AQA

.CG Maths.
Hints

Please write clearly in block capitals.

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

Surname _____

Forename(s) _____

Candidate signature _____

GCSE MATHEMATICS

F

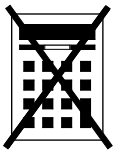
Foundation Tier Paper 1 Non-Calculator

Tuesday 21 May 2019 Morning Time allowed: 1 hour 30 minutes

Materials

For this paper you must have:
- mathematical instruments

You must **not** use a calculator.



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.
- 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	
TOTAL	

Please note that these worked solutions have neither been provided nor approved by AQA and may not necessarily constitute the only possible solutions. Please refer to the original mark schemes for full guidance.

Any writing in blue indicates what must be written in order to answer the questions and get the marks. The worked solutions have been designed to show the smallest amount of work which needs to be done to answer the question.

Anything written in green in a cloud doesn't have to be written in the exam.

Anything written in orange in a rectangle doesn't have to be written in the exam and is there to show what should be put into a calculator or measured using a ruler or protractor.

If you find any mistakes or have any requests or suggestions, please send an email to curtis@cgmaths.co.uk

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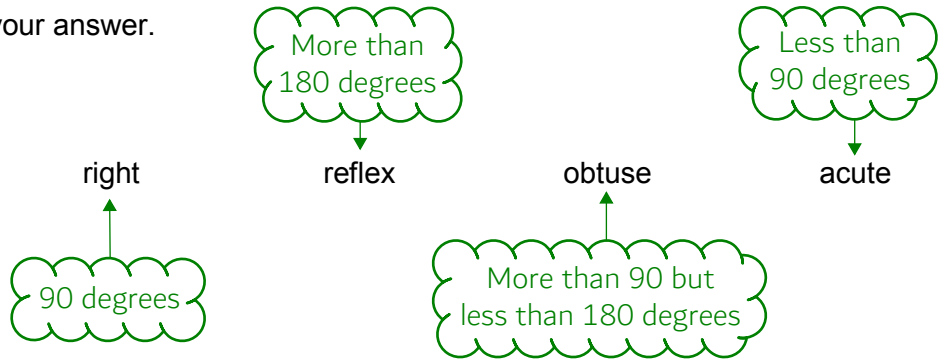
Answer **all** questions in the spaces provided

Do not write outside the box

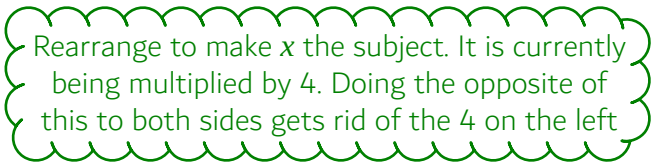
1 Which type of angle is the largest?

Circle your answer. **[1 mark]**



2 Solve $4x = 8$

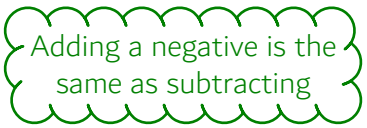
Circle your answer. **[1 mark]**



$x = 0.5$ $x = 2$ $x = 4$ $x = 32$

3 Work out $10 + (-4)$

Circle your answer. **[1 mark]**



–14 –6 6 14

Do not write outside the box

4 Circle the calculation which works out half of 12 **[1 mark]**

'Of' means multiply

$12 \div 0.5$ $2 \div 12$ $12 \times \frac{1}{2}$ $12 \div 50 \times 100$

12 ÷ 2 would work but this isn't an option

5 (a) Work out 364.5 + 17.9 – 2.08 **[2 marks]**

First do 364.5 + 17.9 by using column addition. Make sure that there are the same number of decimal places as the 2.08 in the answer by adding zeros at the end (this doesn't change the value of the decimal). Then subtract 2.08

Answer _____

5 (b) Work out 9.36 × 2 **[1 mark]**

9.36
× 2
.

As there is only one decimal in the multiplication, it is fine to use column multiplication as long as the decimal point is kept in the same place in the answer

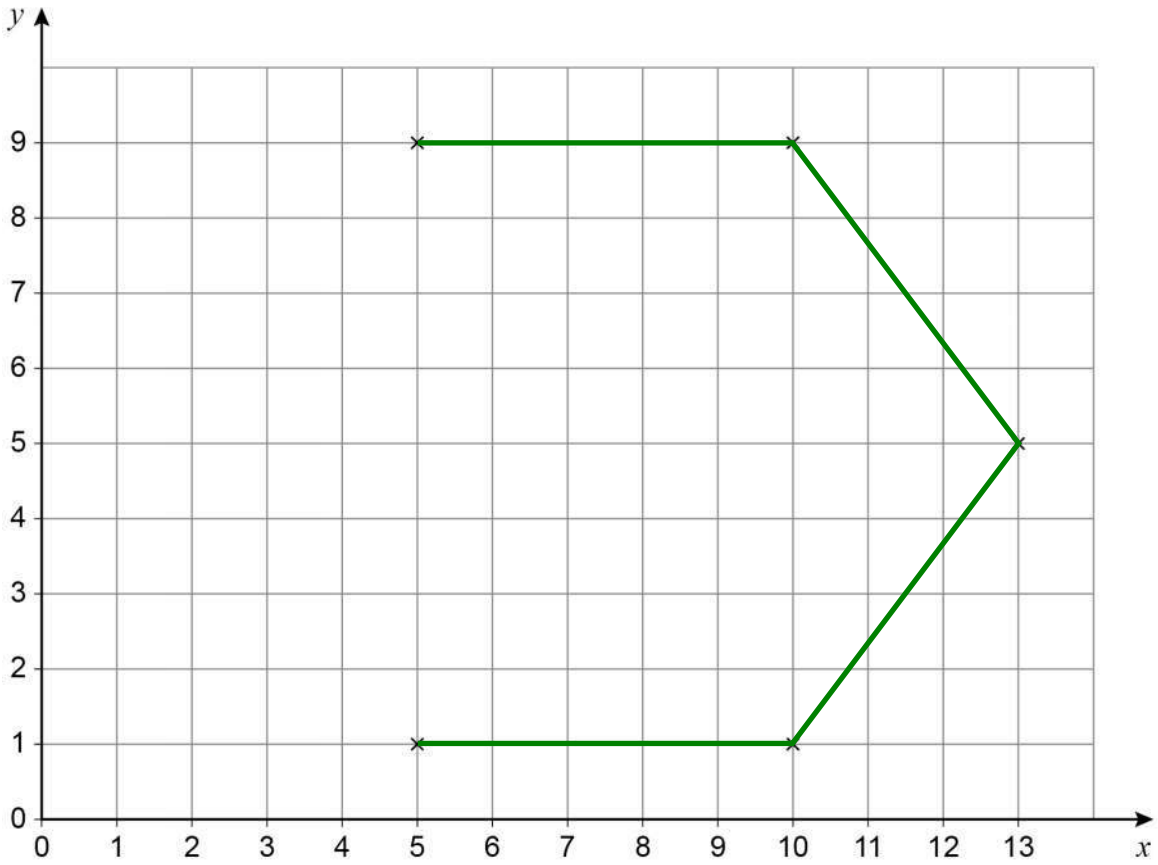
Answer _____

7

0 3

Do not write outside the box

6 Five points are plotted on a centimetre grid.



The points are five of the vertices of a hexagon.

Each side of the hexagon has the same length.

6-sided shape with 6 vertices (corners)

Work out **one** possible pair of coordinates of the other vertex.

[2 marks]

Answer (_____ , _____)

x-coordinate

y-coordinate

Do not write outside the box

7 Amy and Brad each have some money.

Carly has no money.

Amy gives £7 to Carly.

Brad gives £5 to Carly.

Now they all have the same amount of money.

How much money did Amy have to begin with?

[2 marks]

Carly started with £0 so adding what she received from Amy and Brad works out how much money she now has. As they now all have the same amount of money, Amy also has this amount but started with £7 more

Answer £_____

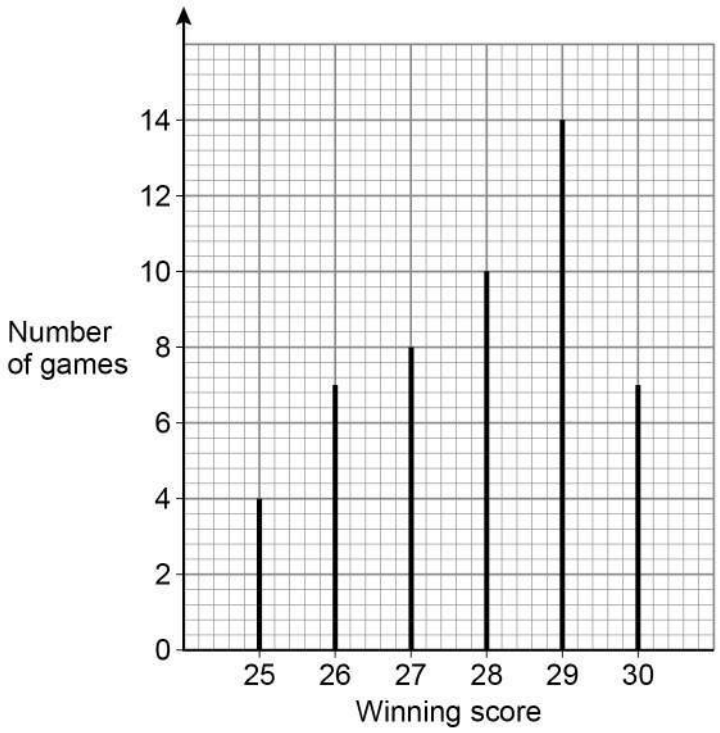
Turn over for the next question

4

Do not write outside the box

8 A game is played 50 times.

The vertical line chart shows the winning scores.



8 (a) Write down the mode.

[1 mark]

Answer _____

The mode is the score which had the highest frequency (the one which had the highest number of games)

Do not write outside the box

The game is played again.

8 (b) Use the chart to estimate the probability that the winning score is 25

[1 mark]

Answer _____

4 out the the 50 games had a winning score of 25. The probability can be expressed as a fraction

8 (c) Use the chart to estimate the probability that the winning score is 27 or more.

[2 marks]

Add together the number of games which had winning scores of 27, 28, 29 and 30. This number out of the 50 games played can be expressed as a fraction and this is the estimate for the probability

Answer _____

9 (a) Write down **all** the factors of 18

Factors of 18 are whole number 18 can be divided by to get another whole number

[2 marks]

Answer 1, 18,

Listing the factors in pairs starting with the smallest. 1 x 18 = 18 so both 1 and 18 are factors. Next see if 2 is a factor, then 3 and so on

9 (b) Work out the lowest common multiple (LCM) of 12 and 15

[2 marks]

15, 30,

List out the multiples of 15 until one is also a multiple of 12

Answer _____

8

Do not write outside the box

10 Coaches take people to a festival.

Each coach can take 50 people.

10 (a) From one city there are 820 people.

How many coaches are needed?

[3 marks]

50 | 8 2 0

Divide 820 by 50 to work out how many lots of 50 go into it. This tells us how many coaches are needed. However a whole number of coaches are needed so the answer will need to be either rounded up or down

Answer _____

Do not write outside the box

10 (b) From a different city 13 coaches are needed.

Each coach costs £450 to hire.

Work out the total cost of hiring 13 coaches.

[3 marks]

450
× 13

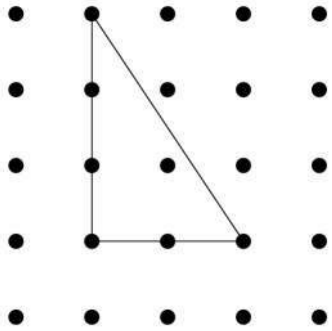
Answer £_____

Turn over for the next question

6

Do not write outside the box

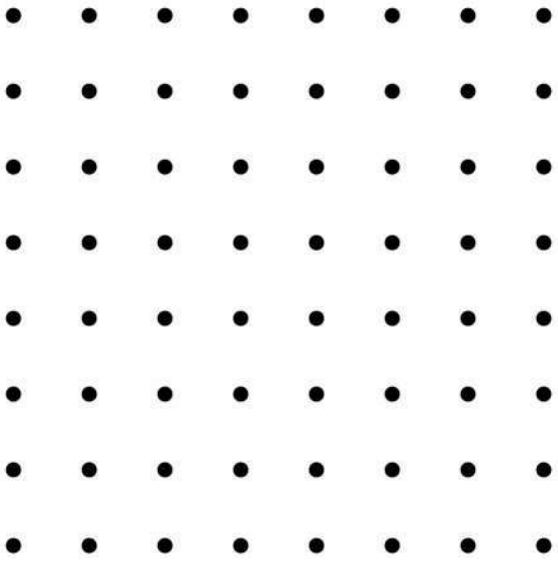
11 Here is a triangle on a square dotty grid.



11 (a) On the grid below, show how you can make a parallelogram with **two** of these triangles.

[1 mark]

Four-sided shape. Opposite sides are parallel and equal in length

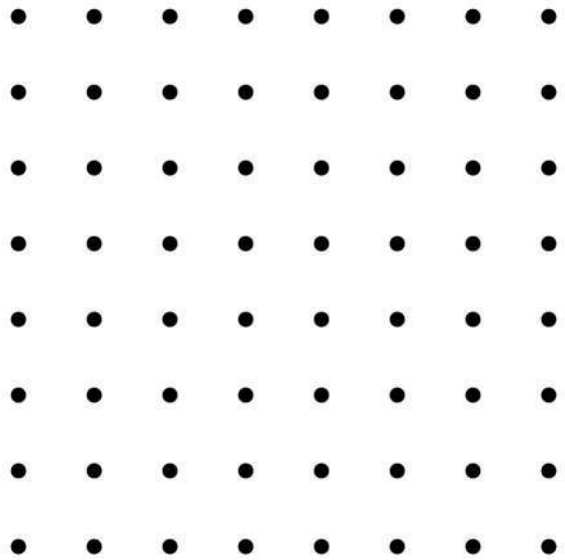


Do not write outside the box

11 (b) On the grid below, show how you can make a trapezium with **three** of these triangles.

[1 mark]

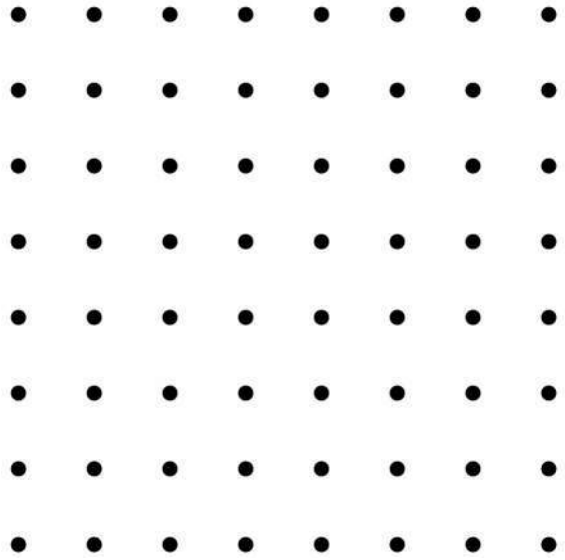
Four-sided shape with only one pair of parallel sides



11 (c) On the grid below, show how you can make a rhombus with **four** of these triangles.

[1 mark]

Four-sided shape with all sides the same length but with no right angles



3

Do not write outside the box

12 Work out 65% of 300

[3 marks]

Divide by 100 to find 1% then multiply by 65

Answer _____

13 In a game the average score was 50

Tom's score was $\frac{5}{2}$ of the average.

Circle Tom's score.

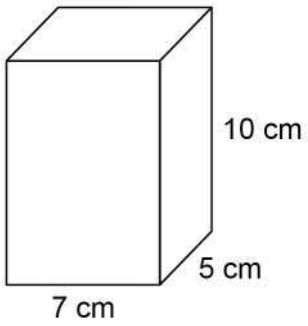
[1 mark]

125 175 30 20

To find a fraction of an amount, divide the amount by the denominator of the fraction then multiply by the numerator

Do not write outside the box

14 Here is a cuboid.



Work out the volume.

[2 marks]

Volume of cuboid = length x width x height

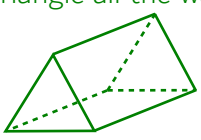
Answer _____ cm^3

15 Circle the shape that has a uniform cross section.

[1 mark]

cone sphere cylinder pyramid

For example, a triangular prism has a uniform cross section as it has the same triangle all the way through the shape



7

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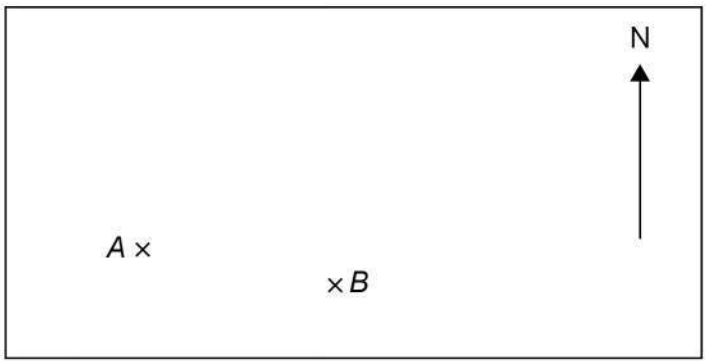
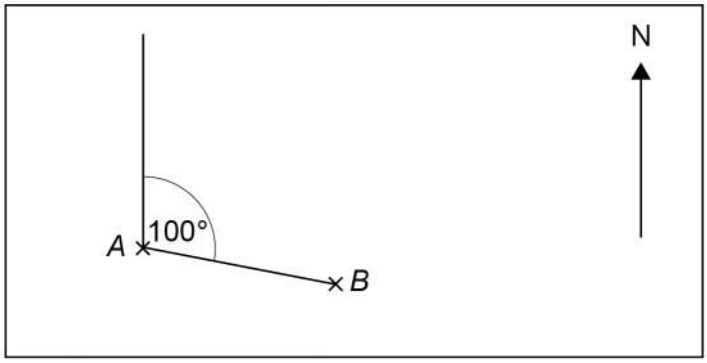
16 (a) Here is a map showing points *A* and *B*.



Kemal wants to measure the bearing of ***A* from *B***.

He draws two lines and measures the angle between them.



Kemal says that the bearing of *A* from *B* is 100°

Is his method correct?

Give a reason for your answer.

[1 mark]

The bearing of A from B is the amount of degrees turned clockwise from north from B to face A

Do not write outside the box

16 (b) On a different map, the bearing of *D* from *C* is 045°

Nina says,

"*D* is North West of *C*."

Is Nina correct?

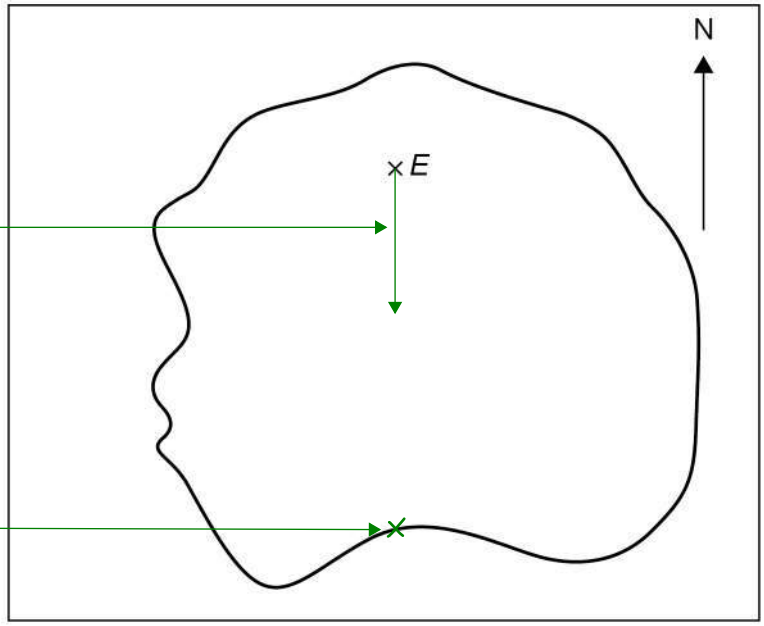
Give a reason for your answer.

[1 mark]

Bearings are measured clockwise from North.
North West is halfway between North and West

16 (c) This map shows an airport, *E*, on an island.

Scale: 1 cm represents 100 km



The plane travels in this direction

The plane reaches the sea here

A plane flies due South from the airport.

How far does it fly until it reaches the sea?

[3 marks]

Measure the distance in centimetres using a ruler
then use the scale to convert into kilometres

Answer _____ km

5

Do not write outside the box

17 (a) Simplify fully 56 : 24

[2 marks]

To simplify a ratio fully, divide both sides by the same amount until they can't be divided by the same amount any further

Answer _____ : _____

17 (b) Write the ratio 5 : 4 in the form n : 1

[1 mark]

4 has been divided by 4 to get 1 so the 5 needs to be divided by 4 as well. There is no need to convert it into a decimal

Answer _____ : _____

17 (c) Share £180 in the ratio 1 : 9

[2 marks]

Add up the number of parts in the ratio to work out how many parts there are in total. Divide the £180 by the total number of parts to find 1 part (this is one of the answers). Then multiply by 9 to work out what the 9 parts are worth

Answer £_____ and £_____

Do not write outside the box

18 Here is some data about the people listening to a radio station one day.

	Percentage	Mean number of hours listening	Range of number of hours listening
Aged 40 or under	21	1.2	4.5
Aged 41 or over	79	6.3	13.9

Compare the data for people aged 40 or under with the data for people aged 41 or over.
Make **three** comparisons.

[3 marks]

Comparison 1 Make a comparison about the percentage

Comparison 2 Make a comparison about the mean

Comparison 3 Make a comparison about the range

The comparisons could be as simple as just stating which age group had the highest

Turn over for the next question

8

Do not write outside the box

19 You are given that $4a - 2b = 10$

19 (a) Write down the value of $2a - b$

[1 mark]

Answer _____

2a - b is half of 4a - 2b

19 (b) Write down the value of $2b - 4a$

[1 mark]

Answer _____

The 4a has become negative and the -2b has become positive. So the sign for the answer will flip to a negative

19 (c) You are given that $4a - 2b = 10$ **and** $a + c = 3$

Write an expression in a, b and c that is equal to 23
Give your answer in its simplest form.
You **must** show your working.

[2 marks]

10 + 10 + 3 = 23
Write an expression with the 10 and 3 replaced with what they are equal to in terms of a, b and c. Then collect like terms and simplify

Answer _____

Do not write outside the box

20 (a) Write 0.000 97 in standard form.

[1 mark]

Answer _____

Standard form: a x 10^n where $1 \leq a < 10$ and n is a whole number. Count the number of times the decimal point needs to be moved to get a number between 1 and 10. n is the number of times it has been moved to the left (as it moves to the right in this case n will be negative)

20 (b) Work out $\frac{3 \times 10^5}{4 \times 10^3}$

Give your answer as an ordinary number.

[2 marks]

First divide 3 by 4 then multiply the answer by $10^5/10^3$
$a^x/a^y = a^{x-y}$
This will give an answer in standard form which needs to be converted to an ordinary number

Answer _____

Turn over for the next question

7

Do not write outside the box

21 Anna plays a game with an ordinary, fair dice.

If she rolls 1 she wins.

If she rolls 2 or 3 she loses.

If she rolls 4, 5 or 6 she rolls again.

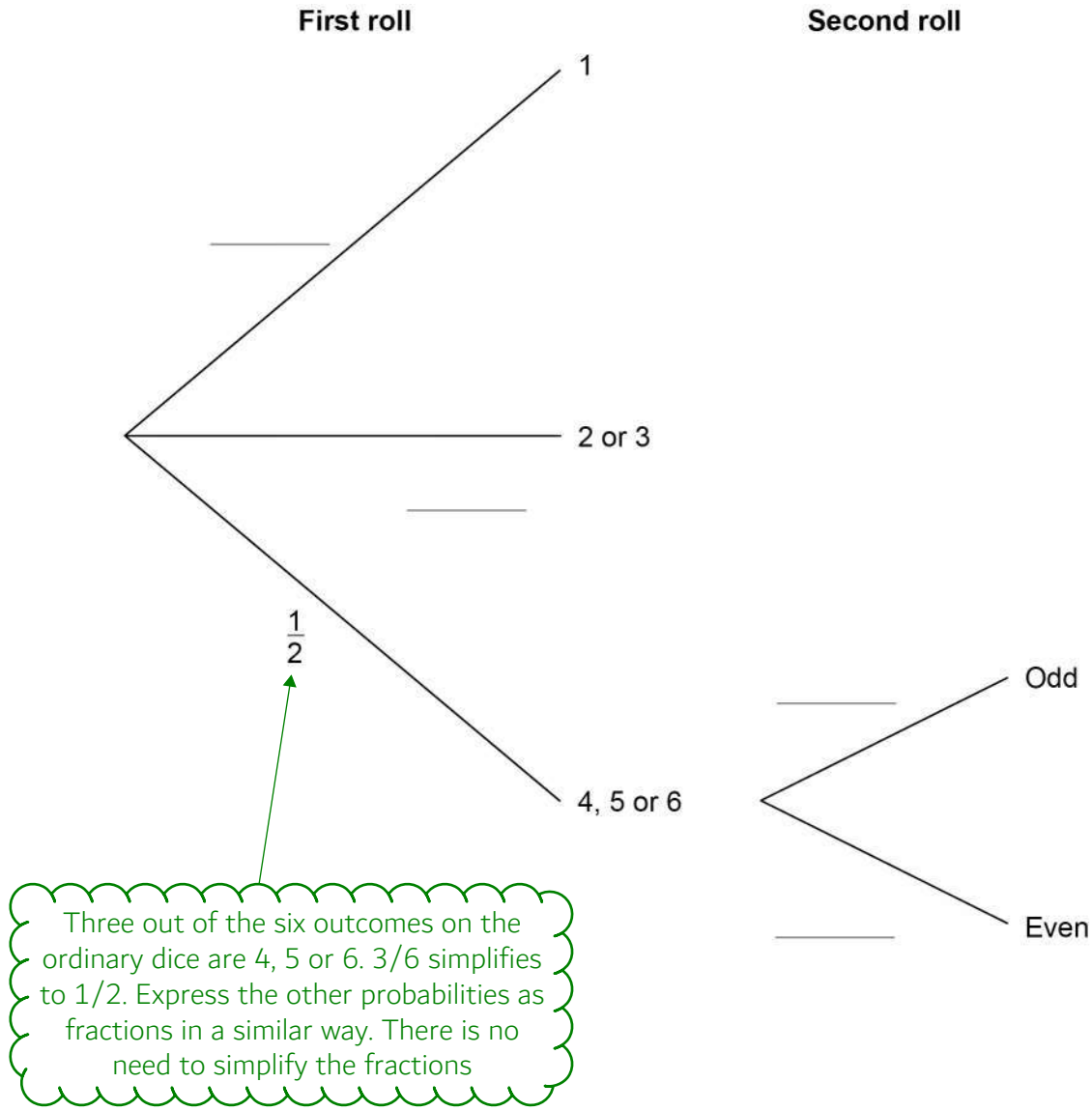
When she has to roll again,

if she rolls an odd number she wins

if she rolls an even number she loses.

21 (a) Complete the tree diagram with the four missing probabilities.

[2 marks]



Do not write outside the box

21 (b) Is Anna more likely to win or to lose?

You **must** work out the probability that she wins.

[4 marks]

AND means to multiply, OR means to add. To win, roll a 1 OR roll 4, 5, 6 AND odd. Substitute in the probabilities from the tree diagram then work with the fractions to get the probability of winning. If it is more than half, she is more likely to win

Turn over for the next question

6

Do not write outside the box

22 Three friends arrive at a party.

Their arrival increases the number of people at the party by 20%

In total, how many people are now at the party?

[2 marks]

20% of the people is 3. As it has increased by 20%, the number of people is now at 120%. Multiply 20% to get 120%

Answer _____

Do not write outside the box

23 Work out the value of $(3^{12} \div 3^5) \div (3^2 \times 3)$

[3 marks]

Do not work out the value of any of the powers of 3 until they have been fully simplified to a single power of 3

$a^x / a^y = a^{x-y}$

$a^x \times a^y = a^{x+y}$

Answer _____

24 (a) $a + b = 0$

Which of these is equal to b?

Circle your answer.

[1 mark]

Adding these to a doesn't give 0

0 $\quad \frac{1}{a}$ (crossed) $\quad a$ (crossed) $\quad -a$

24 (b) $c \times d = 1$

Which of these is equal to d?

Circle your answer.

[1 mark]

1 (crossed) $\quad \frac{1}{c} \quad c$ (crossed) $\quad -c$

$c \times 1 = c$

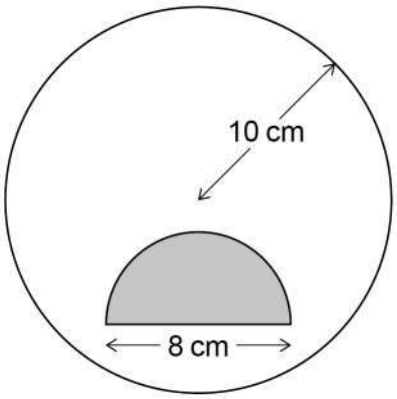
$c \times c = c^2$

7

Do not write outside the box

25 A shaded semicircle is inside a circle as shown.

Not drawn accurately



The **radius** of the circle is 10 cm

The **diameter** of the semicircle is 8 cm

How many times bigger is the unshaded area than the shaded area?

[4 marks]

Dividing the unshaded area by the shaded area works out how many times larger it is. Subtract the shaded area from the area of the circle to get the unshaded area. Area of circle = πr^2, where r is the radius.

Answer _____

Do not write outside the box

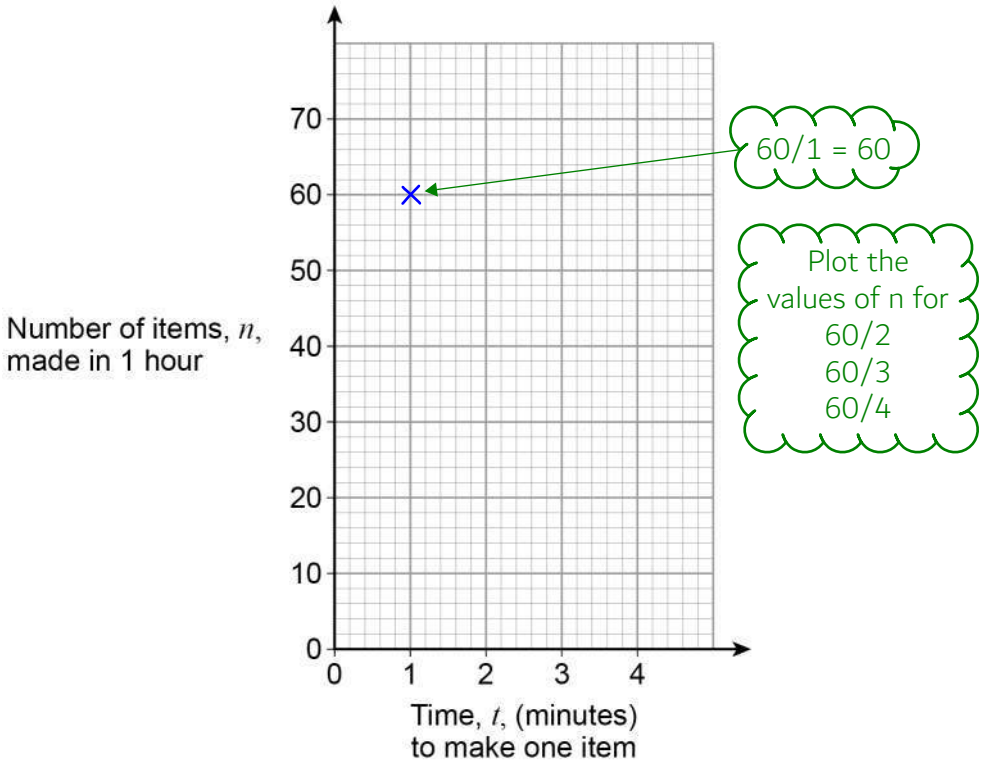
26 The number of items, n, made in 1 hour by a machine is given by $n = \frac{60}{t}$

t is the time in minutes the machine takes to make one item.

The value of t changes for different types of item.

26 (a) On the grid below, draw the graph of $n = \frac{60}{t}$ for values of t from 1 to 4

[2 marks]



26 (b) The machine takes 3 minutes 30 seconds to make one item.

Use your graph to estimate the value of n.

[2 marks]

Answer _____

30 seconds is half a minute so draw a line up from 3.5 minutes to the line drawn then across to the number of items on the y-axis

8

Do not write outside the box

27 Rearrange $x = 2y - 6$ to make y the subject.

[2 marks]

y is on the right side so wants to stay there but needs to be on its own. Follow BIDMAS backward to decide what to get rid of first. Do the opposite operation to both sides to get rid of the 2 and -6

Answer _____

28 Multiply out and simplify $(x + 5)(x - 1)$

[2 marks]

Answer _____

END OF QUESTIONS

4