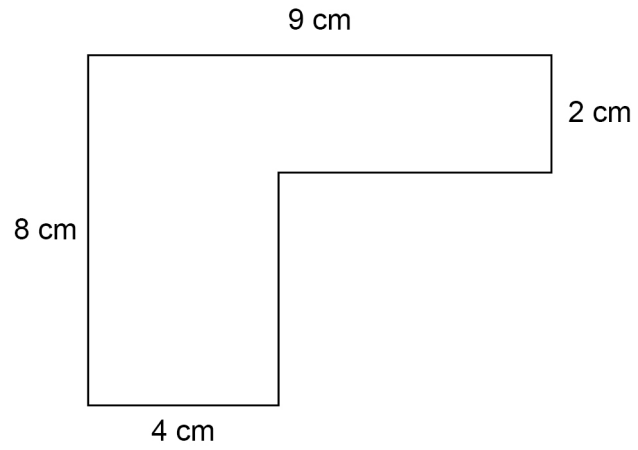
**Turn over for the next question**

6

*Do not write outside the box*

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

Not drawn accurately



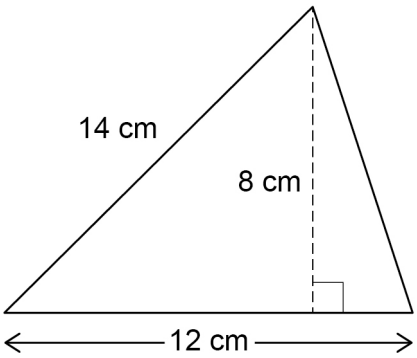

Work out the area.

**[3 marks]**

Answer _____ $cm^2$

*Do not write outside the box*

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




Not drawn accurately

Here is his working.

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

What is wrong with his method?

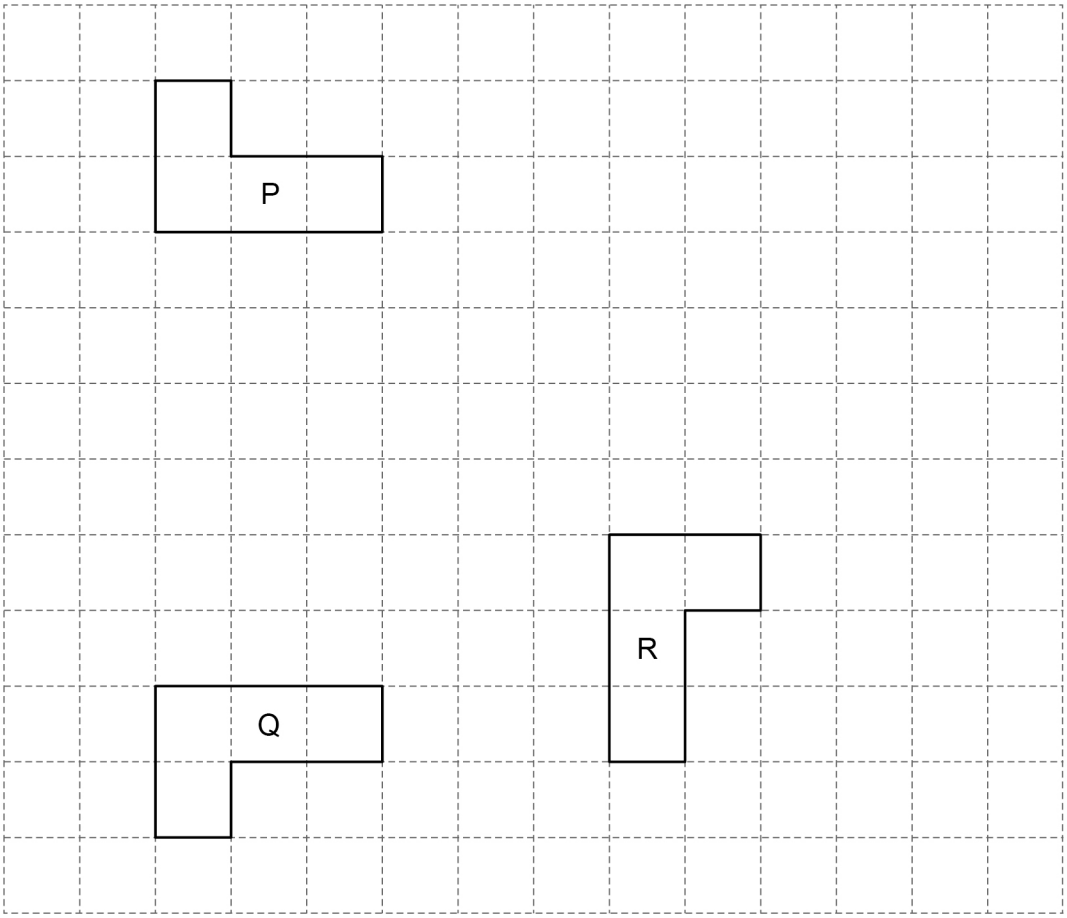
**[1 mark]**

**Turn over for the next question**

4

*Do not write outside the box*

**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

*Do not write outside the box*

**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]**

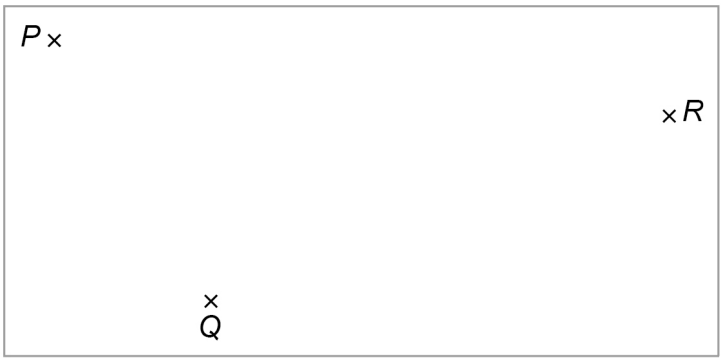
Answer _____

**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 $\quad QR = 6.5$ 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

Do not write outside the box

**20 (a)** $a$ and $b$ are whole numbers.

$a \leqslant 12$ $b < 9$

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

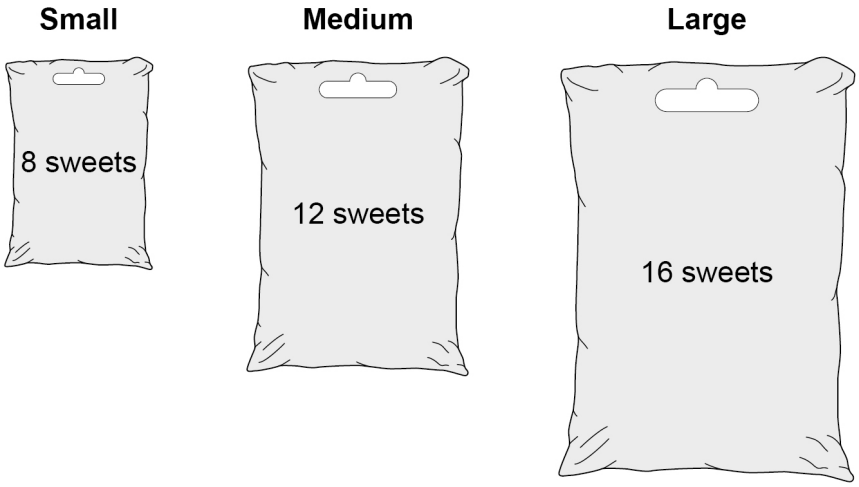
**[1 mark]**

**Turn over for the next question**

6

*Do not write outside the box*

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




She uses

30 small bags

twice as many medium bags as large bags.

There are no sweets left over.

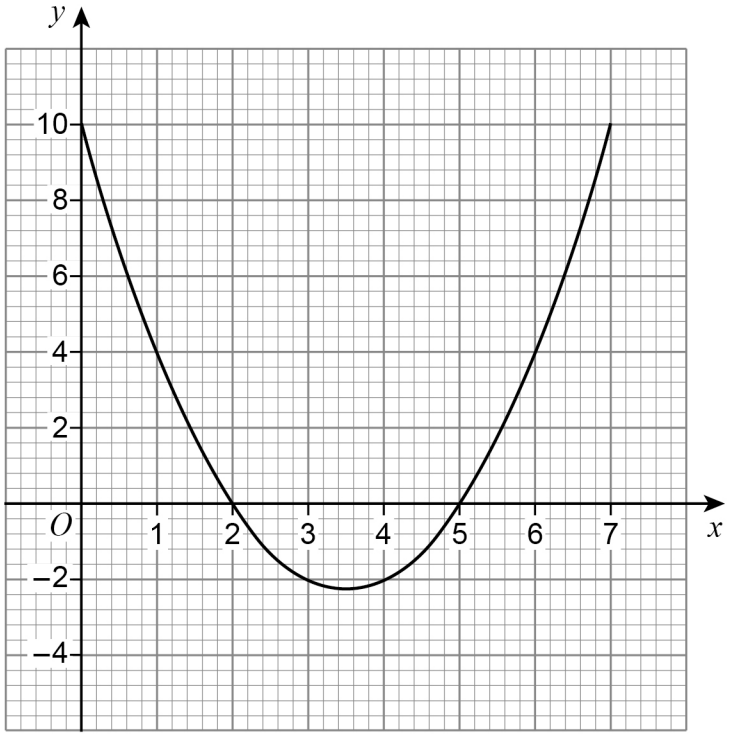
For the number of bags, work out the ratio small : medium : large

**[4 marks]**

Answer _____ : _____ : _____

*Do not write outside the box*

**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 ►**

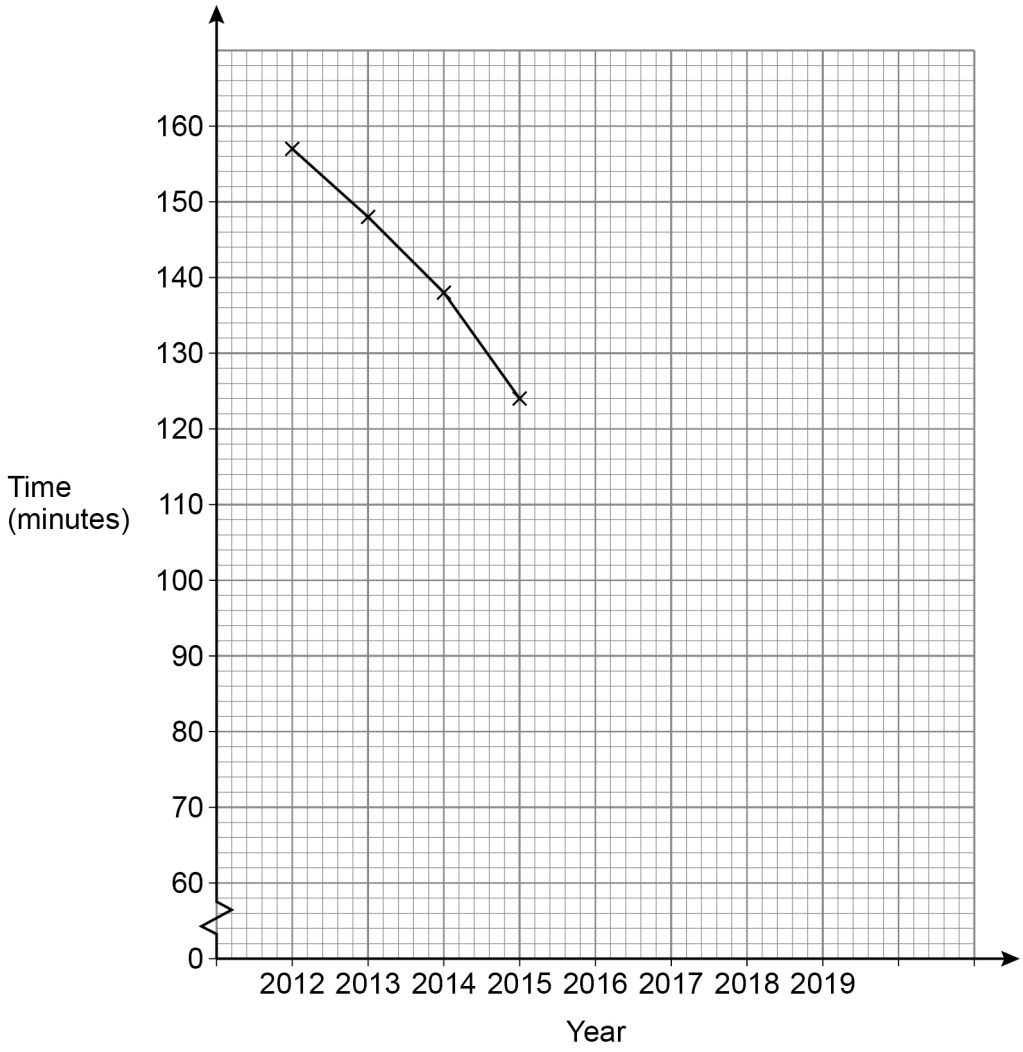
**23** The time students spent watching TV was recorded.

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.



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**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

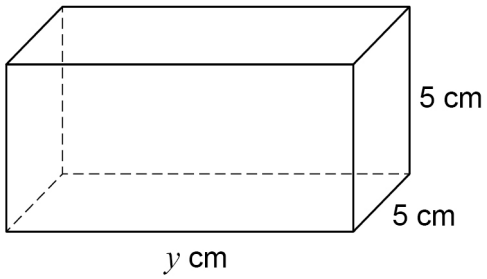
**[2 marks]**

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 _____ $cm^3$

*Do not write outside the box*

**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

*Do not write outside the box*

**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]**

*Do not write outside the box*

**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

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**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

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**ANSWER IN THE SPACES PROVIDED**

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