

Please write clearly in block capitals.

Centre number

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Candidate number

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Surname StemUp Model Solution

Forename(s) _____

Candidate signature _____

I declare this is my own work.

GCSE MATHEMATICS

F

Foundation Tier Paper 1 Non-Calculator

Thursday 16 May 2024

Morning

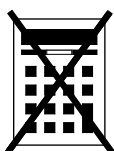
Time allowed: 1 hour 30 minutes

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	



J U N 2 4 8 3 0 0 1 F 0 1

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

Do not write
outside the
box

1 (a) Work out $280 \div 7$

[1 mark]

$$28 \div 7 = 4, \text{ so } 280 \div 7 = 40$$

Answer 40

1 (b) Work out $1062 - 438$

[2 marks]

$$\begin{array}{r} \overset{0}{1} \overset{5}{0} \overset{6}{6} \overset{2}{2} \\ - \quad 438 \\ \hline 624 \end{array}$$

Answer 624



2 (a) Complete the statement.

[1 mark]

2 metres = 200 centimetres

2 (b) Complete the statement.

[1 mark]

8 kilograms = 8000 grams

2 (c) Convert 24 kilometres to miles.

Use 8 kilometres = 5 miles

[2 marks]

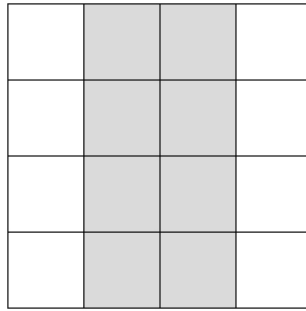
$$24 \div 8 = 3$$

$$3 \times 5 = 15 \text{ miles}$$

Answer 15 miles



- 3 (a) Here is a centimetre grid.

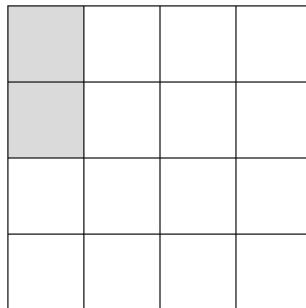


What **percentage** of the grid is shaded?

[1 mark]

Answer 50 %

- 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]

$$\frac{3}{4} \text{ of } 16 = 16 \div 4 \times 3 = 12 \text{ squares}$$

$$12 - 2 = 10$$

Answer 10



- 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

The number that rounds to 7.2 to 1 decimal place is 7.18

- 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

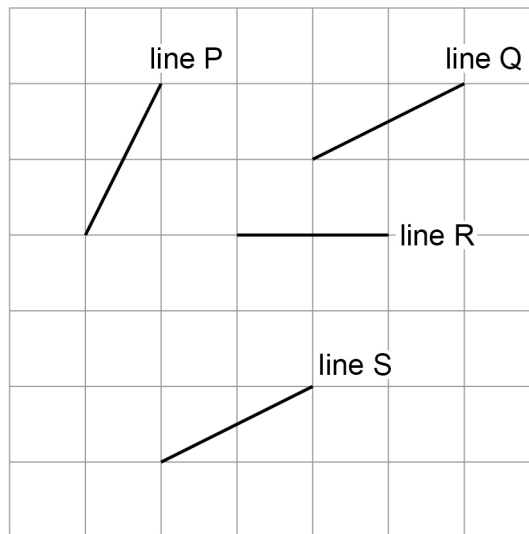
Two numbers that **multiply** to make 20 are -10 and -2

Turn over for the next question

Turn over ►



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

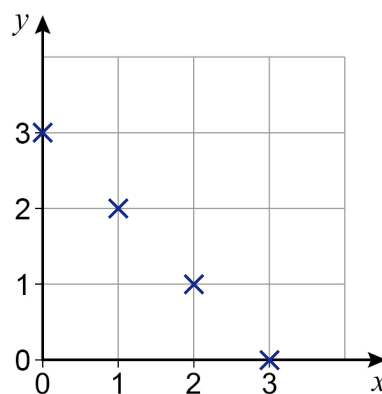


Which **two** lines are parallel?

[1 mark]

line Q and line S

- 5 (b) Here is a different grid.



There are **four** points on this grid that each have
both coordinates that are whole numbers
and
 $x\text{-coordinate} + y\text{-coordinate} = 3$

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

[2 marks]



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

[1 mark]

Answer 9

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

[1 mark]

Answer 12

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

[1 mark]

$$2 \times 2 \times 2 \times 2 = 4 \times 4 = 16$$

Answer 16

Turn over for the next question

Turn over ►



- 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

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

Small portion

6 dough balls

Large portion

10 dough balls

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

Show how they can do this.

[2 marks]

4 small portions: $4 \times 6 = 24$

2 large portions: $2 \times 10 = 20$

$24 + 20 = 44$ dough balls

Number of Small portions 4

Number of Large portions 2



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]

$$\text{Apples: } 9 \times 25 = 250 - 25 = 225\text{p} = \text{£}2.25$$

$$\text{Money left: } \text{£}10.00 - \text{£}2.25 = \text{£}7.75$$

Oranges at 60p each:

$$10 \text{ oranges} = 10 \times 60\text{p} = \text{£}6.00$$

$$11 \text{ oranges} = \text{£}6.00 + \text{£}0.60 = \text{£}6.60$$

$$12 \text{ oranges} = \text{£}6.60 + \text{£}0.60 = \text{£}7.20 \quad (\text{less than } \text{£}7.75)$$

$$13 \text{ oranges} = \text{£}7.20 + \text{£}0.60 = \text{£}7.80 \quad (\text{more than } \text{£}7.75)$$

So she can buy 12 oranges (£0.55 left over)

Answer 12



- 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	19
Sue	18	21

$$\text{Alina range} = 26 - 12 = 14$$

$$\text{Sue median} = (20 + 22) \div 2 = 42 \div 2 = 21$$

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

Tick a box.

Alina

☒

Sue

☐

Give a reason for your answer.

[1 mark]

Alina has the lower range (14 is less than 18),

so her numbers of goals are less spread out.



10

Work out 35% of 1200

[3 marks]

$$10\% \text{ of } 1200 = 1200 \div 10 = 120$$

$$30\% = 3 \times 120 = 360$$

$$5\% = 120 \div 2 = 60$$

$$35\% = 30\% + 5\% = 360 + 60 = 420$$

Answer 420

Turn over for the next question

Turn over ►



- 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]

$$C = 2 \times 6 + 5$$

$$C = 12 + 5 = 17$$

Answer £ 17

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

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

[1 mark]

$$2W + 5 = 24, \text{ so } 2W = 19 \text{ and } W = 19 \div 2 = 9.5$$

You cannot clean half a window.

(9 windows cost £23 and 10 windows cost £25)



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]

$$X: \frac{7}{20} \quad Y: \frac{2}{5} = \frac{2 \times 4}{5 \times 4} = \frac{8}{20}$$

$$\frac{8}{20} \text{ is greater than } \frac{7}{20} \quad (0.4 > 0.35)$$

Answer Y

Turn over for the next question

Turn over ►



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

Work out the larger share.

[2 marks]

$$1 + 3 = 4 \text{ parts}$$

$$1 \text{ part} = 240 \div 4 = £60$$

$$\text{Larger share} = 3 \times 60 = £180$$

Answer £ 180

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

What fraction of the matches do they win?

[1 mark]

$$\text{Total parts} = 5 + 9 = 14, \text{ wins} = 5 \text{ out of } 14$$

Answer $\frac{5}{14}$



14 Here is a multiplication table.

$\times$	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 $3843 \div 63$

[1 mark]

Answer 61

14 (b) Work out 6.1×6.7

[1 mark]

Answer 40.87

14 (c) Work out 63×66

[2 marks]

$$63 \times 66 = 63 \times 65 + 63 \times 1$$

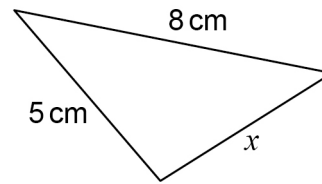
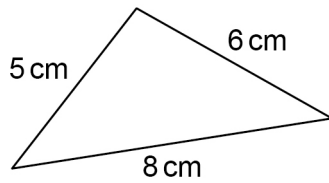
$$= 4095 + 63$$

$$= 4158$$

Answer 4158



15

These two triangles are **congruent**.Not drawn
accuratelyWrite down the value of x .

[1 mark]

 $x =$ 6 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
$c + d$	☐	☒	☐
$4c$	☒	☐	☐
$\frac{c}{2}$	☐	☐	☒



17

A linear sequence has

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

Work out the 5th term.

[4 marks]

$$2\text{nd term} = 39 - 10 = 29$$

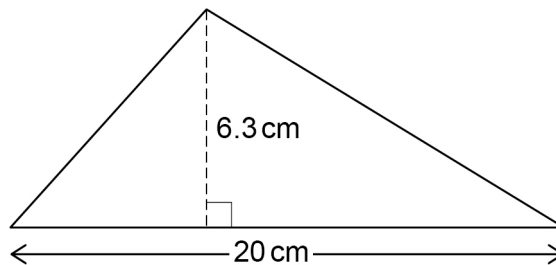
$$\text{Difference} = 29 - 10 = 19$$

$$10, 29, 48, 67, 86$$

$$5\text{th term} = 10 + 4 \times 19 = 10 + 76 = 86$$

Answer 86

18

Not drawn
accurately

Work out the area of this triangle.

[2 marks]

$$\text{Area} = \frac{1}{2} \times \text{base} \times \text{height}$$

$$= 20 \times 6.3 \div 2$$

$$= 126 \div 2 = 63$$

Answer 63 cm²

Turn over ►



- 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 $\begin{pmatrix} 3 \\ -7 \end{pmatrix}$

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

- 20 (a) Write down the minimum possible attendance.

[1 mark]

Answer 8350

- 20 (b) Write down the maximum possible attendance.

[1 mark]

Answer 8449



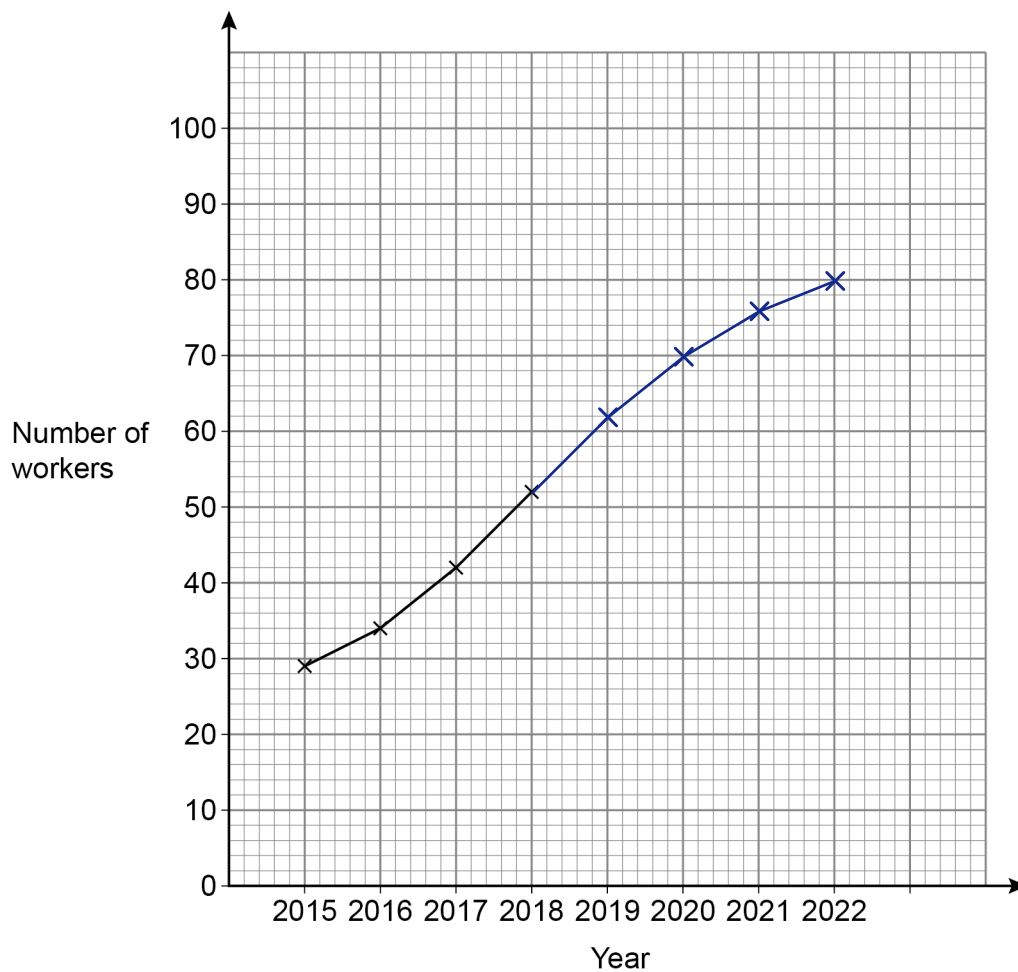
21

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]

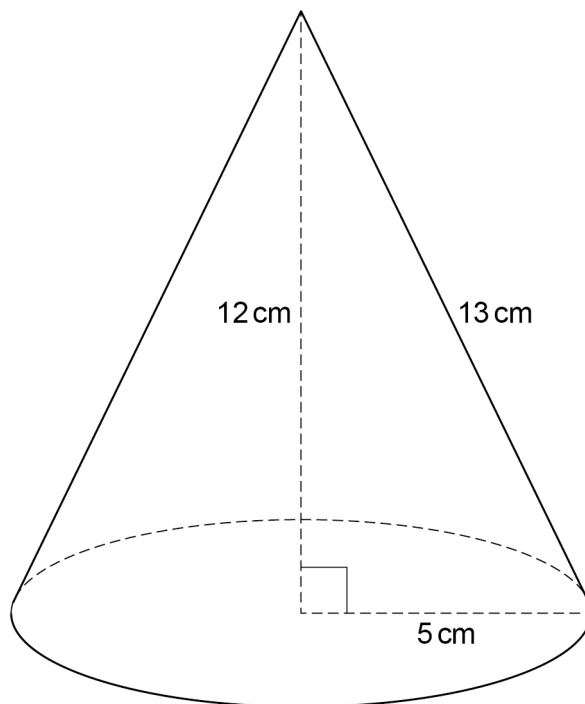
Answer 84

Turn over ►



22

Here is a cone.

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outside the
box

22 (a)

Curved surface area of a cone = $\pi r l$
 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]

She used the vertical height (12 cm) instead of the slant height (13 cm). It should be $\pi \times 5 \times 13 = 65\pi \text{ cm}^2$



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

Work out his estimate.

[2 marks]

$$\text{Area} = \pi r^2$$

$$= 3 \times 5^2 = 3 \times 25$$

$$= 75$$

Answer 75 cm²

- 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 bigger than 3 (Adam rounded π down), so Beth

gets $3.14 \times 25 = 78.5$, which is more than 75

Turn over for the next question

Turn over ►



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]

$$\text{Each day: } \frac{1}{4} + \frac{1}{2} = \frac{1}{4} + \frac{2}{4} = \frac{3}{4} \text{ pint}$$

$$30 \text{ days: } \frac{3}{4} \times 30 = \frac{90}{4}$$

$$= 22 \frac{2}{4} = 22 \frac{1}{2} \text{ pints}$$

Answer $22 \frac{1}{2}$



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

[3 marks]

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

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

$$3x = 51$$

$$x = 51 \div 3 = 17$$

$$x = 17$$

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]

$$\frac{\text{living room}}{\text{kitchen}} = \frac{26}{16.4} = \frac{260}{164} \quad (\times 10)$$

$$= \frac{130}{82} \quad (\div 2)$$

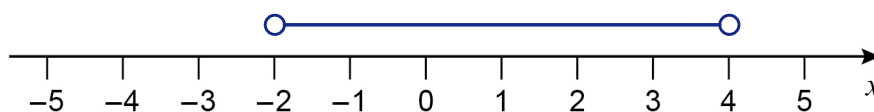
$$= \frac{65}{41} \quad (\div 2)$$

$$\text{Answer } \frac{65}{41}$$



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

[1 mark]



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

[2 marks]

$$5y + 14 \geq 11$$

$$5y \geq 11 - 14$$

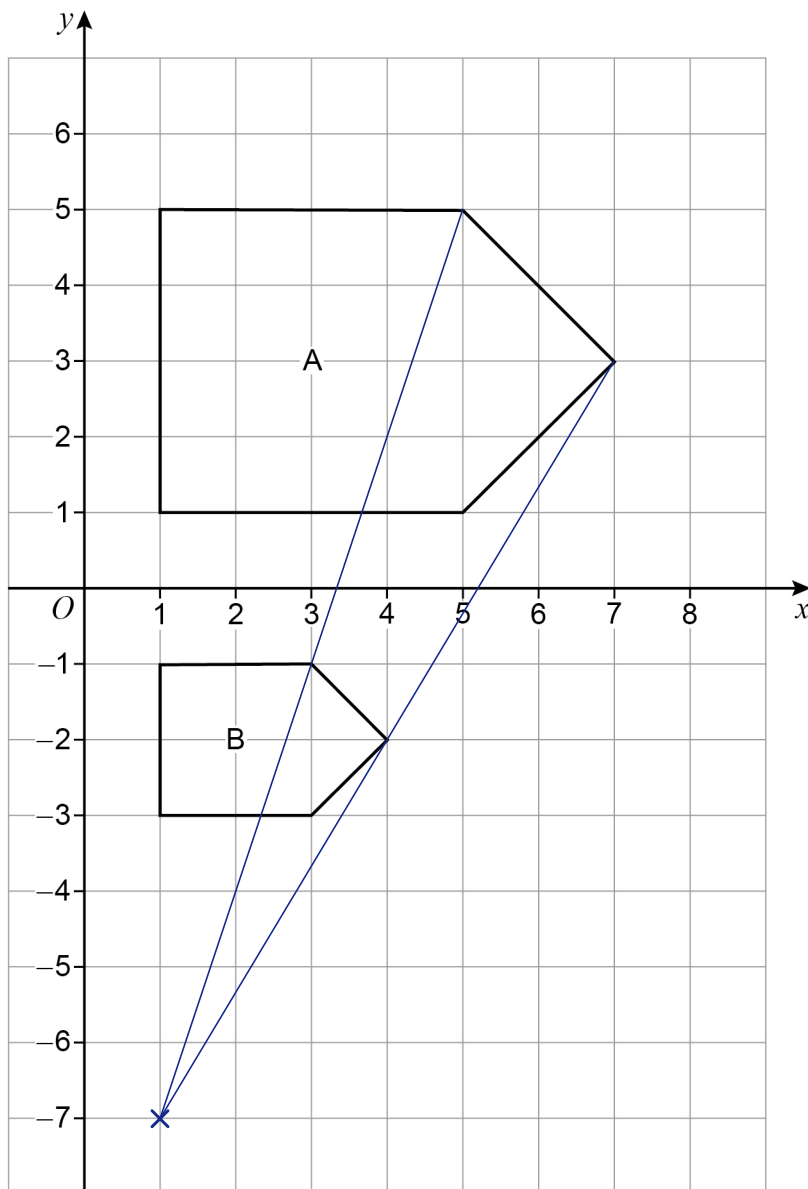
$$5y \geq -3$$

$$y \geq -\frac{3}{5}$$

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



27

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

[3 marks]

Enlargement, scale factor $\frac{1}{2}$

centre (1, -7)

END OF QUESTIONS

6



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ANSWER IN THE SPACES PROVIDED**



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