AQA

Please write clearly in block capitals.

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

Surname _____

Forename(s) _____

Candidate signature _____

GCSE MATHEMATICS

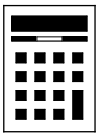
F

Foundation Tier Paper 2 Calculator

Thursday 7 November 2019 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.
- 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	
TOTAL	

Answer **all** questions in the spaces provided

Do not write outside the box

1 Simplify $8a - 3a + a$

Circle your answer.

[1 mark]

$4a$ $6a$ $5 + a$ $8a - 3a^2$

2 Which of these numbers is three less than a square number?

Circle your answer.

[1 mark]

5 19 22 34

3 Circle the length of time between 1.50 pm and 3.35 pm

[1 mark]

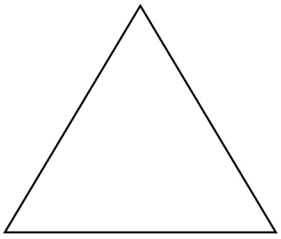
1 h 45 min 2 h 15 min 2 h 25 min 3 h 5 min

Do not write outside the box

4 Circle the letter of the shape that has rotational symmetry of order 2

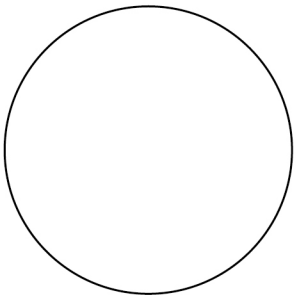
[1 mark]

P

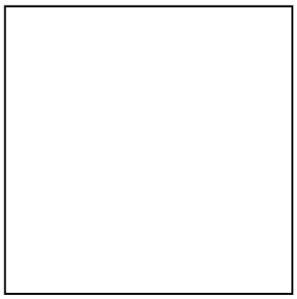


Q

R



S



Turn over for the next question

4

Do not write outside the box

5 Here are eight numbers.

4 10 9 3 4 12 5 14

5 (a) Work out the range.

[1 mark]

Answer _____

5 (b) Work out the median.

[2 marks]

_____

_____

_____

Answer _____

Do not write outside the box

6 A shop has this offer.

£5 reduction if you spend more than £100
or
£10 reduction if you spend more than £150
or
£20 reduction if you spend more than £200

At the shop, dresses cost £42 each.

Amira buys 3 dresses.

Bobbi buys 5 dresses.

How much **more** than Amira does Bobbi pay?

[3 marks]

Answer £ _____

Turn over for the next question

6

7 (a) Solve $x + 17 = 12$

[1 mark]

$x =$ _____

7 (b) Solve $\frac{w}{4} = 12$

[1 mark]

$w =$ _____

7 (c) Simplify fully $\frac{9m}{12m}$

[2 marks]

Answer _____

Do not write outside the box

8 The cost of a taxi journey is

£3 plus £2 per mile.

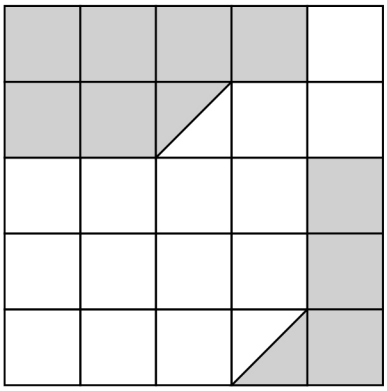
Circle the cost of a journey of 6 miles.

[1 mark]

£5 £12 £15 £30

9 What percentage of this shape is shaded?

[2 marks]



Answer _____ %

7

10 A group of students were asked to name their favourite burger.

The pictogram shows the results.

The key is missing.

Chicken	● ● ● ◗
Beef	● ● ● ● ● ●
Turkey	◗
Veggie	● ● ● ● ●

40 students said Veggie.

How many students said Chicken?

[3 marks]

Answer _____

Do not write outside the box

11 $c = 250 - 16^2$

$d = \dfrac{18 \times 14}{-28}$

Work out the value of $c \times d$

[2 marks]

Answer _____

12 When a spinner is spun, it shows

Blue (B) or Green (G) or Red (R) or White (W).

When a coin is tossed, it shows

Heads (H) or Tails (T).

The spinner is spun and the coin is tossed.

Complete this list of possible outcomes.

[2 marks]

B H

7

Do not write outside the box

13 A quadrilateral *PQRS* has

PQ = 5 cm

QR perpendicular to *PQ*

QR = 7 cm

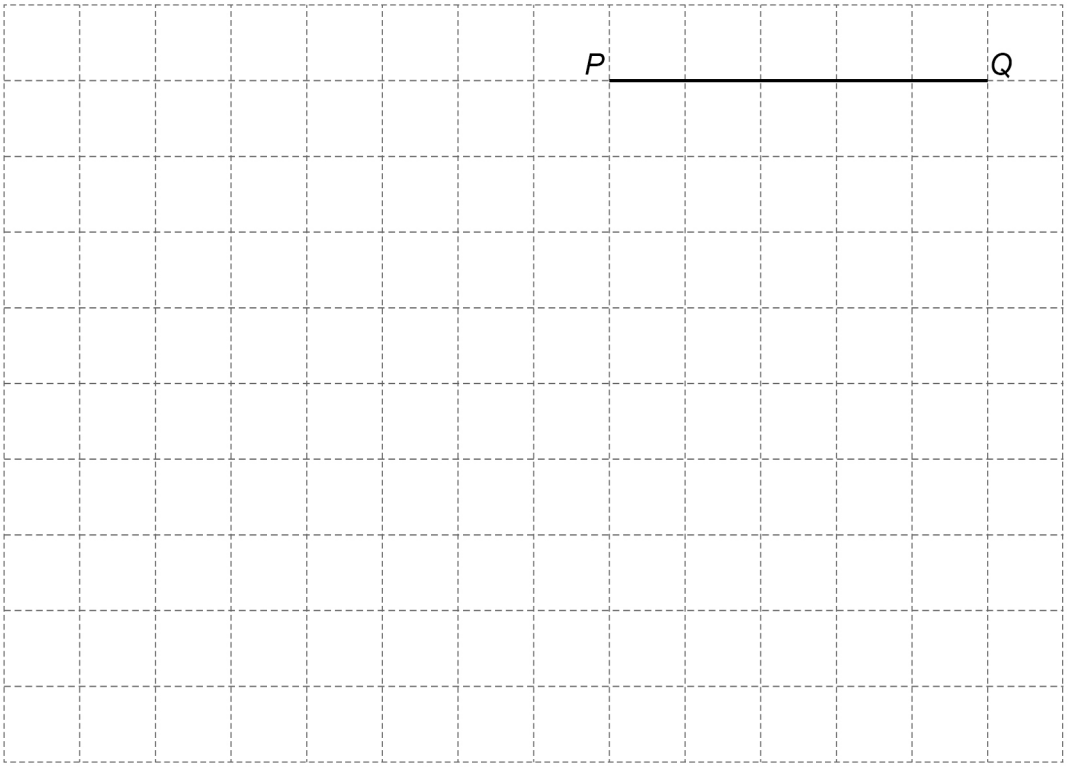
angle *QPS* = 135°

PS = 8.5 cm

On the grid, draw the quadrilateral *PQRS*.

PQ has been drawn for you.

[4 marks]



Do not write outside the box

14 Circle the solid that has six vertices.

[1 mark]

cone cuboid triangular prism square-based pyramid

15 Which of these fractions is closer in value to 1?

$\frac{3}{4}$ $\frac{13}{10}$

You **must** show your working.

[2 marks]

Answer _____

Turn over for the next question

7

16 Three teams, A, B and C, play in a competition.

games won by A : games won by B = 2 : 1

games won by B : games won by C = 3 : 1

Team B has won 6 games.

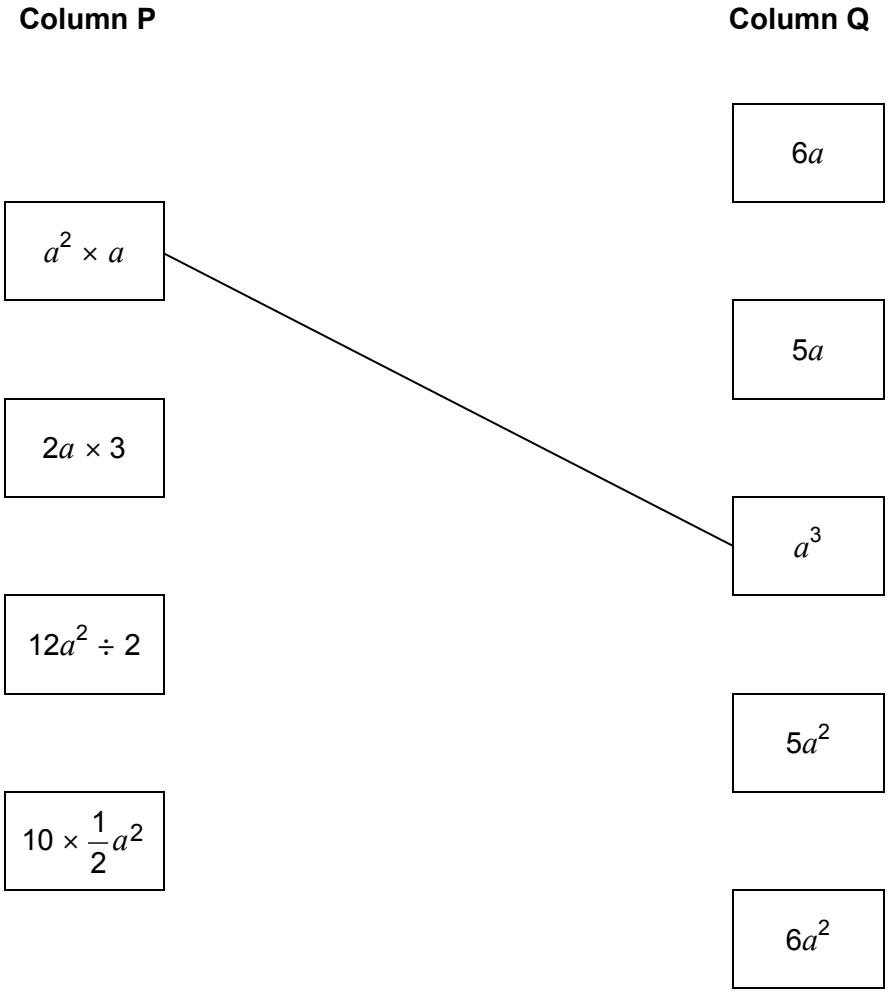
In total, how many games have the three teams won?

[3 marks]

Answer _____

17 Match each expression in Column P with the equivalent expression in Column Q.
One has been done for you.

[3 marks]



Turn over for the next question

6

18 A drink is made by adding water to juice.

Instructions

Add an amount of water that is between 2 times and 3 times the amount of juice

Rana has 120 ml of juice.

She adds some water.

She has now made 450 ml of the drink.

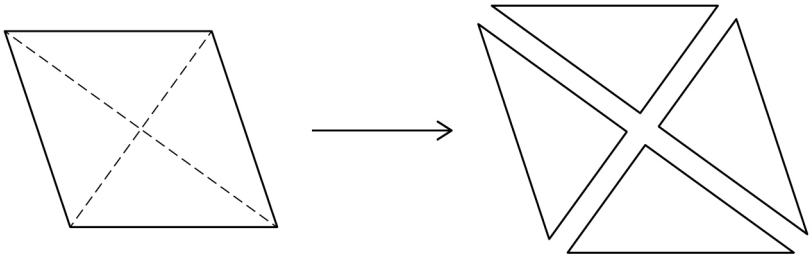
Has Rana followed the instructions?

You **must** show your working.

[3 marks]

Do not write outside the box

19 A rhombus is cut along the diagonals to make four triangles.



Not drawn accurately

Which **three** statements are correct for any rhombus?

Tick **three** boxes.

[2 marks]

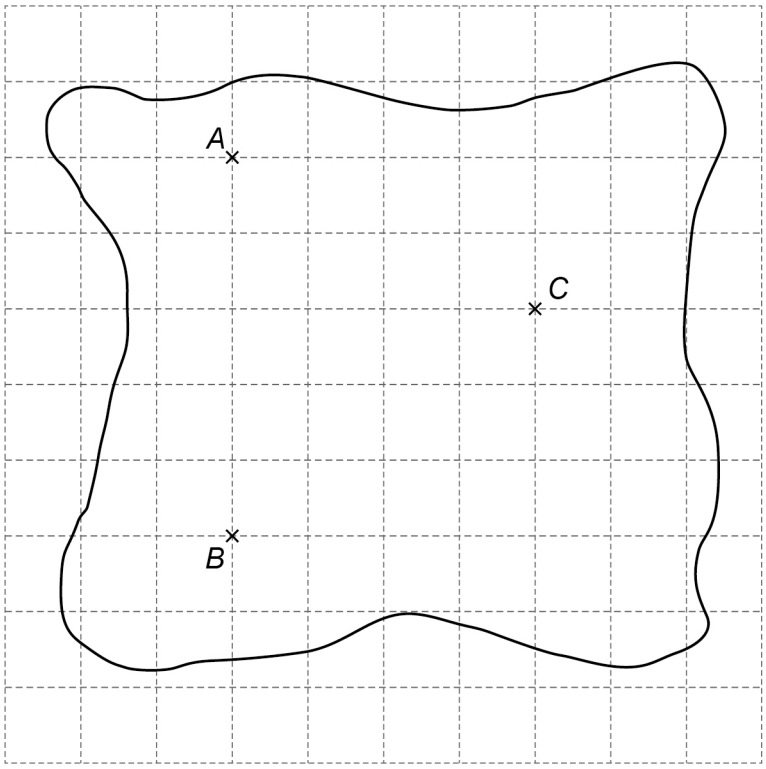
- ☐ All four triangles are right-angled
- ☐ All four triangles are isosceles
- ☐ All four triangles are congruent
- ☐ Area of rhombus = 4 × area of one triangle
- ☐ Perimeter of rhombus = 4 × perimeter of one triangle

Turn over for the next question

5

20 A map of an island is shown on a centimetre grid.

A, *B* and *C* are houses.



20 (a) The actual distance between *A* and *B* is 1500 metres.

Show that the scale on the map is 1 : 30 000

[2 marks]

Do not write outside the box

20 (b) Work out the actual distance between *A* and *C*.

Give your answer in kilometres.

[4 marks]

Answer _____ km

21 a and b are both prime numbers.

They are each less than 20

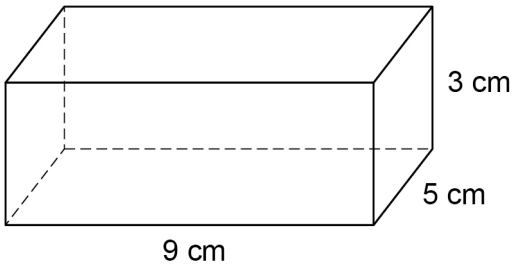
Give an example where $a + b$ is odd but **not** prime.

[2 marks]

$a =$ _____ $b =$ _____

8

22 Here is a cuboid.



The two **largest** faces are blue.

The other four faces are green.

Is the total blue area greater than the total green area?

You **must** show your working.

[3 marks]

Do not write outside the box

23 The result of a game is Win, Lose or Draw.

After 80 games

relative frequency of the result Win is 0.4

relative frequency of the result Lose is 0.25

How many of the games had the result Draw?

[3 marks]

Answer _____

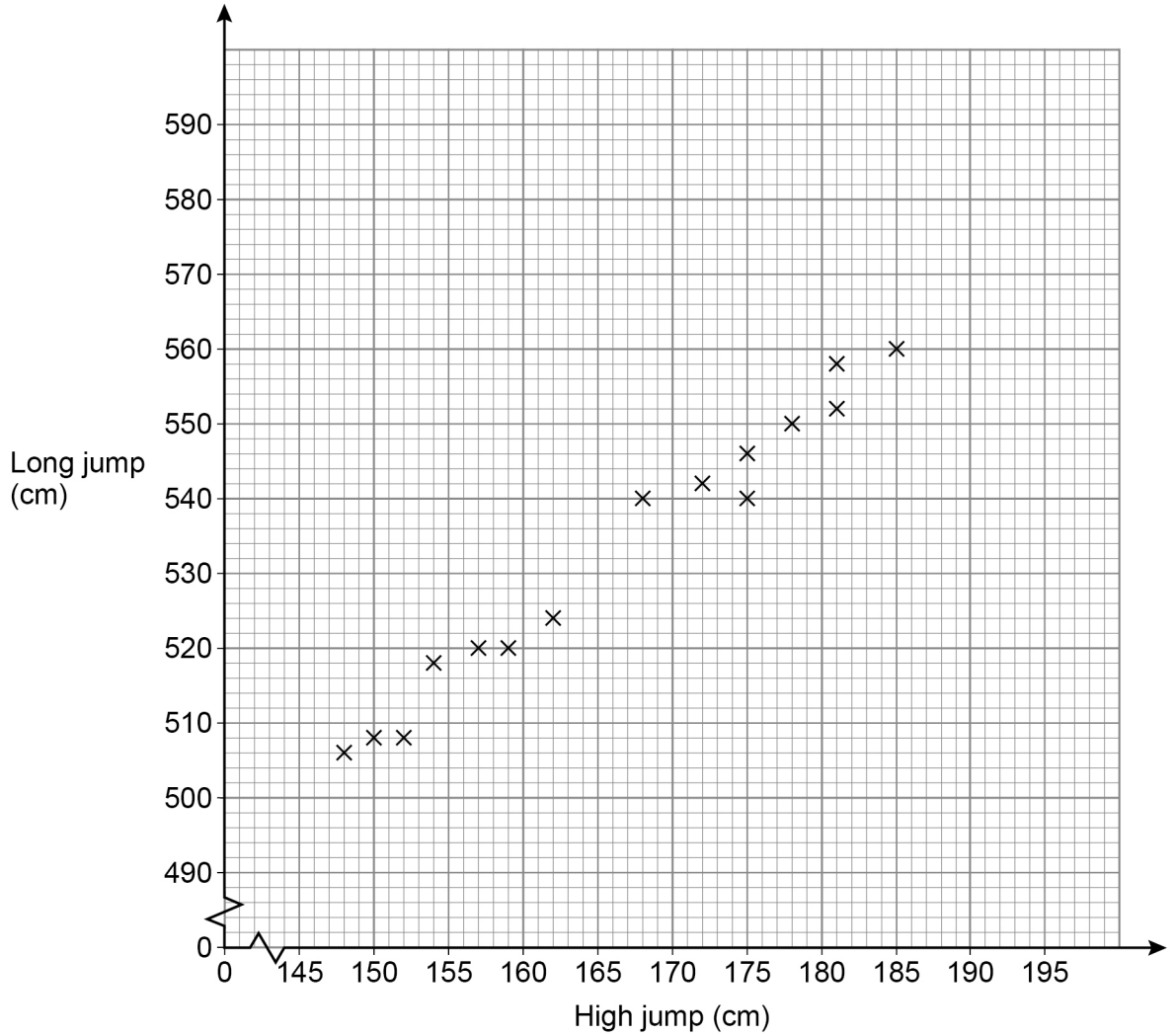
24 Work out the lowest common multiple (LCM) of 120 and 144

[2 marks]

Answer _____

8

25 The scatter graph shows the best high jump and the best long jump for 15 boys.



25 (a) Write down the type of correlation shown.

[1 mark]

Answer _____

Do not write outside the box

25 (b) Liam has a best high jump of 166 cm

Use a line of best fit to estimate his best long jump.

[2 marks]

Answer _____ cm

25 (c) Another boy has a best high jump of 195 cm

Give a reason why you should **not** use a line of best fit to estimate his best long jump.

[1 mark]

_____

_____

Turn over for the next question

4

26 A car journey is in two stages.

Stage 1 The car travels 110 miles in 2 hours.

Stage 2 The car travels 44 miles at the same average speed as Stage 1

Work out the time for Stage 2

Give your answer in minutes.

[3 marks]

Answer _____ minutes

27 Here is an identity.

$a(3x - 10) \equiv 21x + 2b$

Work out the values of a and b.

[3 marks]

$a =$ _____ $b =$ _____

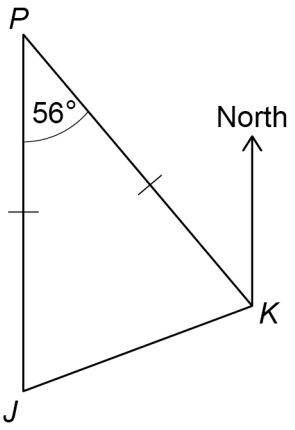
28 *J* and *K* are ships.

P is a port.

J is due South of *P*.

Angle *JPK* = 56°

JP = *KP*



Not drawn accurately

Work out the bearing of *J* from *K*.

[3 marks]

Answer _____ °

Turn over for the next question

9

Do not write outside the box

29 The 5th term of a linear sequence is 17

The 6th term of the sequence is 21

Work out the 100th term of the sequence.

[3 marks]

Answer _____

30 $\mathbf{a} = \begin{pmatrix} 2 \\ 7 \end{pmatrix}$ $\mathbf{b} = \begin{pmatrix} 5 \\ -2 \end{pmatrix}$

Work out $3\mathbf{a} + \mathbf{b}$

[2 marks]

Answer $\begin{pmatrix} \quad \\ \quad \end{pmatrix}$

Do not write outside the box

31 The value of a house is £120 000

The value is expected to increase by 5% each year.

Work out the expected value after 4 years.

Give your answer to 2 significant figures.

You **must** show your working.

[4 marks]

Answer £ _____

END OF QUESTIONS

9

Do not write outside the box

There are no questions printed on this page

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED

Do not write outside the box

There are no questions printed on this page

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED

Do not write outside the box

There are no questions printed on this page

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED