![AQA logo]

# GCSE
# MATHEMATICS

**F**

## Foundation Tier          Paper 2  Calculator

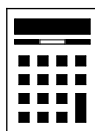---

Friday 10 November 2023          Morning          Time allowed: 1 hour 30 minutes

## Materials

For this paper you must have:
- a calculator
- mathematical instruments
- the Formulae Sheet (enclosed).

## 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 | |
| **TOTAL** | |

IB/M/Nov23/E12

**8300/2F**

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

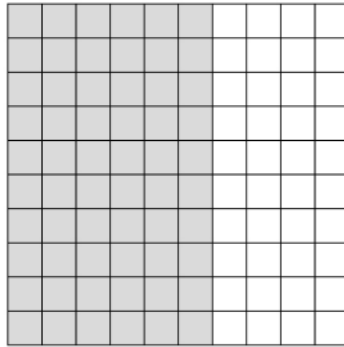**1** Convert 800 centimetres to metres.

[1 mark]

Answer _____ m

**2** The temperature was −11°C and **increases** by 5°C

Work out the new temperature.

[1 mark]

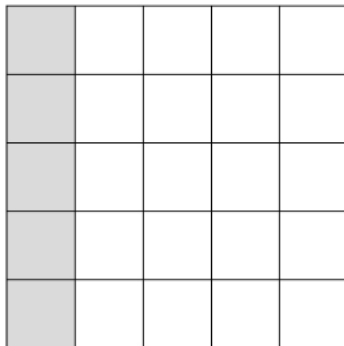Answer _____ °C

**3 (a)** Here is a grid.

What percentage of the grid is shaded?

**[1 mark]**

Answer _____ %


**3 (b)** Here is a different grid.

What percentage of the grid is shaded?

**[1 mark]**

Answer _____ %

**4 (a)** Solve $\dfrac{x}{3} = 6$

**[1 mark]**

$x =$ _____

**4 (b)** Solve $2x + 3 = 27$

**[2 marks]**

$x =$ _____

**5** Work out $\dfrac{9}{4}$ as a decimal.

**[1 mark]**

Answer _____

0 4

**6** Complete the bank statement.

**[3 marks]**

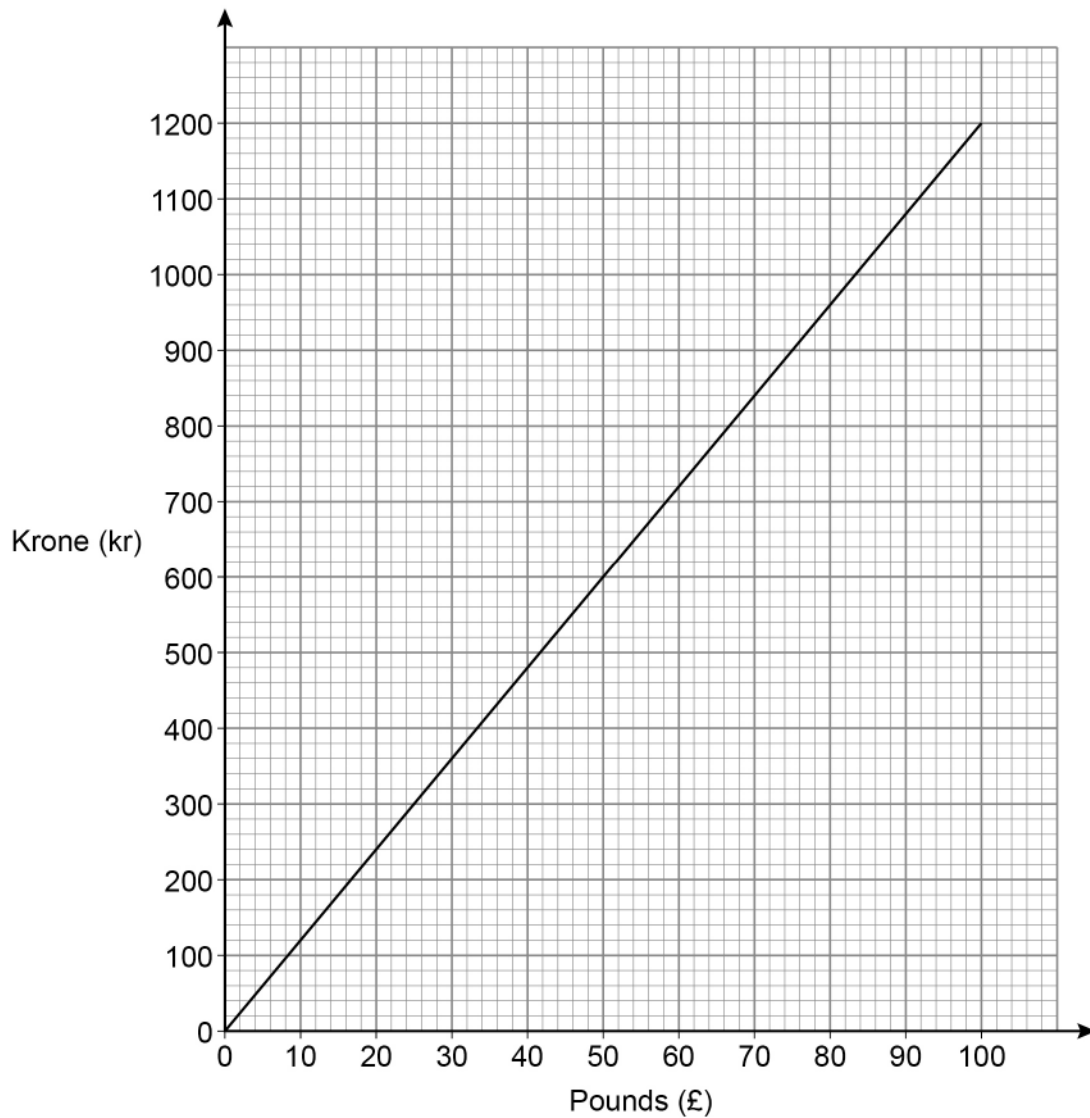| Date | Description | Credit (£) | Debit (£) | Balance (£) |
|---|---|---|---|---|
| 01/11/2021 | Starting balance | | | 736.28 |
| 05/11/2021 | Rent | | 450.00 | _____ |
| 14/11/2021 | Refund | 25.00 | | _____ |
| 27/11/2021 | Wages | 1830.29 | | _____ |

**7** Put all the numbers    4, 5, 6, 10 and 20    into the grid

so that the numbers in each row and each column **multiply** to 120

**[3 marks]**

|  | 3 |  | 120 |
|---|---|---|---|
|  | 2 | 12 | 120 |
|  |  | 1 | 120 |
| 120 | 120 | 120 | |

**Turn over ▶**

10

**8** The graph below is used to convert between pounds (£) and Norwegian krone (kr).



**8 (a)** Convert 720 krone into pounds.

[1 mark]

Answer £ _____

**8 (b)** Convert £500 into krone.

[2 marks]

_____

_____

Answer _____ kr

**9**      Connor is estimating the answer to     $385 + 1479$

**9 (a)**    He rounds each number to the nearest 10

Work out his estimate.

**[2 marks]**

Answer _____

**9 (b)**    Connor says,

"My estimate will be more than the exact answer."

How does he know this **without working out the exact answer**?

**[1 mark]**

**Turn over for the next question**

6

**Turn over ▶**

**10** Here are the salaries, in £, of the 6 workers in a company.

18 300    20 700    21 500    21 500    21 500    99 000

**10 (a)** Work out the mean salary.

[2 marks]

_____

_____

_____

_____

Answer £ _____

**10 (b)** Why is the mean **not** the best average to represent the salaries?

[1 mark]

_____

_____

_____

**11** Zoe's mass is 55 kilograms.

Work out her mass in stones and pounds.

Use     1 kilogram = 2.2 pounds

        14 pounds = 1 stone

**[3 marks]**

Answer _____ stones _____ pounds

**Turn over for the next question**

6

**Turn over ▶**

**12 (a)** A sauce is made from cream and stock in the ratio

cream : stock = 1 : 6

How much **sauce** can be made using 80 millilitres of cream?

[2 marks]

Answer _____ ml

**12 (b)** A different sauce is made from olive oil and tomato juice in the ratio

olive oil : tomato juice = 1 : 14

What fraction of this sauce is olive oil?

[1 mark]

Answer _____

**13**      Multiplying $y$ by 6 gives the same result as adding 15 to $y$

**13 (a)**      Write this as an equation.

[2 marks]

_____

Answer _____

**13 (b)**      Show that the value of $y$ is **not** 4

[1 mark]

_____

_____

_____

_____

**Turn over for the next question**

6

**Turn over ▶**

**14** A golf club is organising a trip for 42 people.

The costs are shown in the table.

| Minibus hire | £450 per minibus |
|---|---|
| Fuel | £26 per minibus |
| 1 game of golf | £18.50 per person |

Each minibus can hold 15 people.

Each person will play 2 games of golf.

The cost of the trip will be shared equally by the 42 people.

Work out the cost per person.

**[5 marks]**

Answer £ _____

**15** An ordinary fair dice is rolled ten times.

Here are the first nine results.

6   1   3   2   1   5   5   5   5

Write down the probability of getting a 5 on the tenth roll.

**[1 mark]**

Answer _____

**16** $r : w = 1 : 4$
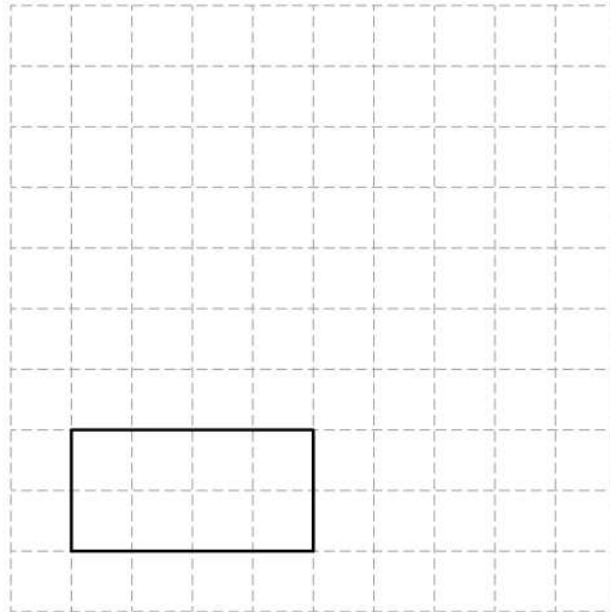
Write down the ratio    $r^2 : w^2$

**[1 mark]**

Answer _____ : _____

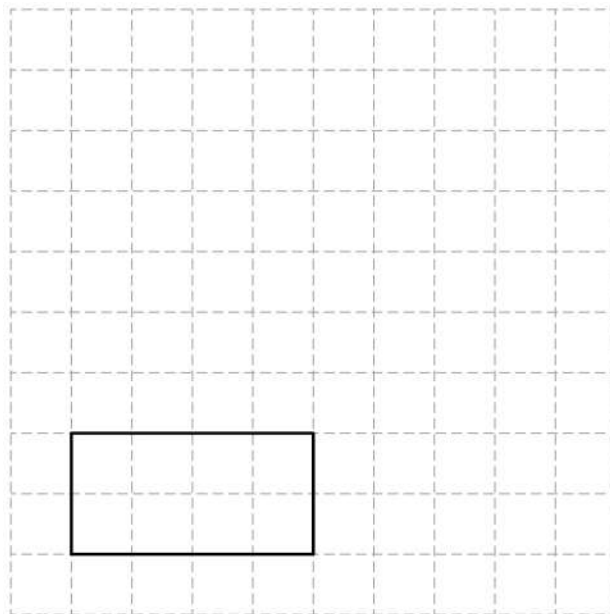**Turn over for the next question**

7

**Turn over ▶**

**17 (a)** A rectangle is drawn on a square grid.

On the grid, draw a **congruent** rectangle.

**[1 mark]**

**17 (b)** Here is the rectangle on a different square grid.

On this grid, draw a **similar** rectangle which is **not** congruent.

**[1 mark]**

**18** A box contains 36 chocolates.

The chocolates are milk or dark and have hard or soft centres.

$\dfrac{4}{9}$ of the chocolates have soft centres.

There are twice as many milk chocolates as dark.

5 of the dark chocolates have soft centres.

**18 (a)** Complete the two-way table.

[4 marks]

|  | Hard centre | Soft centre |
|---|---|---|
| **Milk** |  |  |
| **Dark** |  | 5 |

One chocolate is chosen at random.

**18 (b)** What is the probability that it is a dark chocolate with a soft centre?
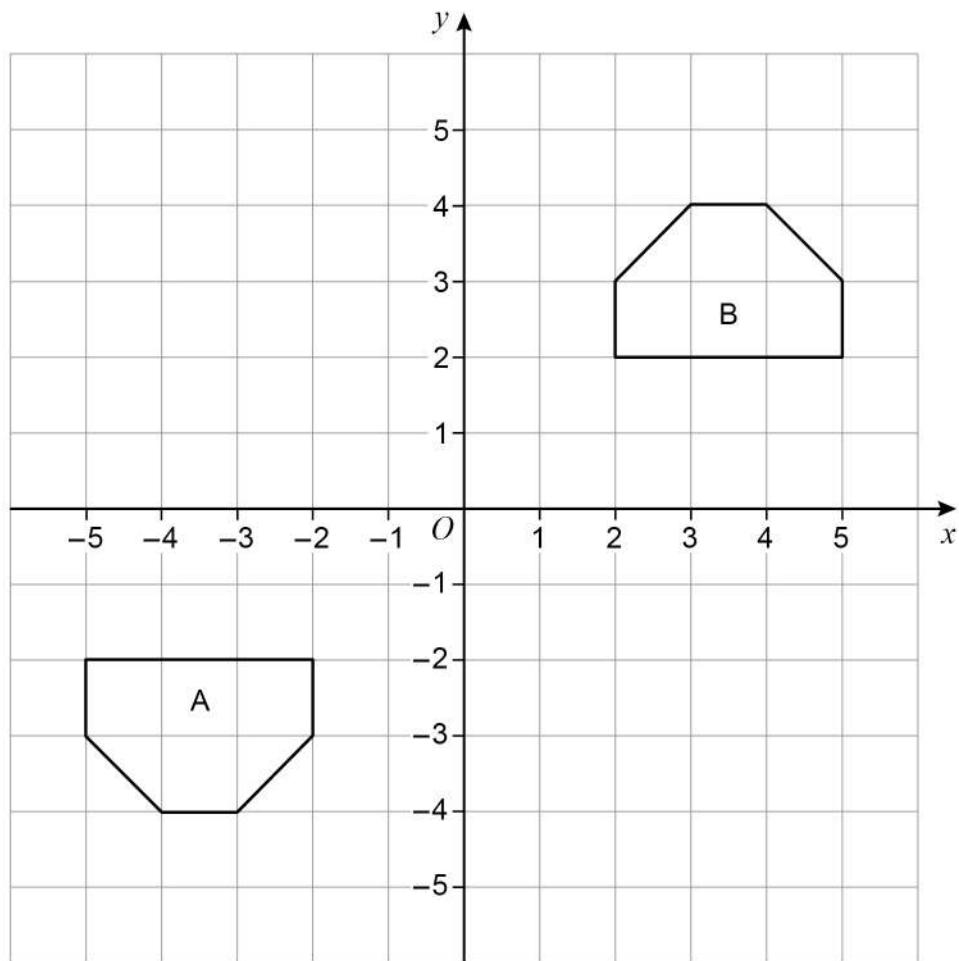
[1 mark]

Answer _____

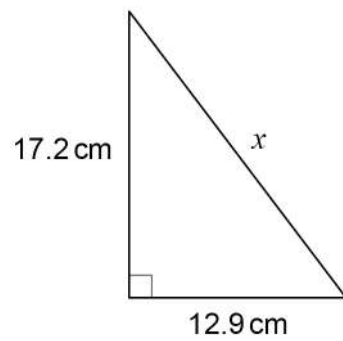**18 (c)** What is the probability that it has a hard centre?

[1 mark]

Answer _____

**Turn over ▶**

**19** Describe fully the **single** transformation that maps shape A to shape B.

**[3 marks]**



_____

_____

_____

_____

**20** Use Pythagoras' theorem to work out the value of $x$.

**[3 marks]**



Not drawn accurately

17.2 cm

$x$

12.9 cm

$x =$ _____ cm

**Turn over for the next question**

6

**Turn over ▶**

**21**

N

B

C

58°

A

Not drawn accurately

The 3-figure bearing of *B* from *A* is 021°

Work out the 3-figure bearing of *C* from *A*.
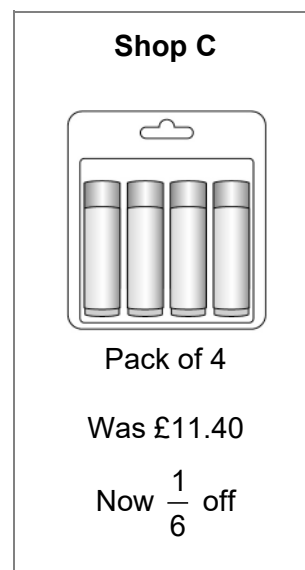
**[2 marks]**

Answer _____ °

**22** How many edges does a triangular prism have?

**[1 mark]**

Answer _____

**23** Three shops sell the same type and size of lip balm stick.

| **Shop A** | **Shop B** | **Shop C** |
|---|---|---|
| £2.39 each | £3.08 each<br><br>Buy one,<br>get one half price | Pack of 4<br><br>Was £11.40<br><br>Now $\frac{1}{6}$ off |

Which shop is the best value for 8 sticks and what is the total cost in that shop?

Show working to support your answer.

**[5 marks]**

Shop _____ Total cost £ _____

8

**Turn over ▶**

**24** The boundaries of a city form a trapezium.

Not drawn accurately



Population density = $\dfrac{\text{number of people}}{\text{area}}$

The population density of the city is 9450 people per square kilometre.

Work out the number of people who live in the city.

**[4 marks]**

Answer _____

**25** Round 1 of voting for Head Student is taking place in a school.

**25 (a)** To reach round 2, a student must receive **at least** $\frac{4}{15}$ of the votes.

What is the largest possible number of students that can reach round 2?

Circle your answer.

[1 mark]

15                    11                    3                    4

**25 (b)** There are 900 votes in round 1

Sean receives 180 votes.

Amy draws a pie chart to represent the results.

Here is her method to work out the angle needed for Sean.

$180 \div 900 \times 100 = 20$

The angle should be 20°

Is Amy's method correct?
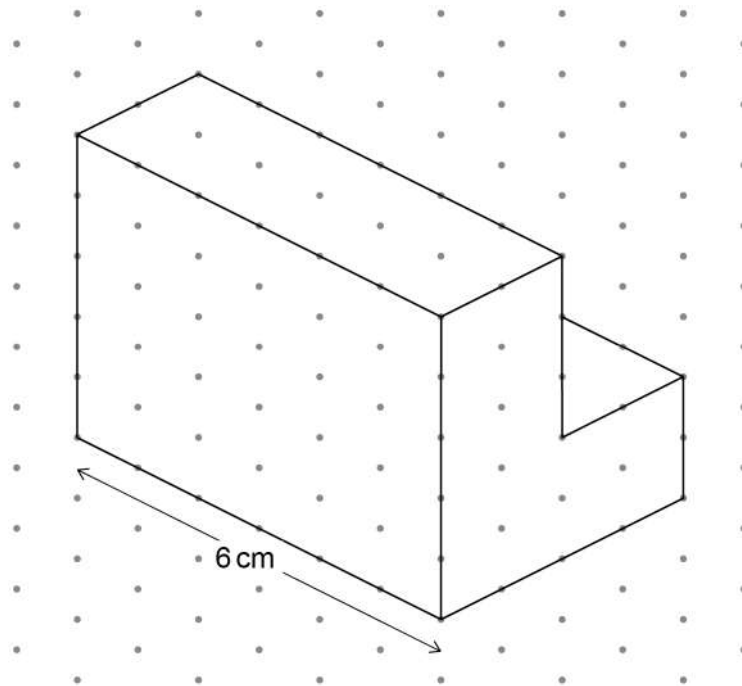
Tick a box.

Yes ☐                    No ☐

Give a reason for your answer.

[1 mark]

6

**Turn over ▶**

**26** Here is a prism drawn on an isometric grid.



6 cm

Work out the volume of the prism.

**[3 marks]**

Answer _____ cm$^3$

**27** Tasha drove 198 miles.

Her average speed for the first 3 hours was 45 miles per hour.

Her average speed for the rest of the journey was 31.5 miles per hour.

Work out her average speed for the whole journey.

**[4 marks]**

Answer _____ miles per hour

**Turn over for the next question**

7

**Turn over ▶**

**28** Here is the term-to-term rule for a sequence.

Double the previous term and add 3

The first three terms of the sequence are $a + 1$ $2a + 5$ $4a + 13$

Show that the sum of the first **four** terms is a multiple of 3

[3 marks]

**29**      A straight line passes through (3, 14) and (12, 32)

Work out the equation of the line.

Give your answer in the form    $y = mx + c$

**[3 marks]**

Answer _____

**END OF QUESTIONS**

6