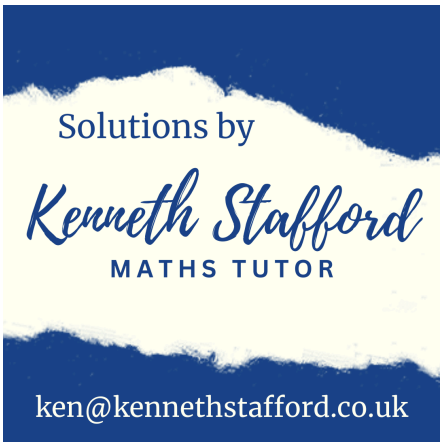
Name: SOLUTIONS

GCSE (1 - 9)

Mixed Transformations



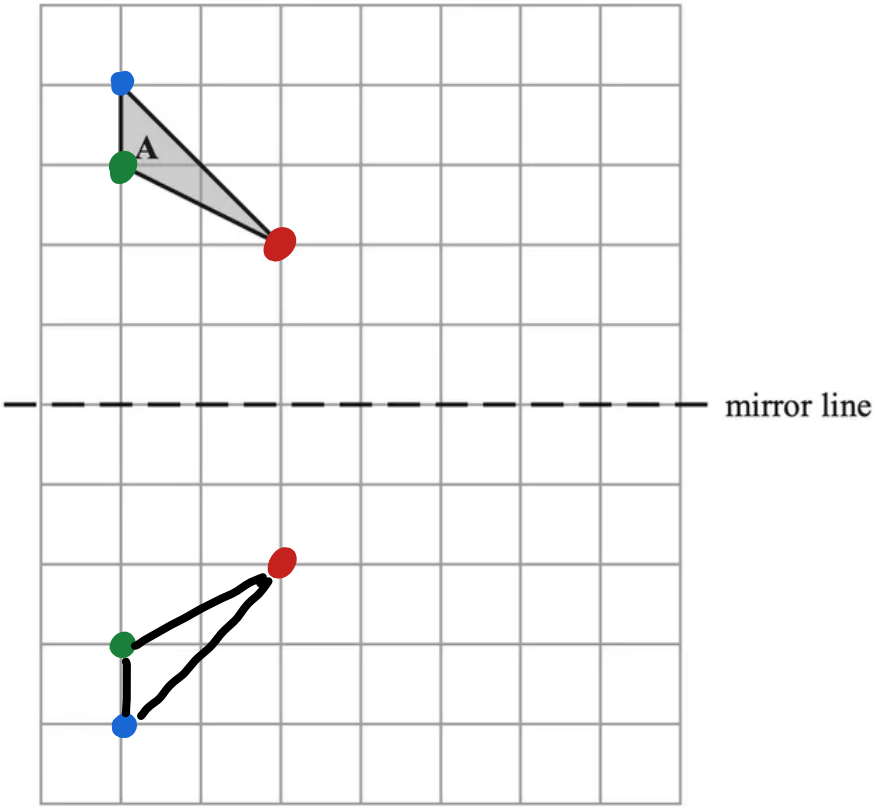


These questions are compiled from *released* Pearson Edexcel GCSE maths exam papers
They contain exam questions from up until the ***Summer 2023*** exam series
More recent exam papers do exist but are withheld for mock exams
As new exam papers are released these worksheets will gradually be updated
The ***most current*** version of these worksheets will always be available at: kennethstafford.co.uk

Question	Where the question appeared	Question	Where the question appeared
1	Edexcel, GCSE, Autumn 2021, Paper 2F, Q11	15	Edexcel, GCSE, Summer 2023, Paper 2F, Q12
2	Edexcel, GCSE, Autumn 2021, Paper 3F, Q16	16	Edexcel, GCSE, Summer 2023, Paper 3F, Q16
3	Edexcel, GCSE, Autumn 2020, Paper 1F, Q11	17	Edexcel, GCSE, November 2022, Paper 1F, Q11
4	Edexcel, GCSE, Autumn 2020, Paper 2F, Q18	18	Edexcel, GCSE, November 2022, Paper 2F, Q18
5	Edexcel, GCSE, Autumn 2019, Paper 2F, Q13	19	Edexcel, GCSE, Summer 2022, Paper 1F, Q3
6	Edexcel, GCSE, Autumn 2019, Paper 3F, Q18	20	Edexcel, GCSE, Summer 2022, Paper 2F, Q22
7	Edexcel, GCSE, Summer 2019, Paper 1F, Q26	21	Edexcel, GCSE, Summer 2022, Paper 2F, Q22
8	Edexcel, GCSE, Autumn 2018, Paper 1F, Q19		
9	Edexcel, GCSE, Autumn 2018, Paper 2F, Q16		
10	Edexcel, GCSE, Autumn 2018, Paper 3F, Q10		
11	Edexcel, GCSE, Summer 2018, Paper 2F, Q18		
12	Edexcel, GCSE, Autumn 2017, Paper 2F, Q20		
13	Edexcel, GCSE, Autumn 2017, Paper 3F, Q14		
14	Edexcel, GCSE, Summer 2017, Paper 2F, Q13		

1

Reflect shape **A** in the mirror line.

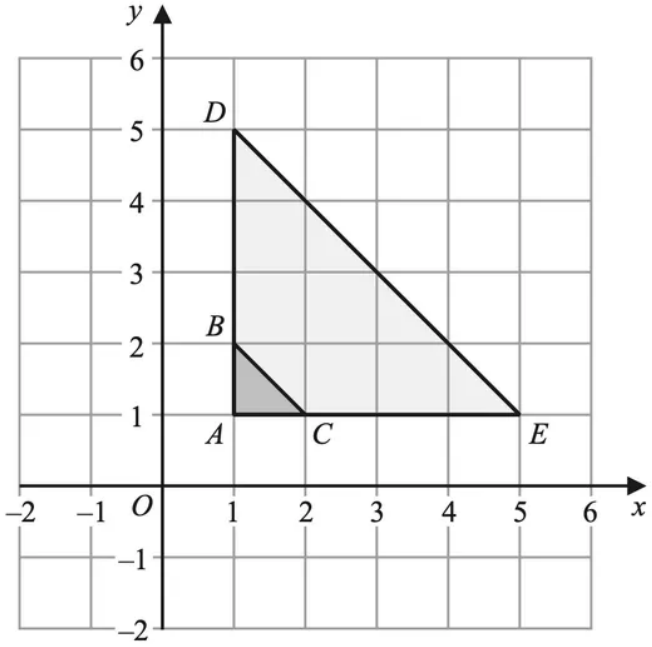


(Total for Question 11 is 2 marks)

[Edexcel, GCSE, Autumn 2021, Paper 2F, Q11]

2

Here is a diagram showing triangle ABC and triangle ADE.



Describe fully the single transformation that maps triangle ABC onto triangle ADE.

Enlargement

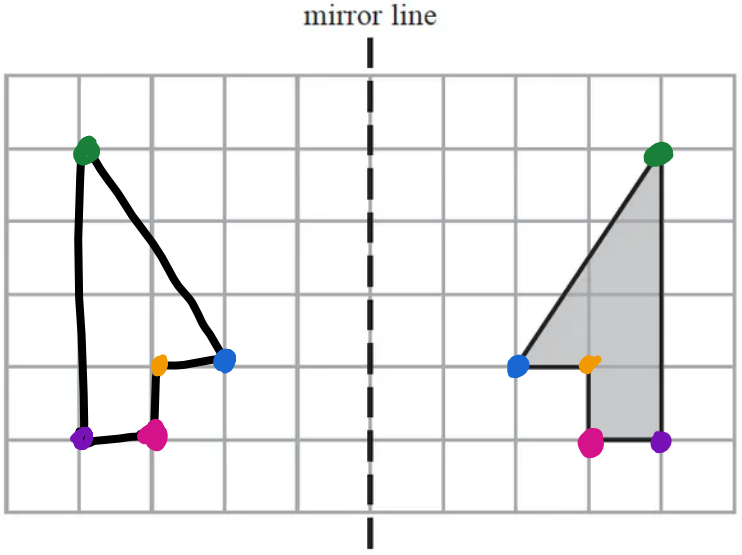
Scale factor 4

Centre (1,1)

(Total for Question 16 is 2 marks)

[Edexcel, GCSE, Autumn 2021, Paper 3F, Q16]

3

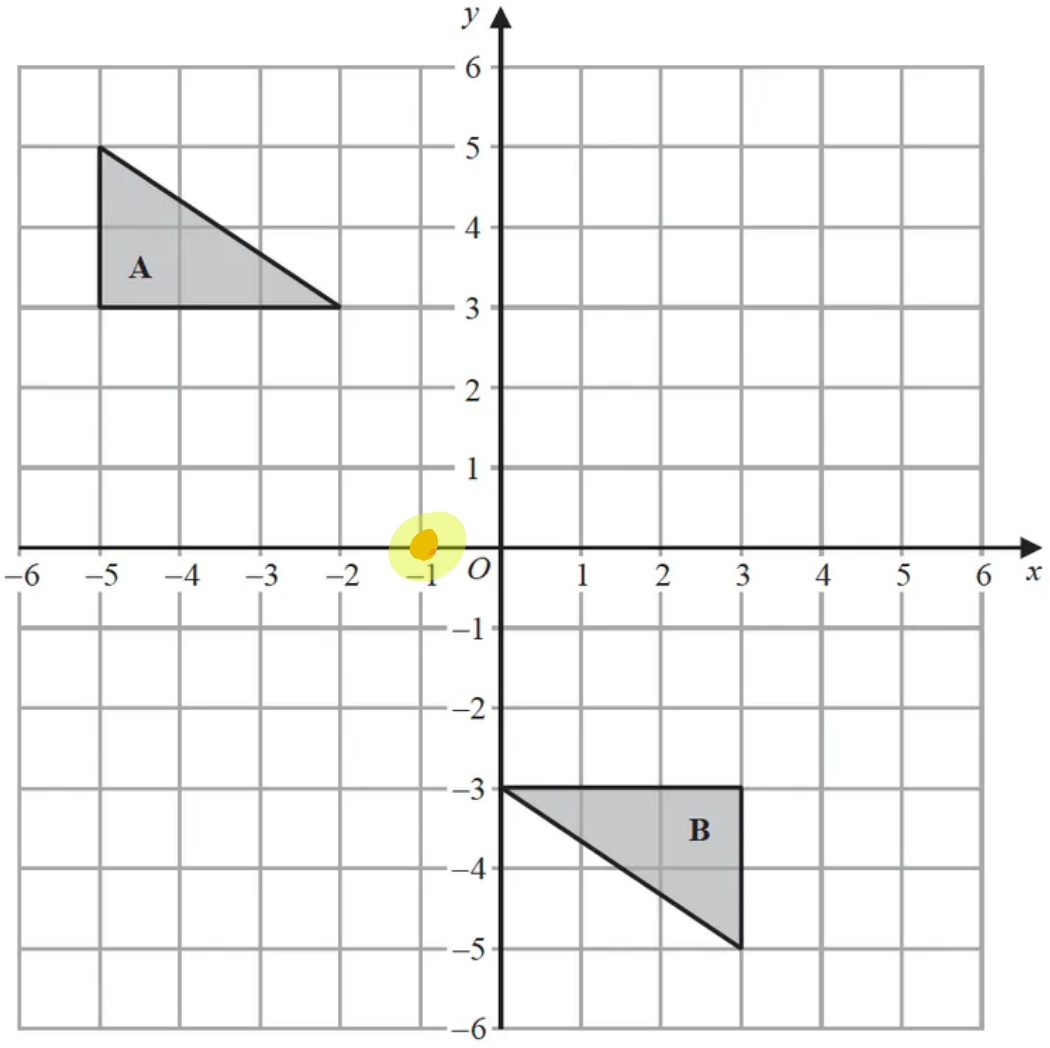


Reflect the shaded shape in the mirror line.

(Total for Question 11 is 2 marks)

[Edexcel, GCSE, Autumn 2020, Paper 1F, Q11]

4



Describe fully the single transformation that maps triangle **A** onto triangle **B**.

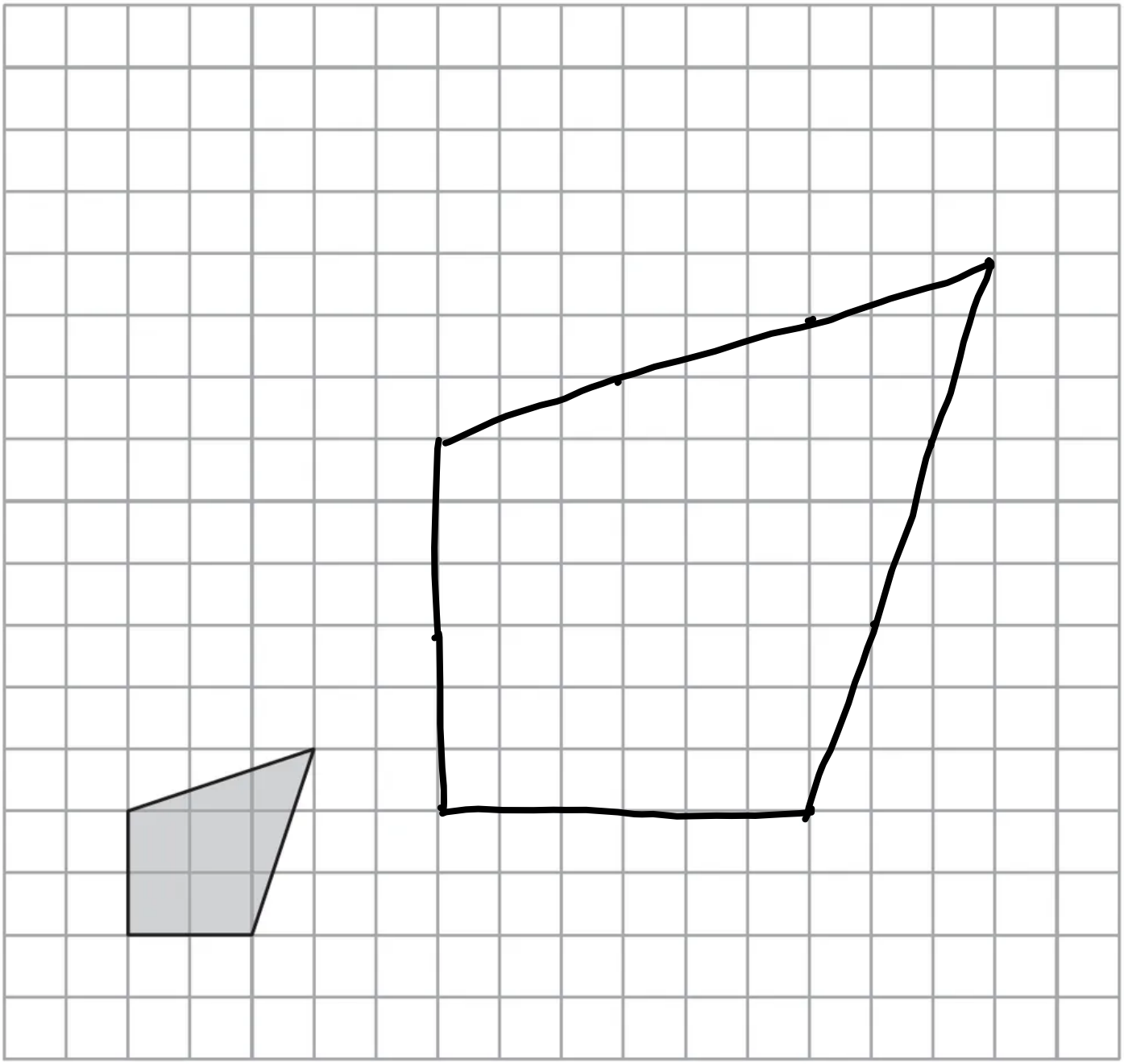
Rotation 180 degrees

Centre (-1,0)

(Total for Question 18 is 2 marks)

[Edexcel, GCSE, Autumn 2020, Paper 2F, Q18]

5

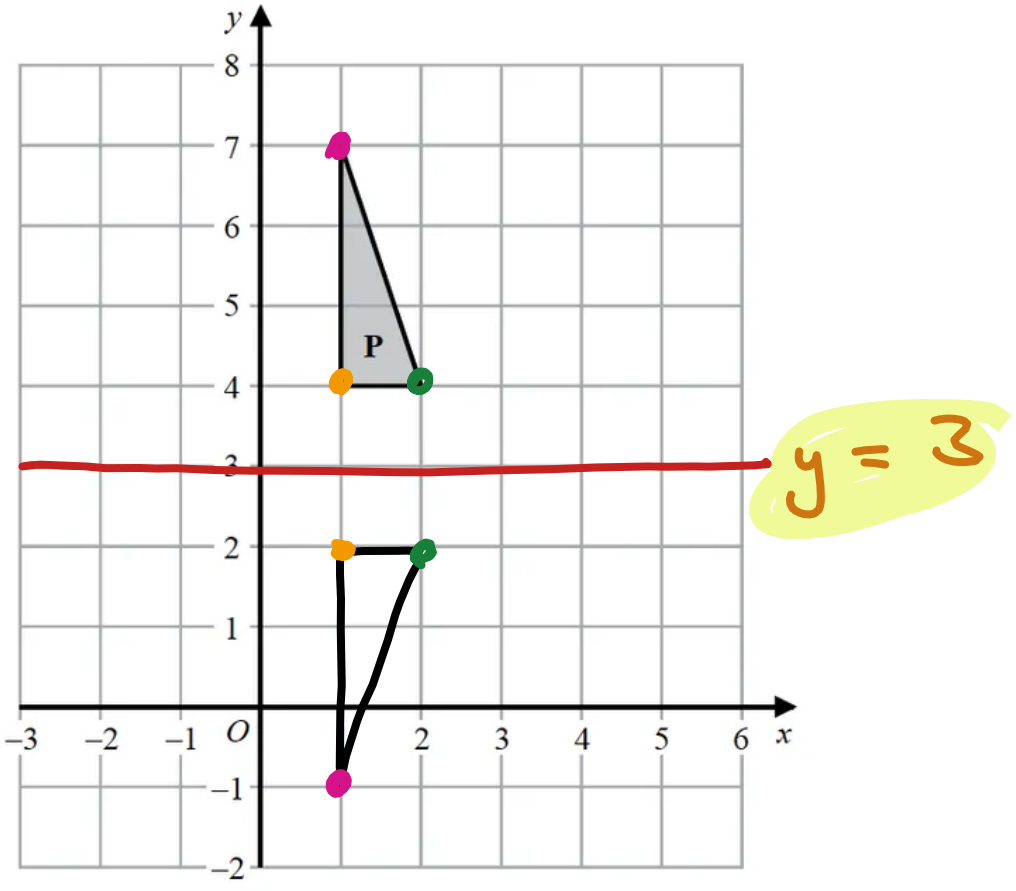


On the grid, draw an enlargement of the shaded shape with a scale factor of 3

(Total for Question 13 is 2 marks)

[Edexcel, GCSE, Autumn 2019, Paper 2F, Q13]

6

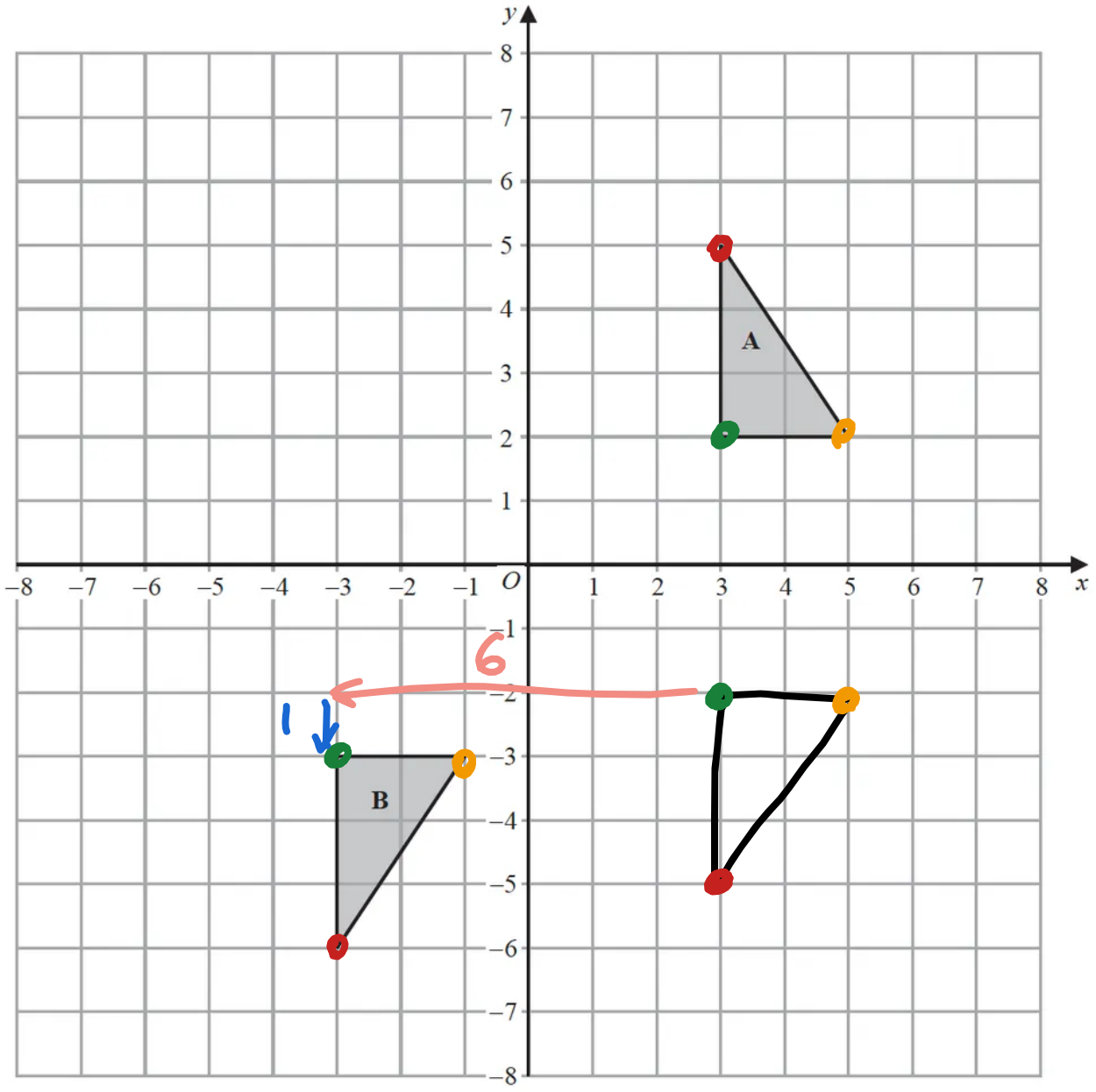


Reflect shape **P** in the line $y = 3$

(Total for Question 18 is 2 marks)

[Edexcel, GCSE, Autumn 2019, Paper 3F, Q18]

7



Shape **A** can be transformed to shape **B** by a reflection in the x-axis followed by a translation $\begin{pmatrix} c \\ d \end{pmatrix}$

Find the value of c and the value of d.

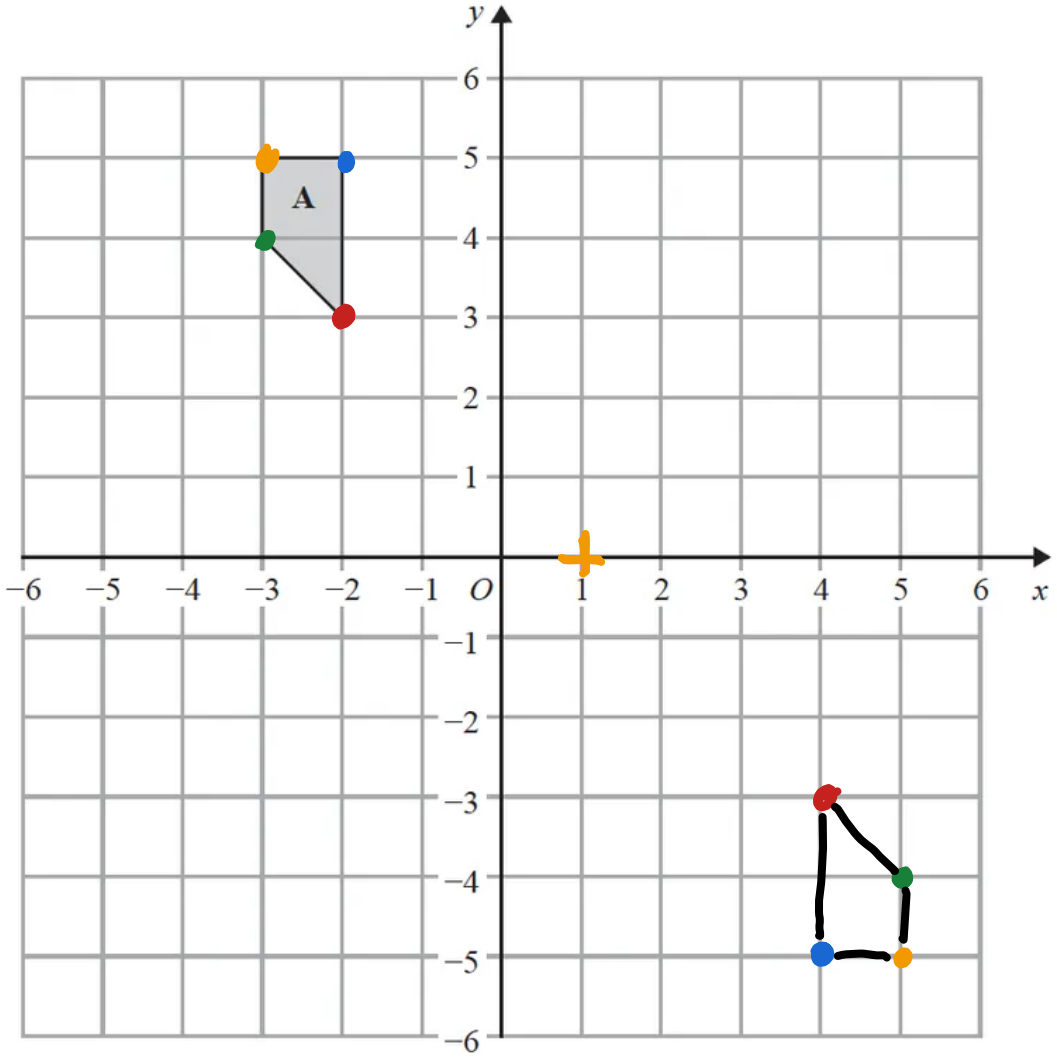
$c =$ -6

$d =$ -1

(Total for Question 26 is 3 marks)

[Edexcel, GCSE, Summer 2019, Paper 1F, Q26]

8

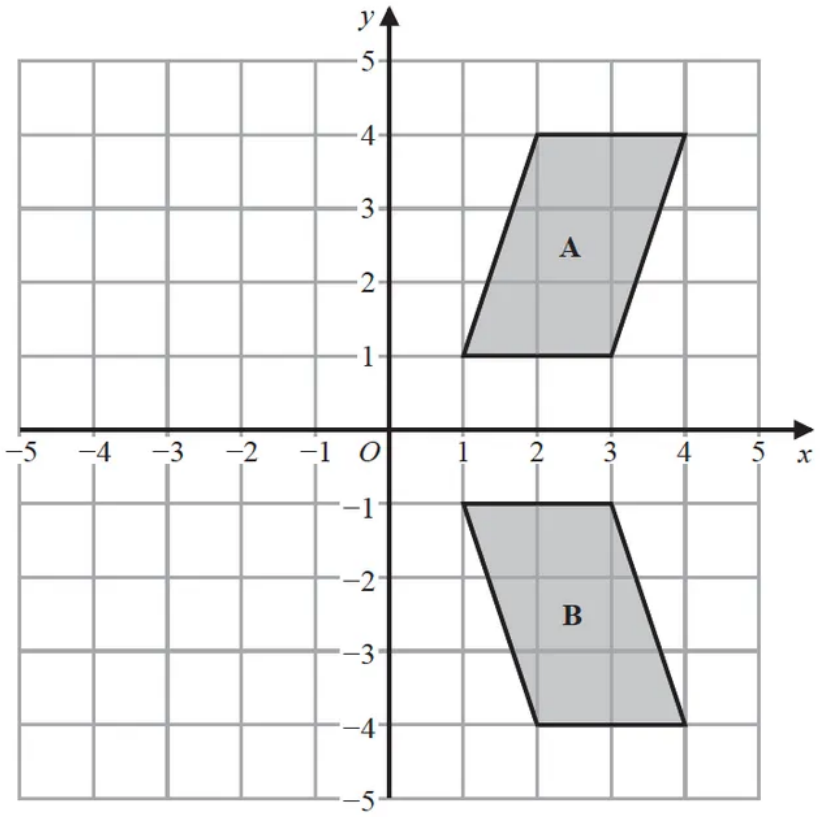


Rotate shape **A** 180° about (1, 0)

(Total for Question 19 is 2 marks)

[Edexcel, GCSE, Autumn 2018, Paper 1F, Q19]

9



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

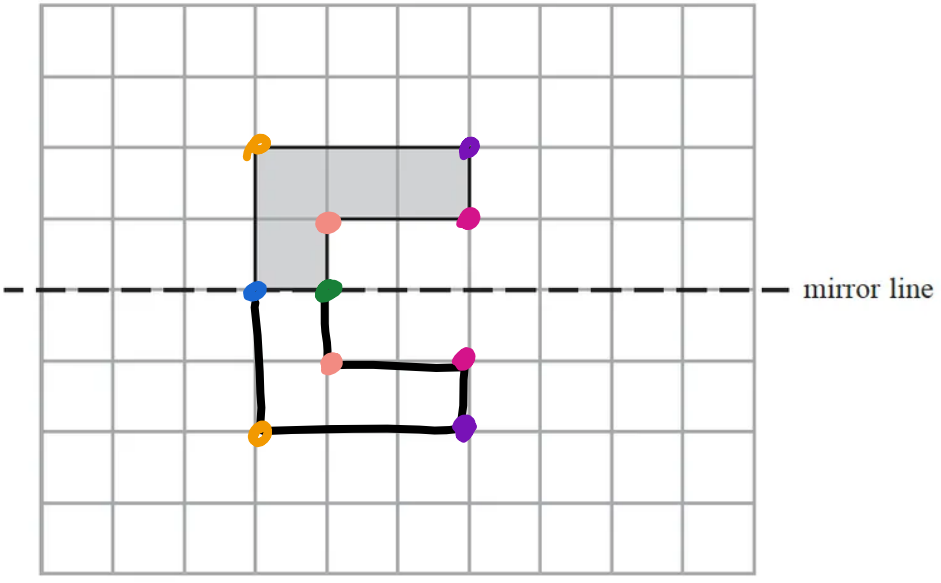
Reflection in the x axis (or y=0)

(Total for Question 16 is 2 marks)

[Edexcel, GCSE, Autumn 2018, Paper 2F, Q16]

10

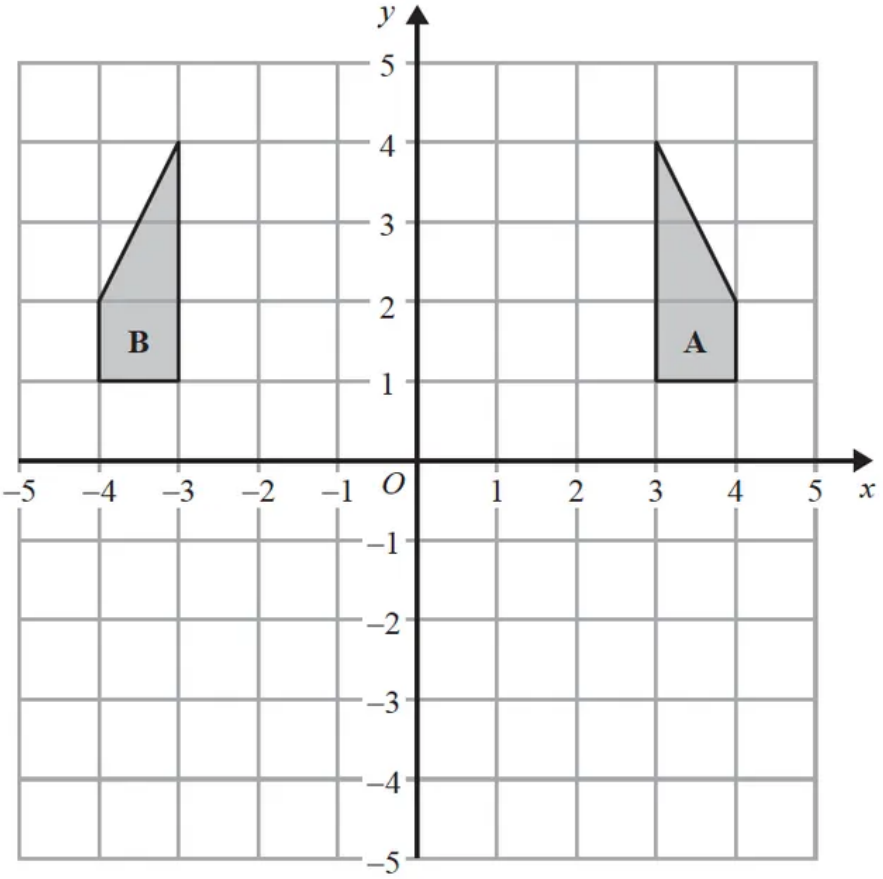
On the grid, reflect the shaded shape in the mirror line.



(Total for Question 10 is 1 mark)

[Edexcel, GCSE, Autumn 2018, Paper 3F, Q10]

11



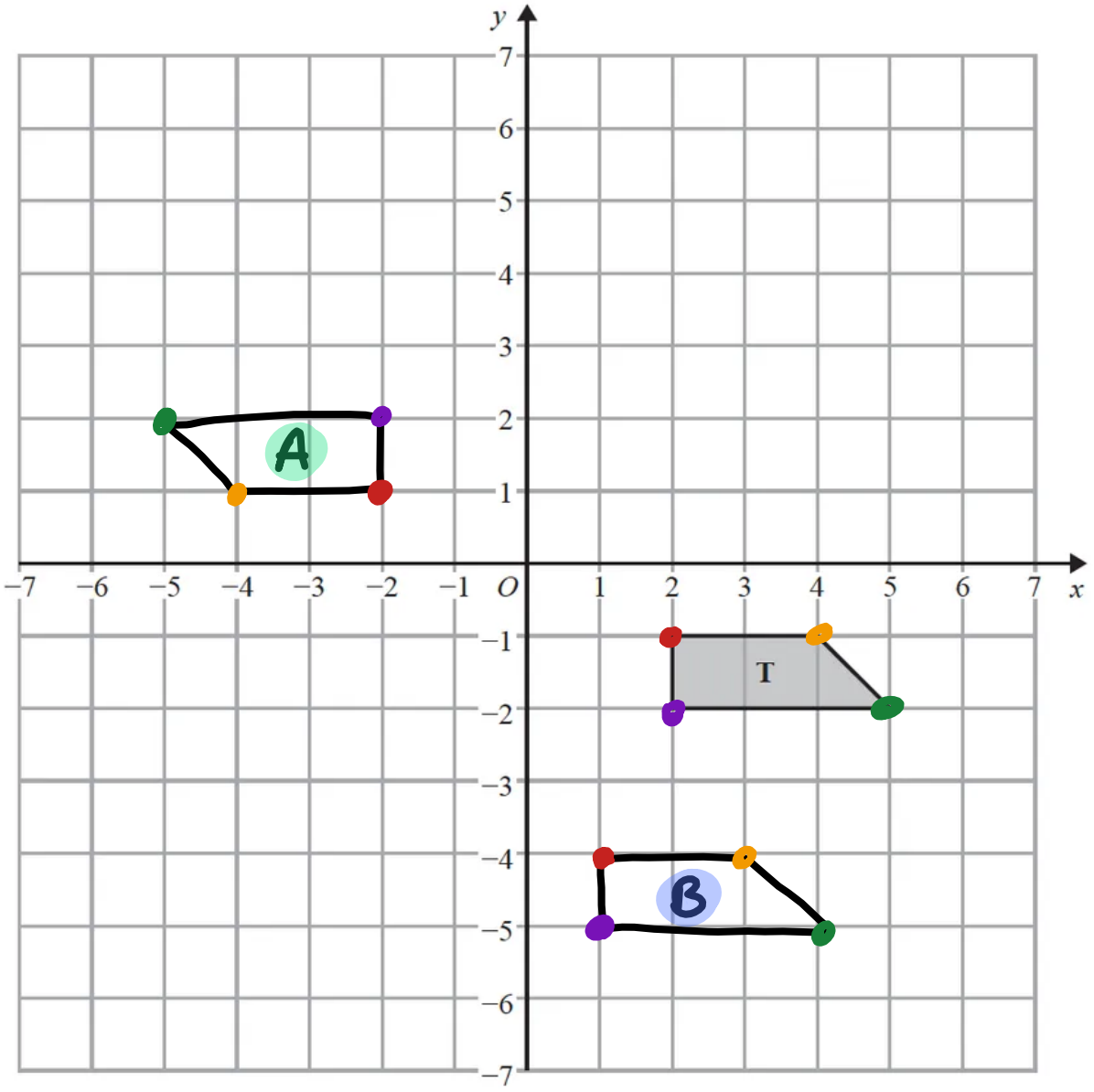
Describe fully the single transformation that maps shape **A** onto shape **B**.

Reflection in the y axis (x=0)

(Total for Question 18 is 2 marks)

[Edexcel, GCSE, Summer 2018, Paper 2F, Q18]

12



(a) Rotate trapezium **T** 180° about the origin.
Label the new trapezium **A**.

(1)

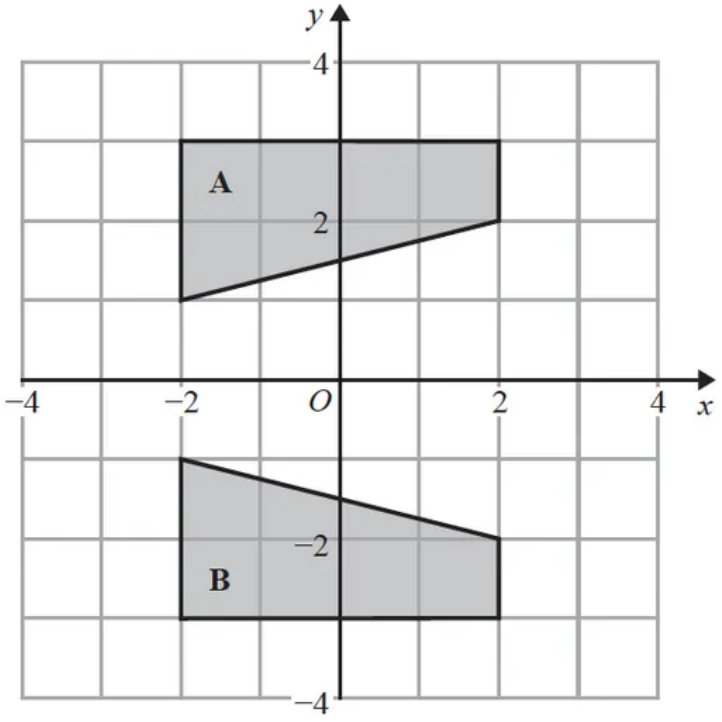
(b) Translate trapezium **T** by the vector $\begin{pmatrix} -1 \\ -3 \end{pmatrix}$
Label the new trapezium **B**.

(1)

(Total for Question 20 is 2 marks)

[Edexcel, GCSE, Autumn 2017, Paper 2F, Q20]

13



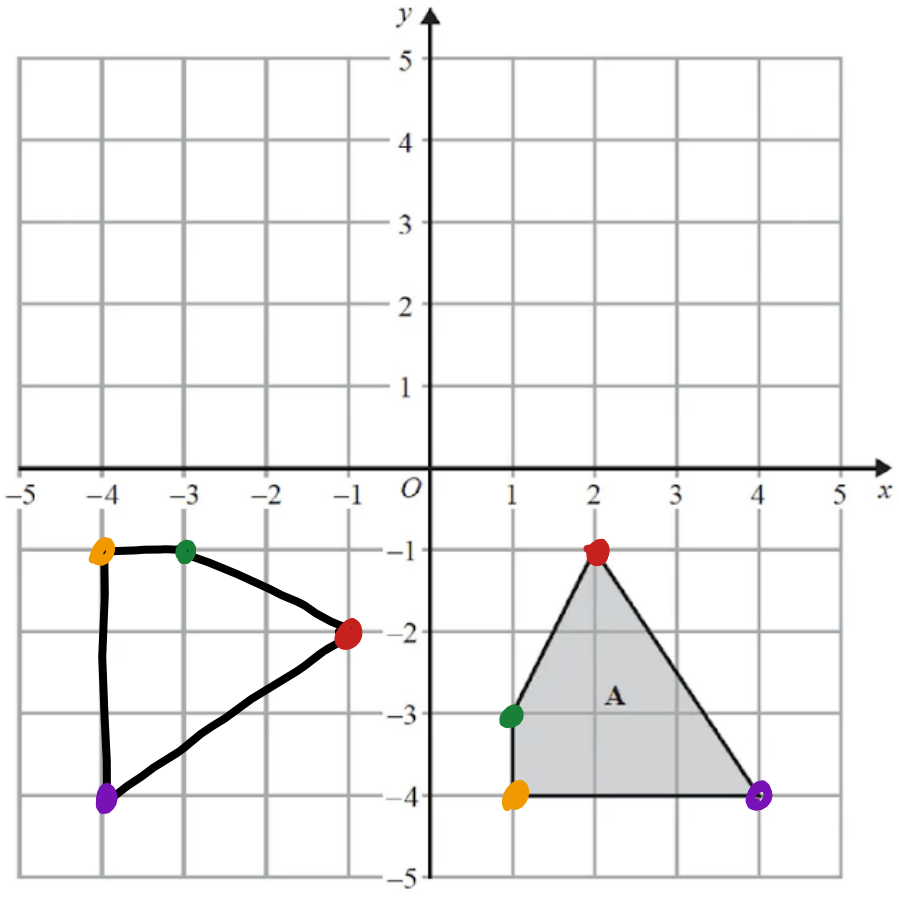
Describe fully the single transformation that maps shape **A** onto shape **B**.

Reflection in the x axis (also known as y=0)

(Total for Question 14 is 2 marks)

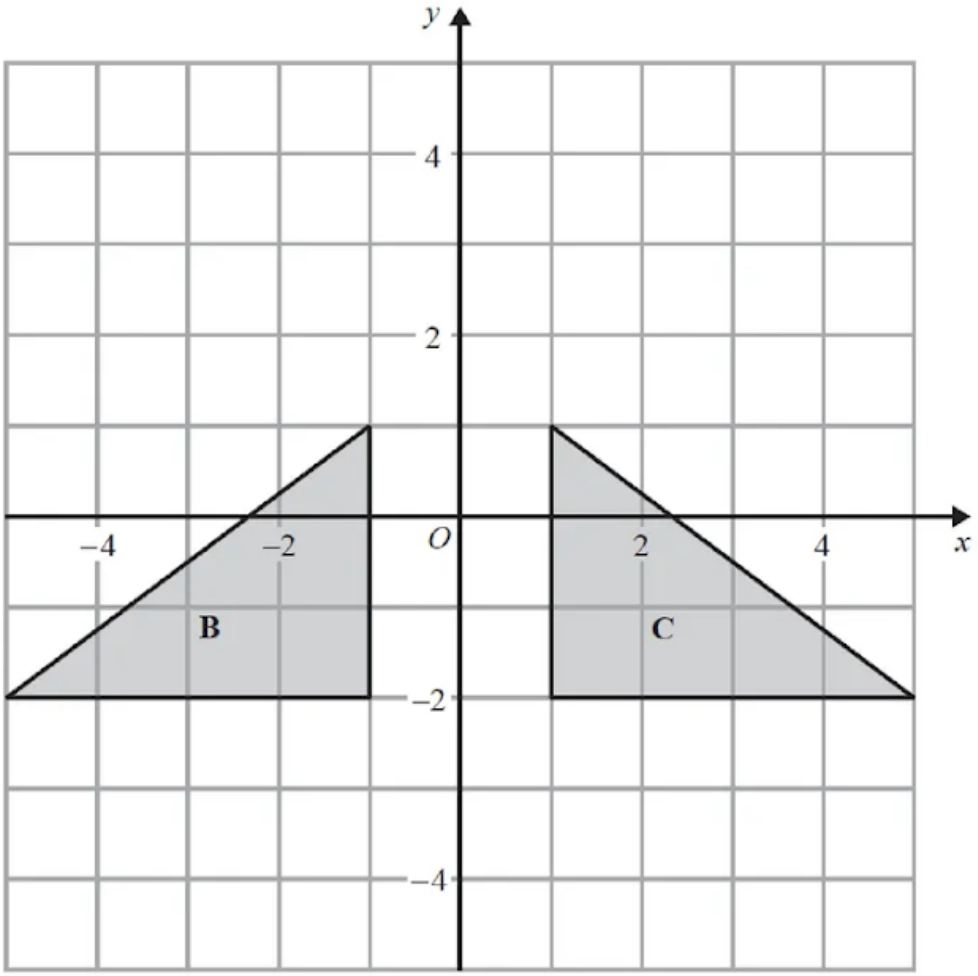
[Edexcel, GCSE, Autumn 2017, Paper 3F, Q14]

14



(a) Rotate shape **A** 90° clockwise about centre O.

(2)



(b) Describe fully the single transformation that maps triangle **B** onto triangle **C**.

Reflection in the y axis

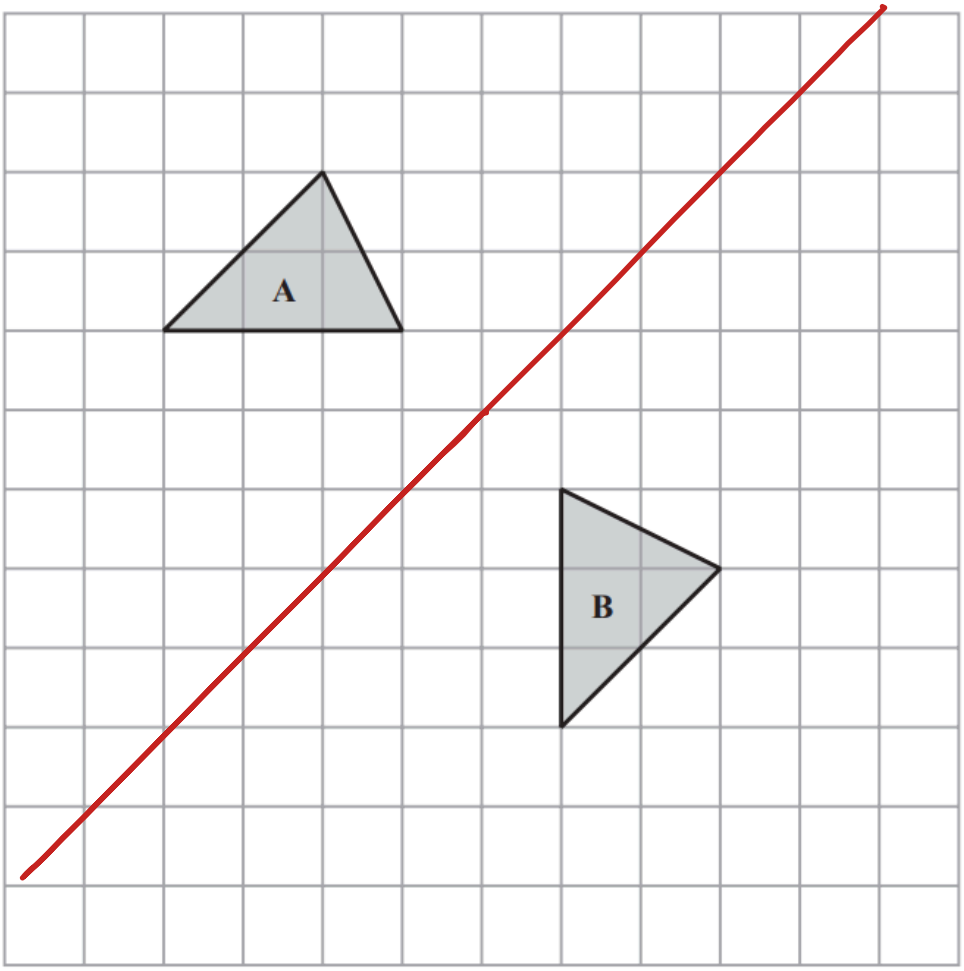
(2)

(Total for Question 13 is 4 marks)

[Edexcel, GCSE, Summer 2017, Paper 2F, Q13]

15

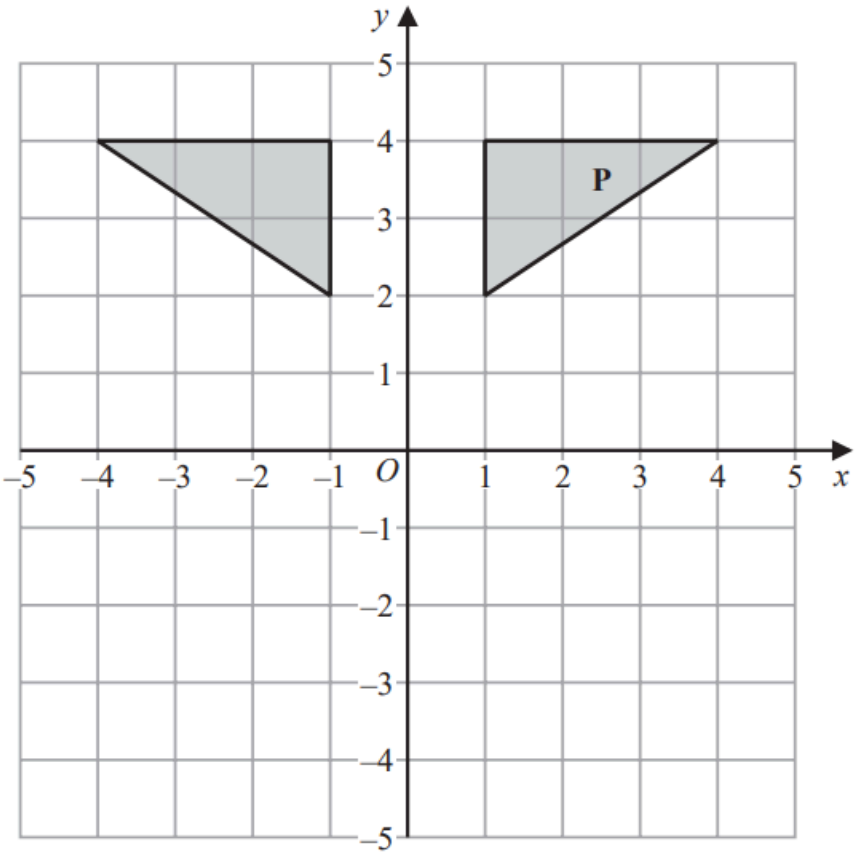
Shape **A** is reflected in a mirror line to give shape **B**.



(a) On the grid, draw the mirror line.

(1)

(b) Alex is asked to reflect shape **P** in the x-axis.
Here is the diagram Alex draws.



Explain the mistake Alex has made.

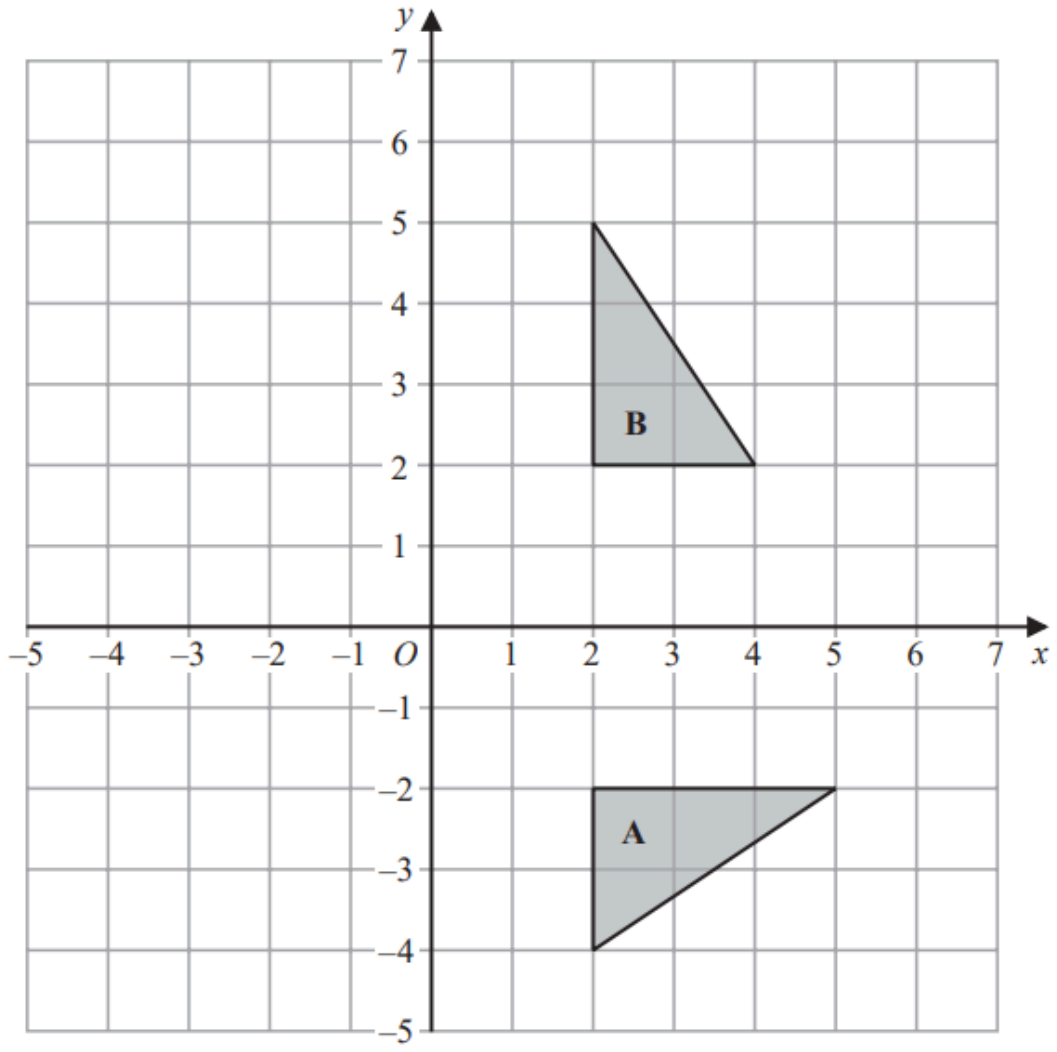
Alex reflected in the y axis

(1)

(Total for Question 12 is 2 marks)

[Edexcel, GCSE, Summer 2023, Paper 2F, Q12]

16



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

Rotation 90 degrees anti-clockwise centre (0,0)

or

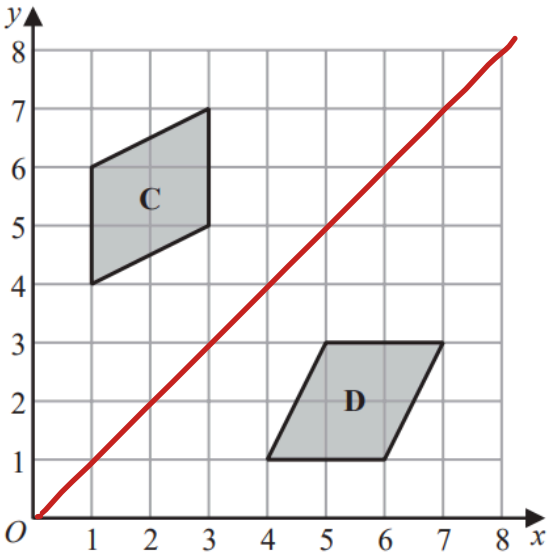
Rotation 270 degrees clockwise centre (0,0)

(Total for Question 16 is 2 marks)

[Edexcel, GCSE, Summer 2023, Paper 3F, Q16]

17

Here are two parallelograms on a coordinate grid.



Parallelogram **D** is a reflection of parallelogram **C**.

(b) (i) On the grid, draw the mirror line.

(1)

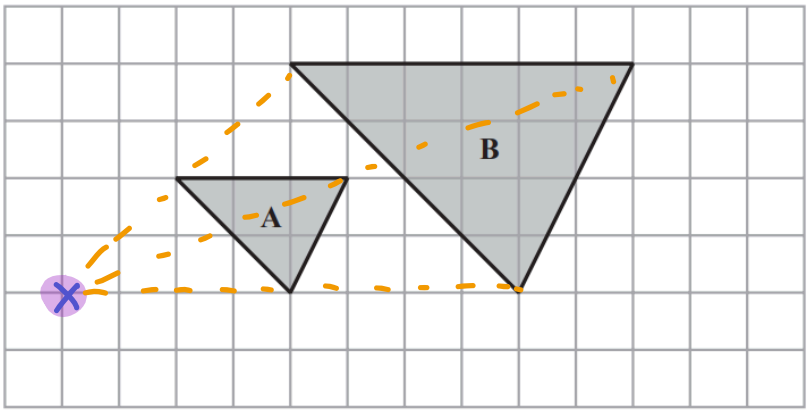
(ii) Write down an equation of this mirror line.

$y = x$

(1)

(Total for Question 11 is 4 marks)

Here are two triangles on a grid.



Triangle **B** is an enlargement of triangle **A**.

(a) (i) Write down the scale factor of the enlargement.

2

.....

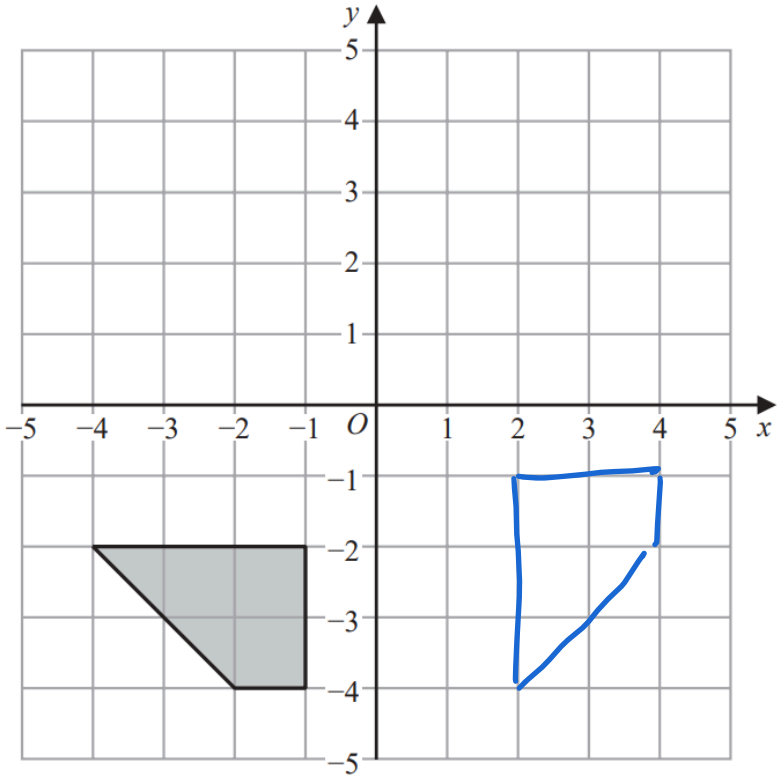
(1)

(ii) On the grid, mark with a cross (×) the centre of enlargement.

(1)

[Edexcel, GCSE, November 2022, Paper 1F, Q11]

18



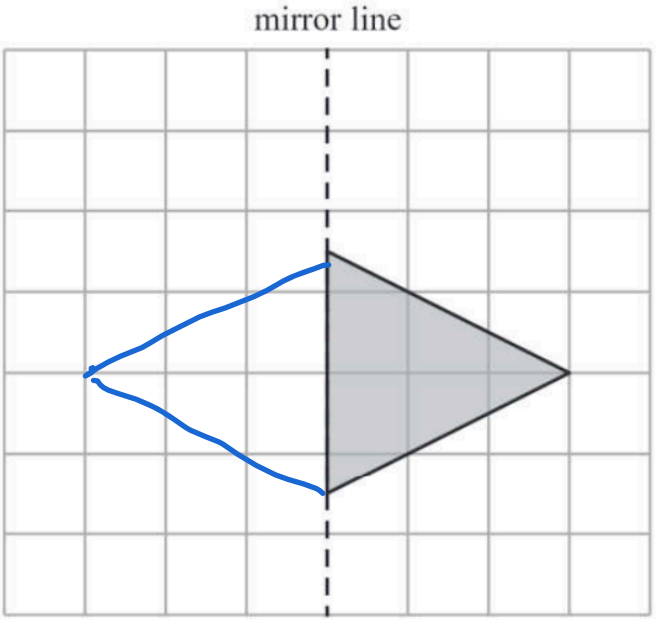
Rotate the shaded shape 90° anticlockwise about (0,0)

(Total for Question 18 is 2 marks)

[Edexcel, GCSE, November 2022, Paper 2F, Q18]

19

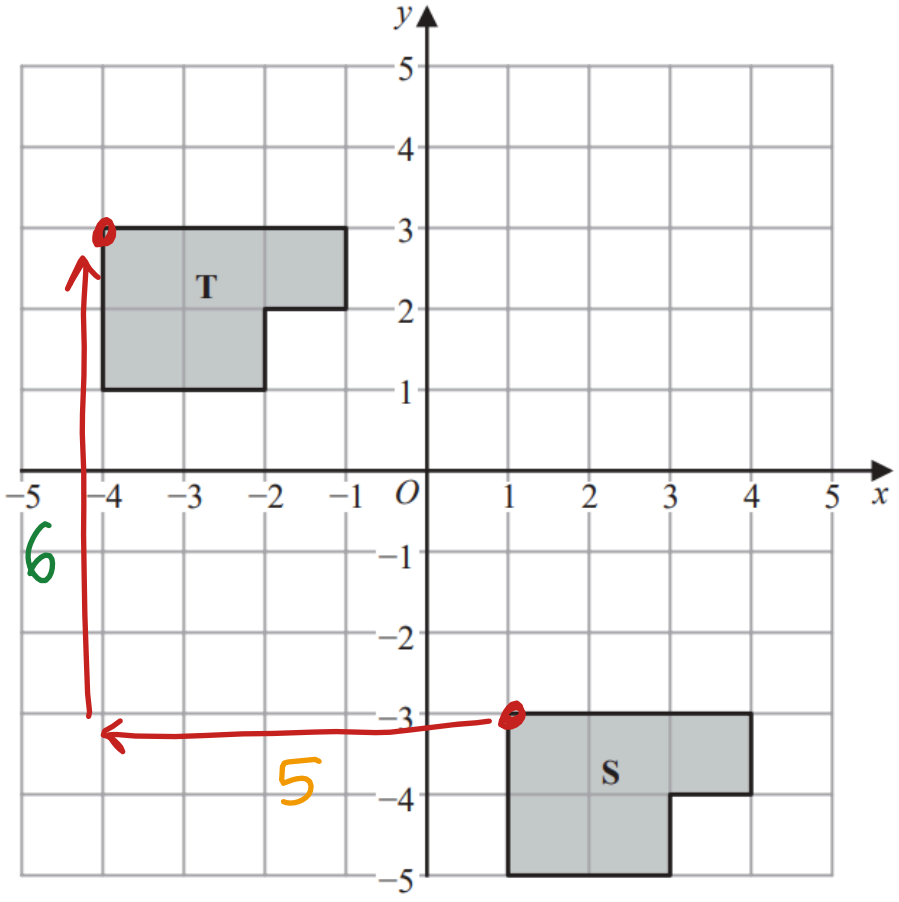
On the grid, reflect the shaded triangle in the mirror line.



(Total for Question 3 is 1 mark)

[Edexcel, GCSE, Summer 2022, Paper 1F, Q3]

20



Describe fully the single transformation that maps shape **S** onto shape **T**.

Translation $\begin{pmatrix} -5 \\ 6 \end{pmatrix}$

(Total for Question 22 is 2 marks)

[Edexcel, GCSE, Summer 2022, Paper 2F, Q22]