AQA

Please write clearly in block capitals.

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

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I declare this is my own work.

GCSE MATHEMATICS

F

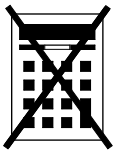
Foundation Tier Paper 1 Non-Calculator

Thursday 16 May 2024 Morning Time allowed: 1 hour 30 minutes

Materials

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

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.
- 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	

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

Do not write outside the box

1 (a) Work out 280 ÷ 7

$$7\overline{)280}\quad 40,\ -280$$

[1 mark]

Answer 40 ✓ (1)

1 (b) Work out 1062 – 438

$$\begin{array}{r} 5 \\ 10\not{6}2 \\ -\ 438 \\ \hline 624 \end{array}$$

[2 marks]

Answer 624 ✓ (2)

Do not write outside the box

2 (a) Complete the statement.

m ×100 cm

[1 mark]

2m × 100 = 200 cm

2 metres = 200 ✓ (1) centimetres

2 (b) Complete the statement.

kg ×1000 g

[1 mark]

8 kg × 1000 = 8000 g

8 kilograms = 8000 ✓ (1) grams

2 (c) Convert 24 kilometres to miles.

Use 8 kilometres = 5 miles

[2 marks]

$\overset{3}{\cancel{24}}$ km × $\frac{5 \text{ miles}}{\overset{1}{\cancel{8}} \text{ km}}$ = 15 miles

✓ (1) ✓ (1)

Answer 15 miles

7

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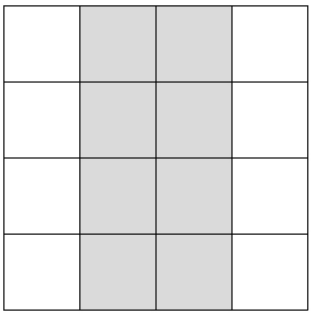
3 (a) Here is a centimetre grid.

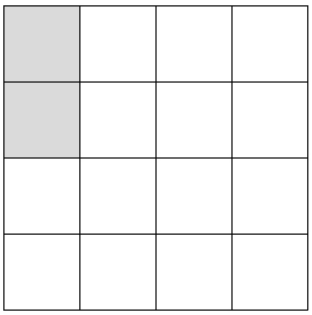


8/16

What **percentage** of the grid is shaded? $\frac{8}{16} \times 100\% = 50\%$ **[1 mark]**

Answer 50 ✓1 %

3 (b) Kai has shaded two small squares on this centimetre grid.



He wants $\frac{3}{4}$ of the grid to be shaded.

How many **more** small squares must he shade? **[2 marks]**

$\frac{3}{4} \times 16 = 12$ squares. ✓1

12 − 2 = 10 more squares to be shaded

Answer 10 ✓1

Do not write outside the box

4 (a) Here is a list of four numbers.

6.92 7.27 7.18 7.14

Use **one** number from the list to complete each statement.

[2 marks]

The number closest in value to 7 is 6.92 ✓ (1)

The number that rounds to 7.2 to 1 decimal place is 7.18 ✓ (1)

4 (b) Here is a list of six numbers.

–10 –5 –2 4 6 10

Use **two** numbers from the list to complete each statement.

[2 marks]

Two numbers that **add** to make –1 are −5 and 4 ✓ (1)

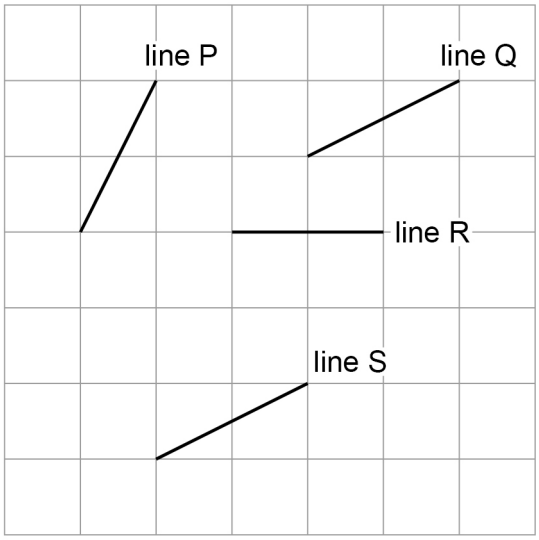
Two numbers that **multiply** to make 20 are −10 and −2 ✓ (1)

Turn over for the next question

7

Do not write outside the box

5 (a) Here are four lines on a square grid.

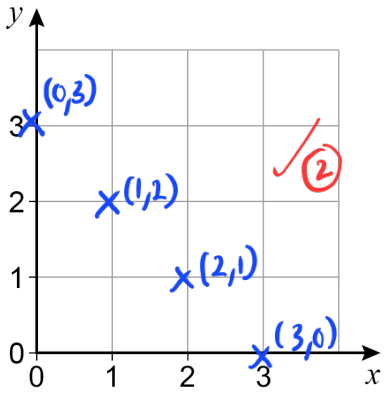


Which **two** lines are parallel?

[1 mark]

line Q and line S ✓ (1)

5 (b) Here is a different grid.



✓ (2)

There are **four** points on this grid that each have

both coordinates that are whole numbers

and

x-coordinate + y-coordinate = 3

Plot the **four** points on the grid.

[2 marks]

Do not write outside the box

6 (a) Write down the value of 3^2

[1 mark]

$3^2 = 9$

Answer 9 ✓1

6 (b) Write down the value of $\sqrt{144}$

[1 mark]

$\sqrt{144} = 12$

Answer 12 ✓1

6 (c) Work out the value of 2^4

[1 mark]

$2 \times 2 \times 2 \times 2 = 16$

Answer 16 ✓1

Turn over for the next question

6

Do not write outside the box

7 (a) At a restaurant, vegan pizzas have two **different** toppings.

The toppings are

sweetcorn (S) mushrooms (M) peppers (P)

Complete the table to list all the possible pairs of toppings.

[1 mark]

SM
SP
MP

✓1

7 (b) At the restaurant, dough balls can be ordered in small portions and large portions.

Small portion	**Large portion**
6 dough balls	10 dough balls

A group of people want to order **exactly** 44 dough balls.

Show how they can do this.

[2 marks]

$(4 \times 6) + (2 \times 10)$

$= 24 + 20$ ✓1

$= 44$

Number of Small portions 4

Number of Large portions 2

✓1

Do not write outside the box

8

Apples	25p each
Oranges	60p each

Salma has £10 to buy apples and oranges.

She buys

9 apples

and

as many oranges as possible.

How many oranges does she buy?

[4 marks]

Apples : $9 \times 25p = £2.25$ ✓1

Balance to buy orange : $£10 - £2.25$

$= £7.75$ ✓1

How many oranges ? : $£7.75 \div £0.60$ ✓1

$$\begin{array}{r} 12 \\ 60\overline{)775} \\ -60 \\ \hline 175 \\ -120 \\ \hline 55 \end{array}$$

: She can only buy 12 oranges.

Answer 12 ✓1

7

Do not write outside the box

9 Alina and Sue play netball.

The number of goals they scored in 8 games is shown.

Alina	12	15	17	17	21	22	24	26
Sue	13	13	17	20	22	23	24	31

9 (a) Complete this table.

[2 marks]

	Range	**Median**
Alina	14 ✓(1)	19
Sue	18	21 ✓(1)

Range (Alina) : 26 − 12 = 14

Median (Sue) : $\frac{20+22}{2}$ = 21

9 (b) Which player scored the more consistent number of goals?

Tick a box.

Alina ☑ Sue ☐

Give a reason for your answer. ✓(1)

[1 mark]

Range is lower compared to Sue.

10 Work out 35% of 1200

[3 marks]

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$\frac{35}{100} \times 1200$ ✓1

$= 35 \times 12$ ✓1

$= 420$

$\begin{array}{r} 1 \\ 35 \\ \times 12 \\ \hline 70 \\ +350 \\ \hline 420 \\ \hline \end{array}$

Answer 420 ✓1

Turn over for the next question

6

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11 A window cleaner uses this formula.

$$C = 2W + 5$$

C = cost, in £, for the customer

W = number of windows to be cleaned

11 (a) How much does it cost for 6 windows to be cleaned?

[2 marks]

$C = 2(6) + 5$ ✓①

$= 12 + 5$

$= 17$

Answer £ 17 ✓①

11 (b) The cost for another customer was £24

Show why this cost **must** be incorrect.

[1 mark]

$24 = 2W + 5$

$2W = 19$

$W = 9.5$ ✓①

This must be incorrect as W should be a whole number. ✓①

Do not write outside the box

12 Two bags, X and Y, each contain coloured discs.

In bag X, $\frac{7}{20}$ of the discs are red.

In bag Y, $\frac{2}{5}$ of the discs are red.

Which bag has the **greater** proportion of red discs, X or Y?

You **must** show your working.

[2 marks]

Bag X = $\frac{7}{20}$ are red discs.

Bag Y = $\frac{2\times4}{5\times4} = \frac{8}{20}$ are red discs. ✓1

Bag Y has greater proportion of red discs.

Answer Bag Y ✓1

Turn over for the next question

5

Do not write outside the box

13 (a) Two friends share £240 in the ratio 1 : 3

Work out the larger share.

[2 marks]

Total ratio = 1 + 3 = 4

Larger ratio = 3/4

Larger share = 3/4 × £240 ✓1

= £180

Answer £ 180 ✓1

13 (b) A tennis player wins or loses matches in the ratio win : lose = 5 : 9

What fraction of the matches do they win? Total fraction = 5 + 9 = 14

[1 mark]

fraction of matches won = $\frac{5}{14}$ ✓1

Answer $\frac{5}{14}$

Do not write outside the box

14 Here is a multiplication table.

×	**61**	**63**	**65**	**67**
61	3721	3843	3965	4087
63	3843	3969	4095	4221
65	3965	4095	4225	4355
67	4087	4221	4355	4489

Use the table to answer the following questions.

14 (a) Work out 3843 ÷ 63

[1 mark]

Answer 61 ✓1

14 (b) Work out 6.1 × 6.7

61 × 67 = 4087

6.1 × 6.7 = 40.87

[1 mark]

Answer 40.87 ✓1

14 (c) Work out 63 × 66

[2 marks]

63 × 66 = (63 × 65) + 63

63 × 65 = 4095

63 × 66 = 4095 + 63 ✓1

= 4158

4095
+ 63
4158

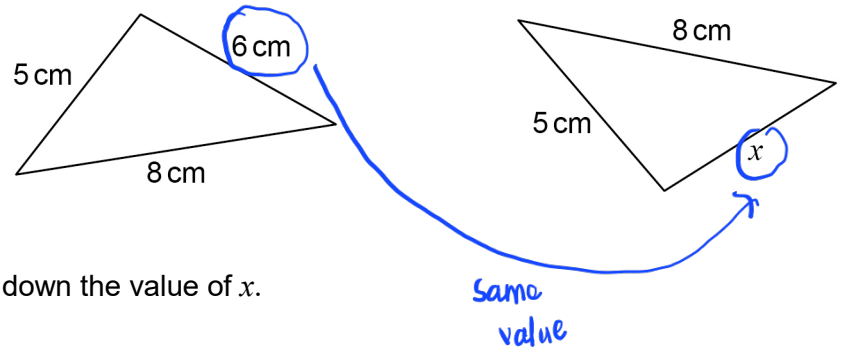
Answer 4158 ✓1

7

Do not write outside the box

15 These two triangles are **congruent**.

Not drawn accurately



Write down the value of x.

[1 mark]

$x =$ 6 ✓1 cm

16 c and d are positive numbers.

c is even.

d is odd.

Tick a box for each expression.

[3 marks]

	Even	Odd	Cannot tell
$c + d$		✓1	
$4c$	✓1		
$\frac{c}{2}$			✓1

Do not write outside the box

17 A linear sequence has

- 1st term = 10
- 1st term + 2nd term = 39

Work out the 5th term.

[4 marks]

2nd term = 39 − 10 = 29 ✓1

a = 10

d = 29 − 10 = 19 ✓1

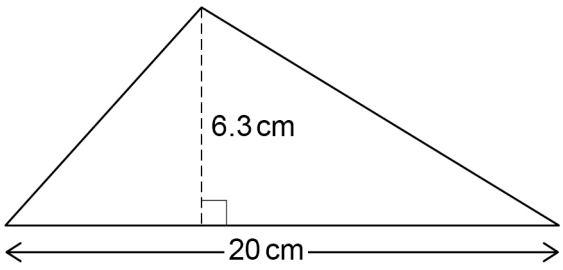
$T_5 = 10 + (5-1)\,19$ $T_n = a + (n-1)d$

$= 10 + 4(19)$ ✓1

$= 86$

Answer 86 ✓1

18



Not drawn accurately

Work out the area of this triangle.

Area of triangle = $\frac{1}{2}$ × base × height

[2 marks]

$\frac{1}{2} \times 20 \times 6.3$ ✓1

$= 10 \times 6.3$

$= 63\ cm^2$ ✓1

Answer 63 cm^2

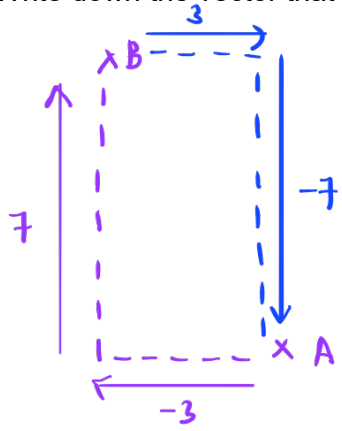
10

Do not write outside the box

19 The vector $\begin{pmatrix} -3 \\ 7 \end{pmatrix}$ translates A to B.

Write down the vector that translates B to A.

[1 mark]



Answer $\begin{pmatrix} 3 \\ -7 \end{pmatrix}$ ✓1

20 The attendance for a rugby match is 8400 people to the nearest 100

20 (a) Write down the minimum possible attendance.

if 8349 to the nearest 100, will be 8300.

[1 mark]

Answer 8350 ✓1

20 (b) Write down the maximum possible attendance.

[1 mark]

if 8450 to the nearest 100 will be 8500.

Answer 8449 ✓1

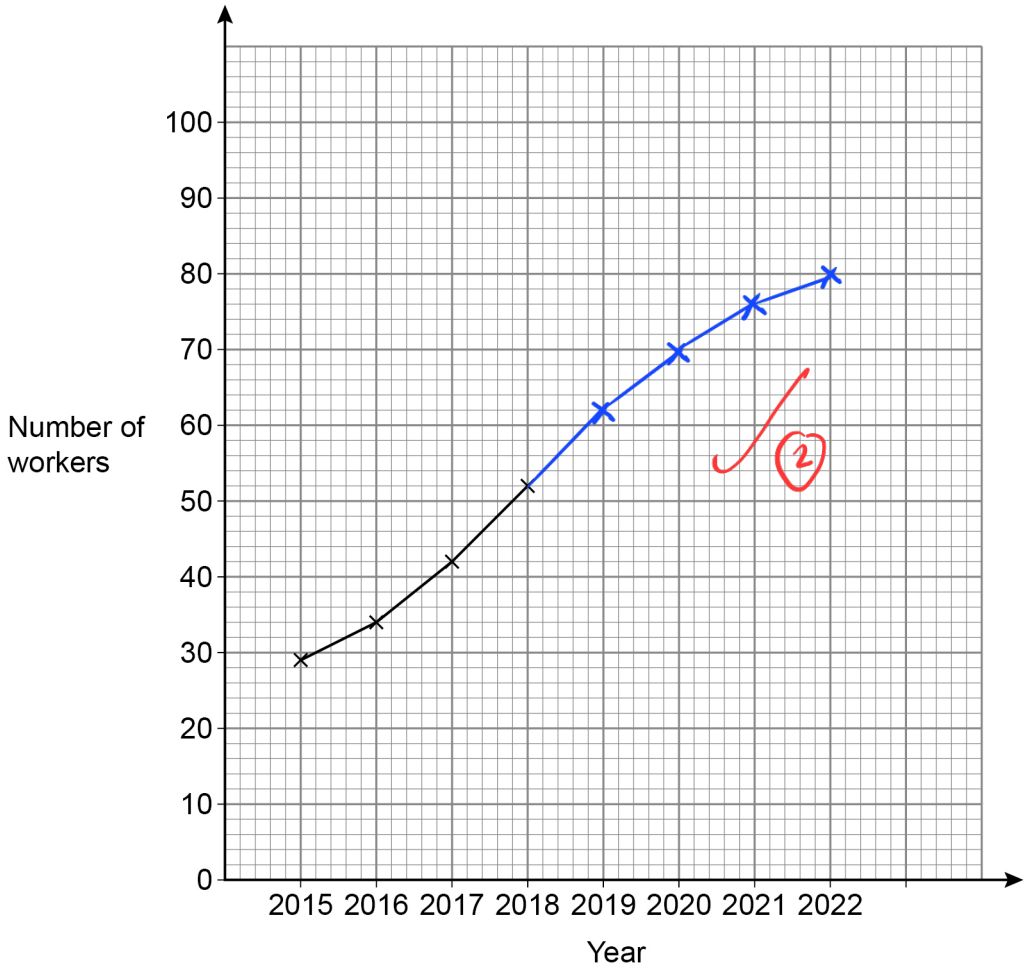
Do not write outside the box

21 The table shows the number of workers at a company in different years.

Year	2015	2016	2017	2018	2019	2020	2021	2022
Number of workers	29	34	42	52	62	70	76	80

A time-series graph is drawn to represent the data.

The first four points have been plotted.



21 (a) Complete the graph.

[2 marks]

21 (b) Estimate the number of workers at the company in 2023.

[1 mark]

Answer 82

6

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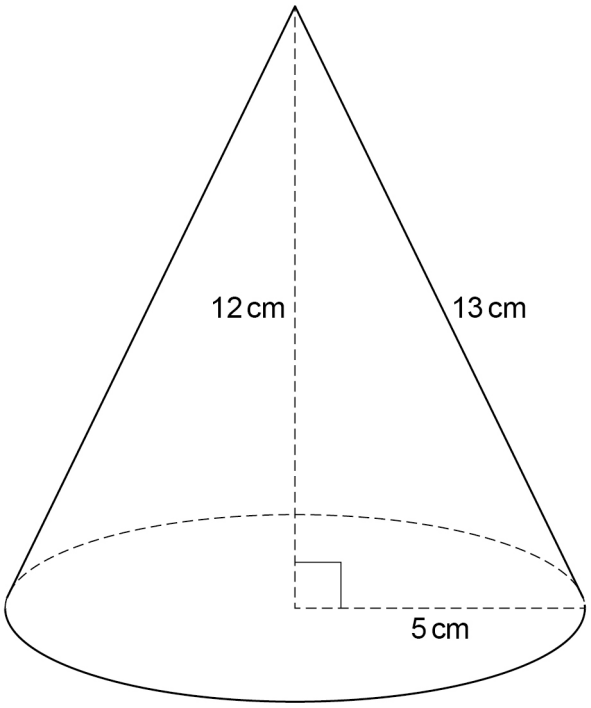
22 Here is a cone.



22 (a)

Curved surface area of a cone $= \pi rl$

where r is the radius and l is the slant height

Beth tries to work out the curved surface area in terms of π

Curved surface area of the cone $= \pi \times 5 \times 12$

$= 60\pi \text{ cm}^2$

What mistake has she made?

[1 mark]

The value of l should be 13 instead of 12 ✓ 1

Do not write outside the box

22 (b) Adam uses $\pi = 3$ to estimate the area of the **base** of the cone.

Work out his estimate.

[2 marks]

Area of the base of the cone = $\pi \times r^2$

$= 3 \times 5^2$

$= 3 \times 25$ ✓1

$= 75\ cm^2$ ✓1

Answer 75 cm^2

22 (c) Beth uses $\pi = 3.14$ to estimate the area of the **base** of the cone.

Is Beth's estimate more than or less than Adam's estimate?

Tick a box.

More than [✓] Less than [ ]

Give a reason for your answer.

[1 mark]

3.14 is larger than 3. ✓1

Turn over for the next question

4

Do not write outside the box

23 Each day, Erik drinks

$\frac{1}{4}$ of a pint of milk in the morning

and

$\frac{1}{2}$ of a pint of milk in the afternoon.

How many pints of milk does he drink in 30 days?

[3 marks]

Pint of milk he drinks in a day : $\frac{1}{4} + \frac{1 \times 2}{2 \times 2}$

$= \frac{1}{4} + \frac{2}{4} = \frac{3}{4}$ pint ✓1

Pints of milk he drink in 30 days : $\frac{3}{4} \times 30$ ✓1

$= 22.5$ pints ✓1

Answer 22.5

Do not write outside the box

24 Solve $7x - 22 = 4x + 29$

[3 marks]

$7x - 4x = 29 + 22$ ✓1

$3x = 51$

$x = \frac{51}{3}$ ✓1

$= 17$ ✓1

$x =$ 17

25 In a house

the floor area of the living room is $26\,m^2$

the floor area of the kitchen is $16.4\,m^2$

Express the area of the living room as a fraction of the area of the kitchen.

Give your answer in its simplest form.

[3 marks]

Area of living room $= \frac{26.0}{16.4}$ area of kitchen ✓1

$= \frac{260 \div 4}{164 \div 4}$ area of kitchen ✓1

$= \frac{65}{41}$ area of kitchen ✓1

Answer $\frac{65}{41}$

9

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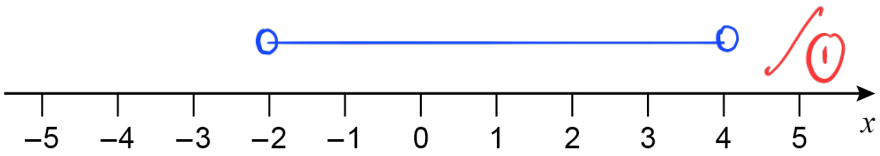
26 (a) Represent $-2 < x < 4$ on the number line.

[1 mark]



26 (b) Solve $5y + 14 \geqslant 11$

[2 marks]

$5y \geqslant 11 - 14$ ✓1

$5y \geqslant -3$

$y \geqslant \frac{-3}{5}$ ✓1

Answer $y \geqslant -\frac{3}{5}$

27

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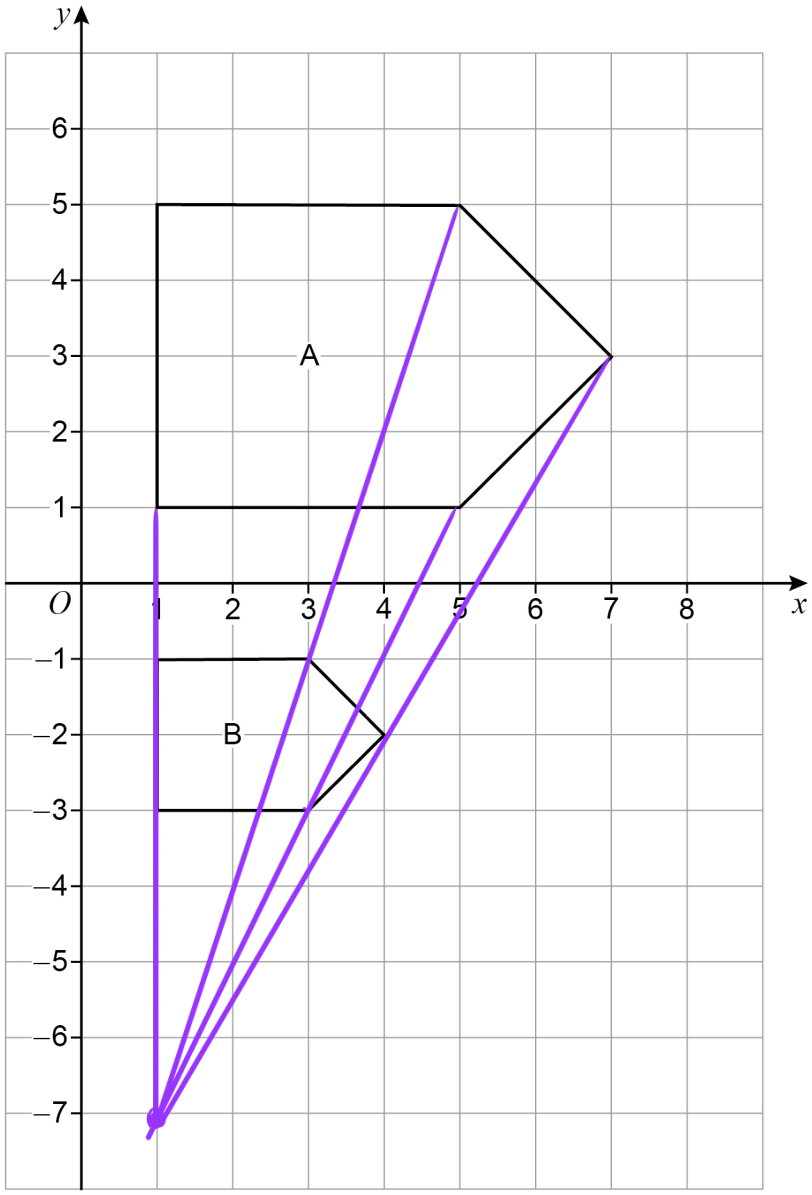

Describe fully the **single** transformation that maps shape A to shape B.

[3 marks]

Enlargement of scale factor $\frac{1}{2}$ at point $(1,-7)$.

✓① ✓① ✓①

END OF QUESTIONS

6

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ANSWER IN THE SPACES PROVIDED

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