

For **AQA**

Name

Class

GCSE
Mathematics
Specification
Paper 2 Foundation Tier

F

Churchill Paper 2E

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.
- Write your name and class in the box at the top of the 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.
- In all calculations, show clearly how you work out your answer.

Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 80.



Written by Shaun Armstrong

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

- 1** Round 0.0307 correct to 2 significant figures.

Circle your answer.

[1 mark]

0.03

0.030

0.031

0.04

- 2** The n th term of a sequence is $5n + 8$

What is the 6th term of this sequence?

Circle your answer.

[1 mark]

19

38

53

70

- 3** How many millimetres are there in $\frac{3}{4}$ metre?

Circle your answer.

[1 mark]

7.5

75

750

75 000

4 Simplify $p \times p + p \times p$

Circle your answer.

[1 mark]

$2p^2$

$3p^2$

$2p^3$

p^4

5 (a) Work out 70% of £220

[1 mark]

Answer £ _____

5 (b) Increase £4.20 by $\frac{1}{3}$

[2 marks]

Answer £ _____

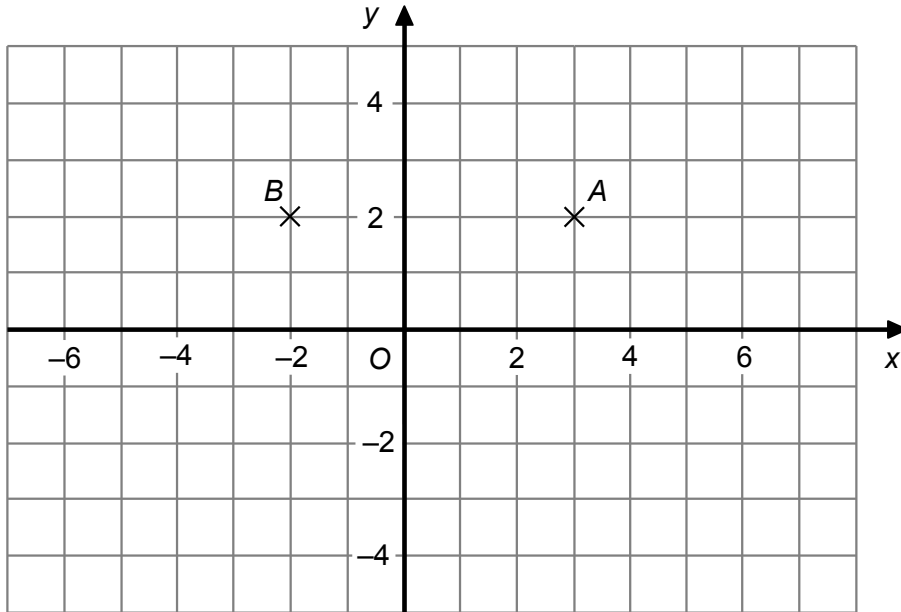
5 (c) In one year, the value of a games console decreases from £400 to £310

Work out the percentage decrease.

[2 marks]

Answer _____ %

6



6 (a) Write down the coordinates of the point A.

[1 mark]

Answer (_____ , _____)

6 (b) Plot and label the point C with coordinates (1, -2).

[1 mark]

ABCD is a rhombus.

6 (c) Find the coordinates of the point *D*.

[2 marks]

Answer (_____ , _____)

M is the midpoint of *AC*.

6 (d) Find the coordinates of the point *M*.

[1 mark]

Answer (_____ , _____)

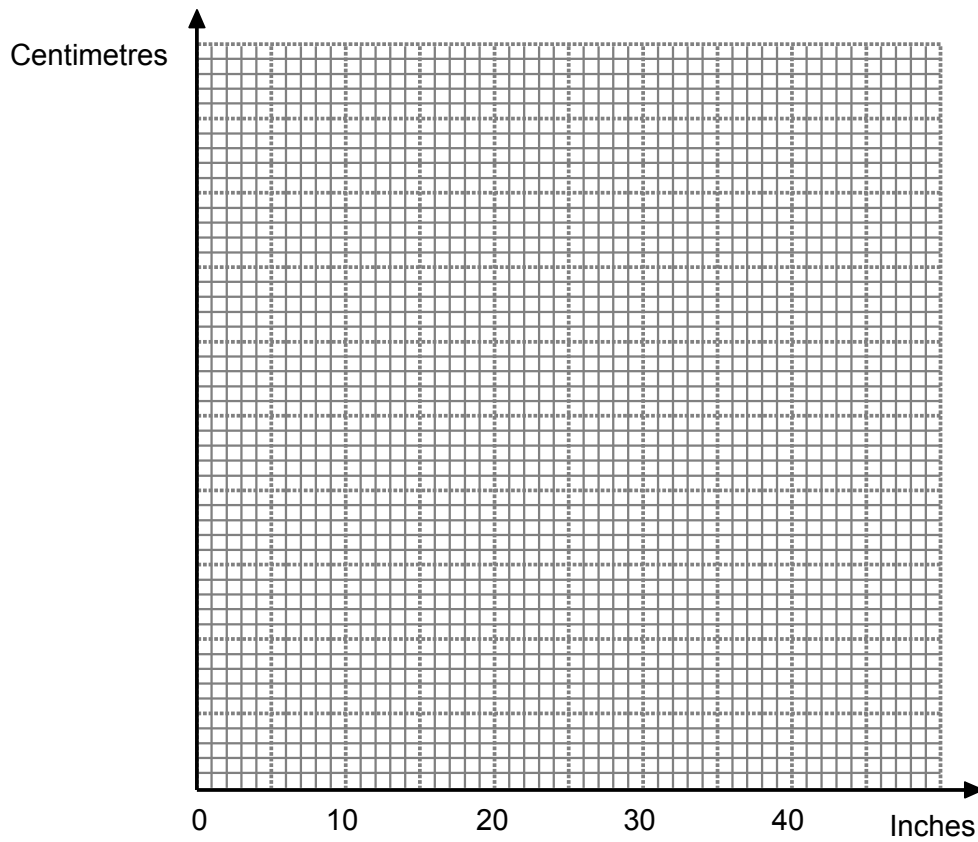
7 1 inch = 2.54 cm

7 (a) Change 30 inches into centimetres.

[1 mark]

Answer _____ cm

7 (b) Draw a conversion graph between inches and centimetres.



[3 marks]

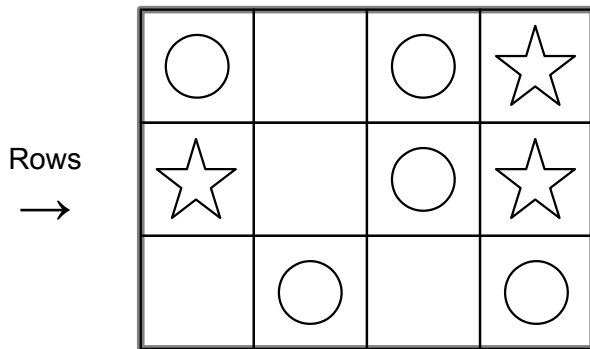
7 (c) Use your graph to change 58 centimetres into inches.

[1 mark]

Answer _____ inches

8

Columns ↓



The diagram shows a rectangular board made up of 12 squares. Some of the squares have a circle or a star in them.

One of the squares is chosen at random.

What is the probability that the square chosen

8 (a) has a star in it,

[1 mark]

Answer _____

8 (b) is in a column which has a star in it,

[1 mark]

Answer _____

8 (c) is in a row with 2 stars in it,

[1 mark]

Answer _____

8 (d) is in a column with exactly 1 circle in it.

[1 mark]

Answer _____

- 9 (a) Kim has 5 children.
Her children want a trampoline which costs £142.
Kim agrees to pay half the cost.
Her children divide the rest of the cost between them equally.

Work out how much each child has to pay towards the cost of the trampoline.

[3 marks]

Answer £ _____

- 9 (b) A bottle contains 1.25 litres of juice.

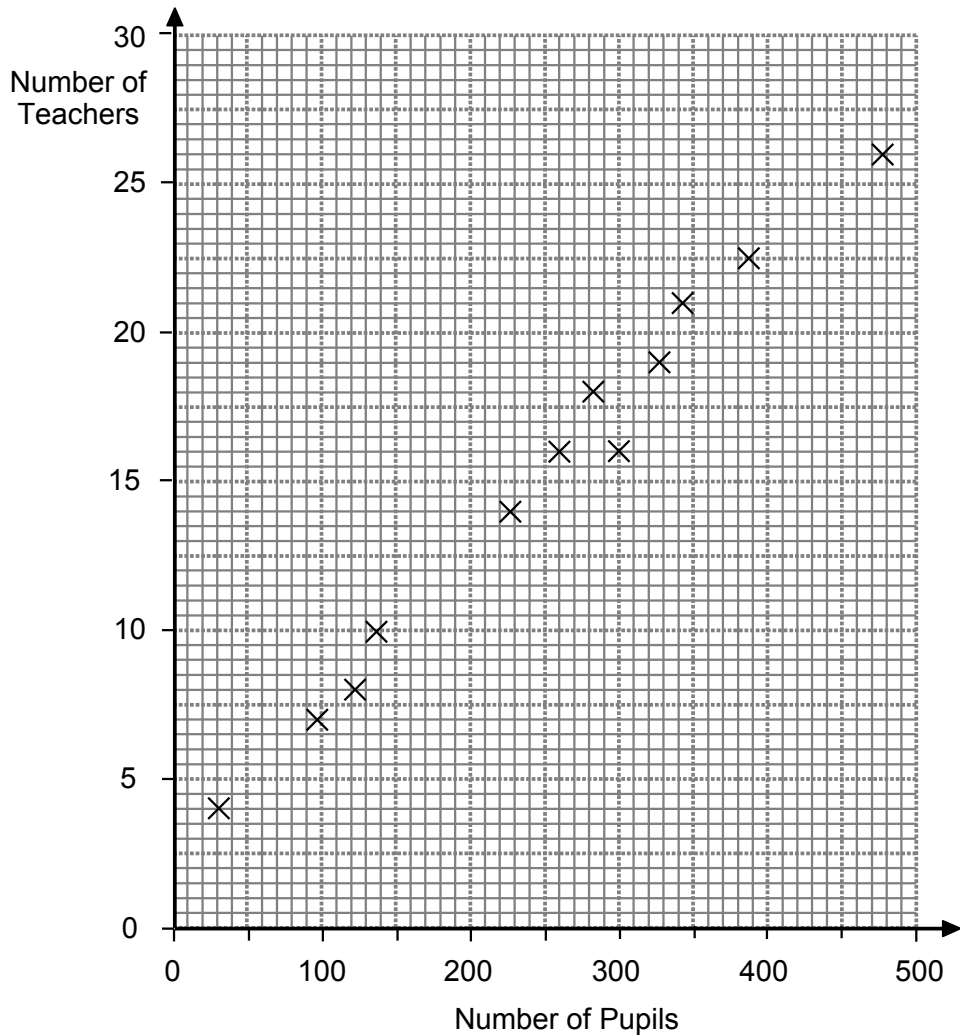
Betsy fills 3 glasses with juice from the bottle.
Each glass has the same amount of juice.
There is 400 ml of juice left in the bottle.

Work out how much juice was poured into each glass.

[3 marks]

Answer _____ ml

- 10 Meg collected information on the number of pupils and the number of teachers at some primary schools near her home. Her results are shown on the scatter diagram.



- 10 (a) Two of the schools had the same number of teachers.

Work out the difference between the number of pupils in these two schools.

[1 mark]

Answer _____

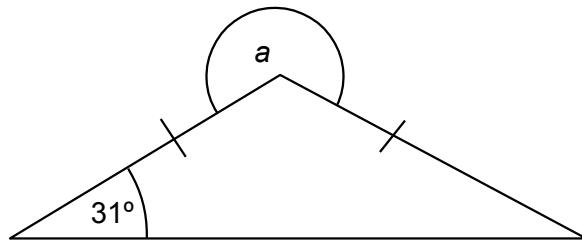
- 10 (b) Another primary school near Meg's home has 180 pupils.

Use a line of best fit to estimate the number of teachers at this school.

[2 marks]

Answer _____

11 (a)



Not drawn accurately

Circle the size of angle a .

[1 mark]

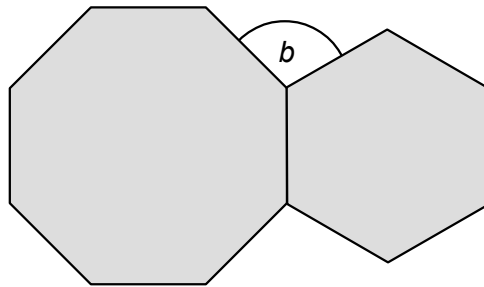
62°

118°

222°

242°

11 (b)



Not drawn accurately

The diagram shows two regular polygons.

Circle the size of angle b .

[1 mark]

95°

105°

111°

115°

12 Elsa, Joachim and Matt share £300 in the ratio 3 : 4 : 8

12 (a) Write the ratio of Joachim's share to Matt's share in its simplest form.

[1 mark]

Answer _____ : _____

12 (b) Work out how much Elsa receives.

[2 marks]

Answer £ _____

13 Younis earns £11.60 per hour on weekdays.
At the weekend his hourly rate is 50% higher.

One week Younis works from 11 am to 4.30 pm on each day from Monday to Friday.
On Saturday he starts work at 10 am.
He doesn't work on Sunday.

Younis earns £379.90 for this week.
Work out the time at which he finished work on Saturday.

[4 marks]

Answer _____

14 Luther wants to buy 3 packets of his favourite snack, Kryptonbix.

There are 2 local shops that usually sell Kryptonbix for the same price.

Today one of the shops is offering 20% off.

Also today, the other shop is offering "Buy 2 get 1 half price".

Which offer gives Luther better value?

You must justify your answer.

[3 marks]

Answer _____

15 Jacqui is thinking of a positive whole number.

Multiplying her number by 2 increases it by **less** than 18.

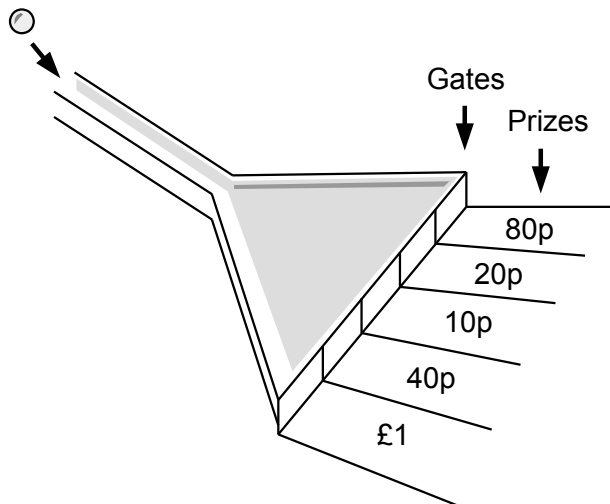
Dividing her number by 3 decreases it by **more** than 11.

What is Jacqui's number?

[4 marks]

Answer _____

16



In a fairground game, a ball is rolled down a slope. The slope becomes wider and the ball goes through one of five gates.

The prize you win depends on which gate the ball goes through, as shown above. The gates are all the same size.

The boy running the game says

“The average prize is 50p but it only costs you 40p for a roll!”

16 (a) Which average, the mode, the mean or the median, is the boy talking about?

Explain how you know.

[2 marks]

Average: _____ Explanation: _____

16 (b) What assumption has he made in claiming the average prize is 50p.

[1 mark]

16 (c) Comment on the boy's assumption and how it affects his claim.

[2 marks]

17 (a) Circle the correct expansion of $(x - 5)(x - 1)$

[1 mark]

$x^2 - 6x + 5$ $x^2 - 6x - 5$ $x^2 - 4x + 5$ $x^2 - 5x + 6$

17 (b) Circle the correct factorisation of $x^2 + 3x - 10$

[1 mark]

$(x - 1)(x + 10)$ $(x + 2)(x - 5)$
 $(x - 2)(x - 5)$ $(x - 2)(x + 5)$

18 Write a number in each box so that these sums are correct.

The number you write in a box must be of the type written below the box.

[4 marks]

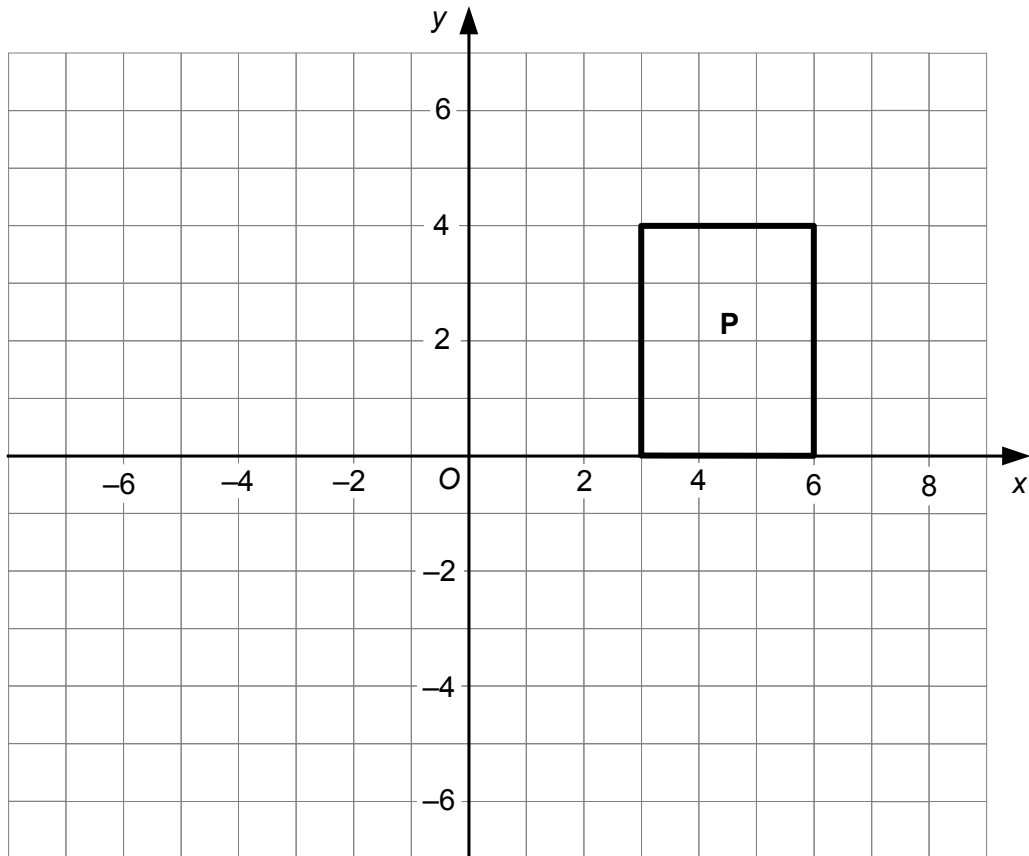
$$\begin{array}{ccc} \square & \times & \square = \square \\ \text{Prime} & & \text{Even} \\ \text{number} & & \text{number} \end{array}$$

$$\begin{array}{ccc} \square & \div & \square = \square \\ \text{Multiple} & & \text{Prime} \\ \text{of 4} & & \text{number} \end{array}$$

$$\begin{array}{ccc} \square & + & \square = \square \\ \text{Prime} & & \text{Square} \\ \text{number} & & \text{number} \end{array}$$

$$\begin{array}{ccc} \square & - & \square = \square \\ \text{Odd} & & \text{Multiple} \\ \text{number} & & \text{of 7} \end{array}$$

19



The rectangle **P** is shown on the grid above.

19 (a) Reflect **P** in the line $y = x$.

Label the image **Q**.

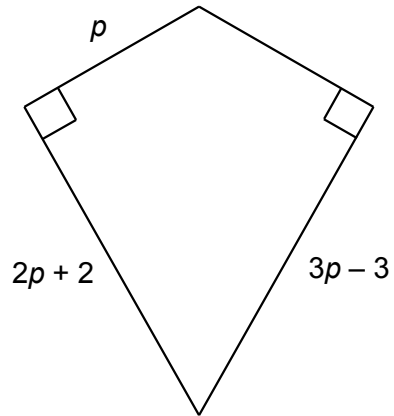
[2 marks]

19 (b) **Q** is translated by the vector $\begin{pmatrix} 0 \\ -9 \end{pmatrix}$ to give the rectangle **R**.

Describe fully the single transformation that maps **P** onto **R**.

[3 marks]

20



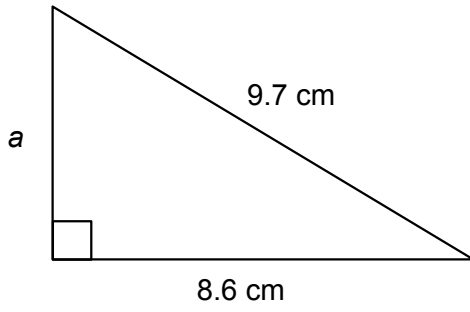
Not drawn accurately

The diagram shows a kite.
Three of the side lengths are shown in centimetres.

Show that the area of the kite is 60 cm^2 .

[4 marks]

21 (a)



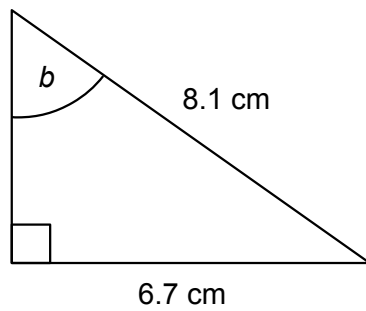
Not drawn accurately

Work out the length a .

[2 marks]

Answer _____ cm

21 (b)



Not drawn accurately

Work out the size of angle b .

[2 marks]

Answer _____ °

22 Solve the simultaneous equations

$$x + y = 1.5$$

$$4x - 3y = 13$$

[4 marks]

$x =$ _____

$y =$ _____

23 y is inversely proportional to x .

When $x = 240$, $y = 2$

23 (a) Find an expression for y in terms of x .

[2 marks]

Answer _____

23 (b) Show that $y = 16$ when $x = 30$.

[2 marks]

END OF QUESTIONS