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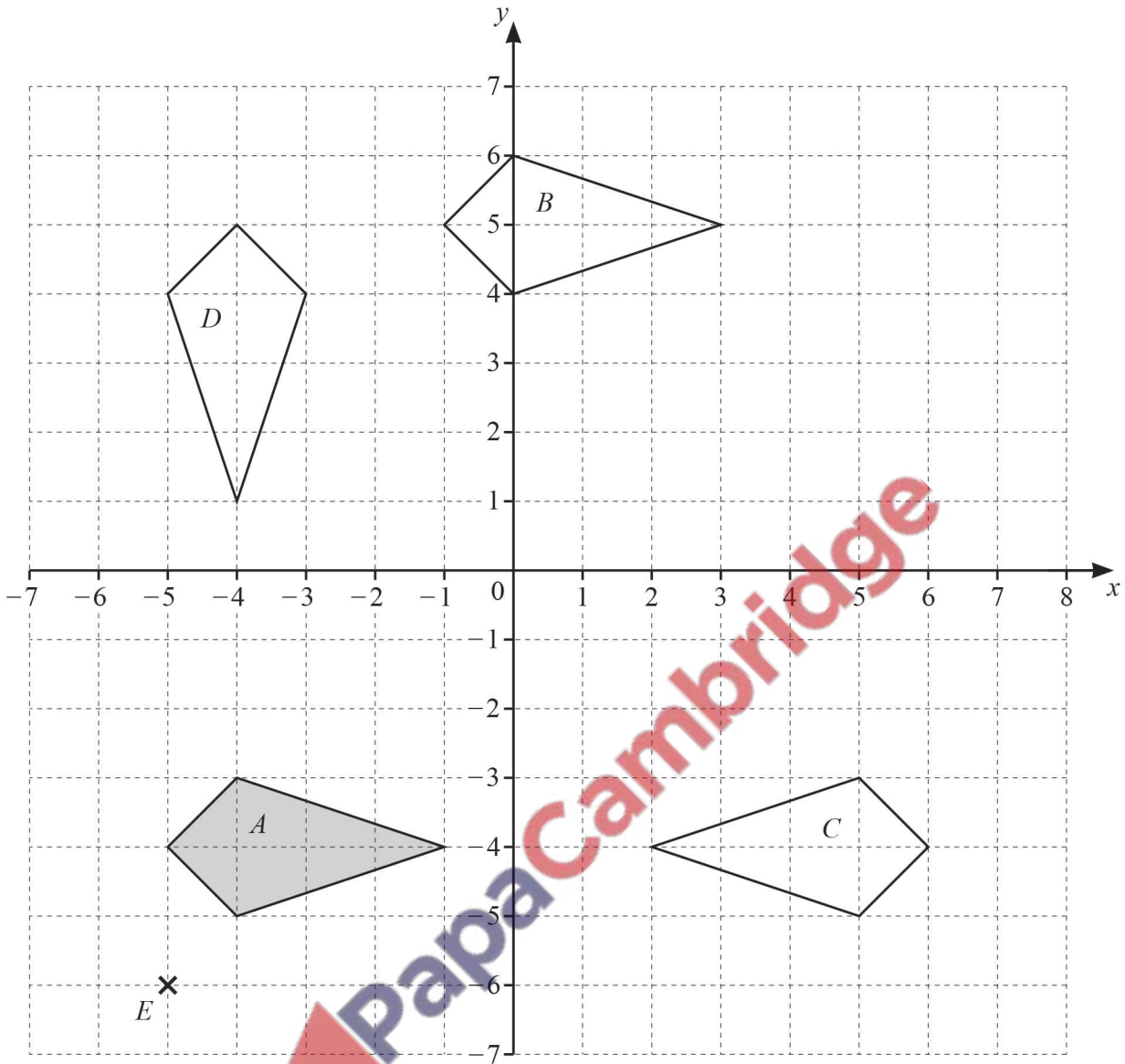
Topical Worksheets for Cambridge IGCSE™

Mathematics (0580)

Transformations

1st edition, for examination until 2025

1 The grid shows a point E and four quadrilaterals, A, B, C and D.



(a) Write down the mathematical name of shape A.

..... [1]

(b) Describe fully the **single** transformation that maps

(i) shape A onto shape B,

.....

..... [2]

(ii) shape A onto shape C,

.....

..... [2]

(iii) shape A onto shape D.

.....

..... [3]

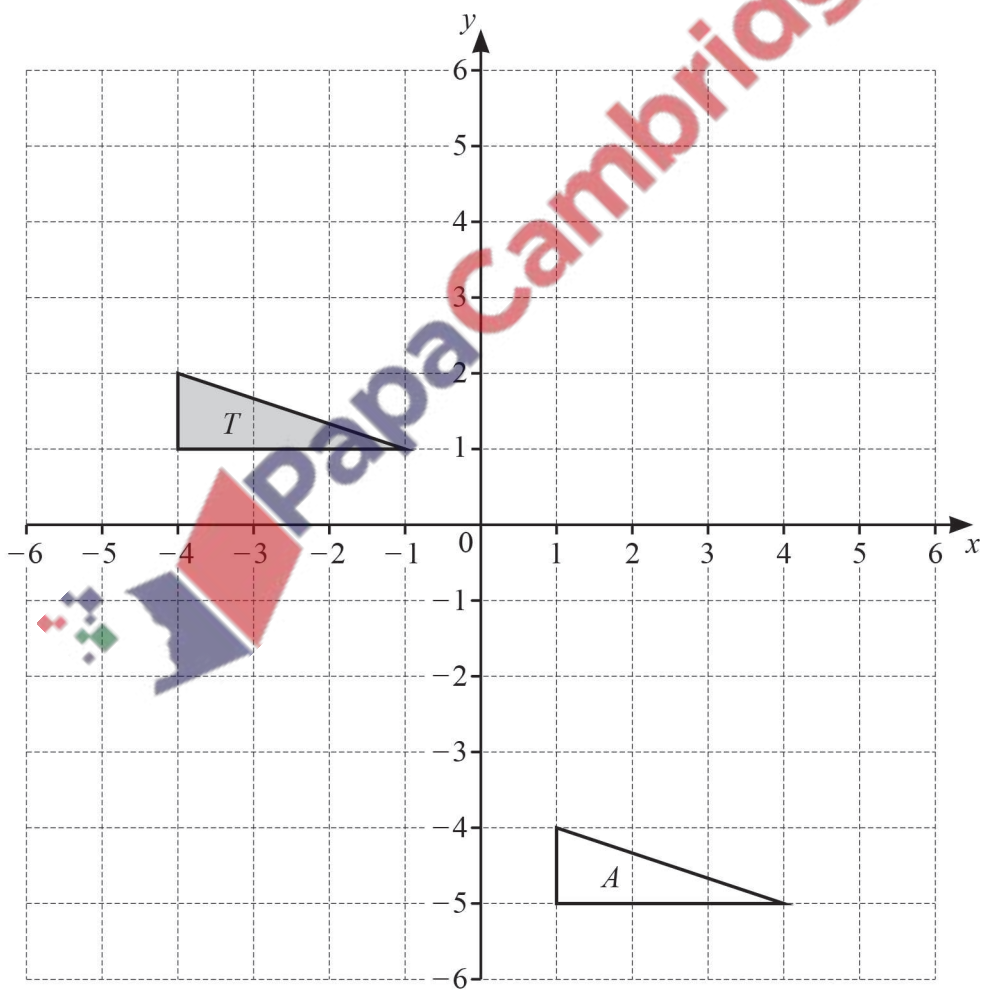
(c) **(i)** Write down the coordinates of the point E.

(..... , ...) [1]

(ii) On the grid, draw the image of shape A after an enlargement by scale factor 3, centre E. [2]

[Total: 11]

2



(a) Draw the image of triangle T after a reflection in the line $y = -1$. [2]

(b) Draw the image of triangle T after a rotation through 90° clockwise about (0, 0). [2]

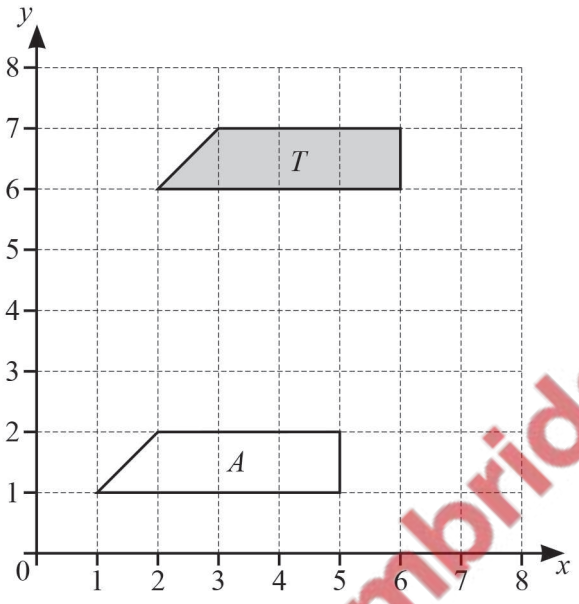
(c) Describe fully the **single** transformation that maps triangle T onto triangle A.

.....

..... [2]

[Total: 6]

3



(a) Describe fully the **single** transformation that maps shape T onto shape A.

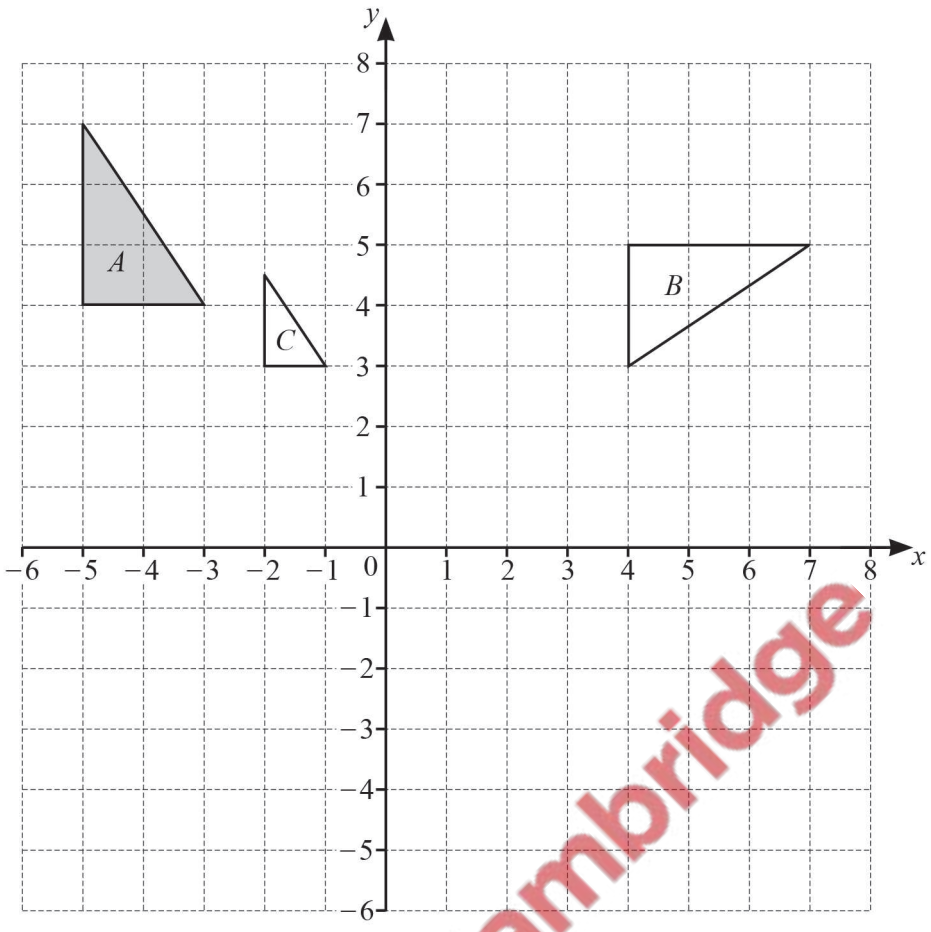
.....

..... [2]

(b) On the grid, reflect shape T in the line $y = x$. [2]

[Total: 4]

4 Triangles A, B and C are shown on the grid.



(a) Describe fully the **single** transformation that maps

(i) triangle A onto triangle B,

.....

..... [3]

(ii) triangle A onto triangle C.

.....

..... [3]

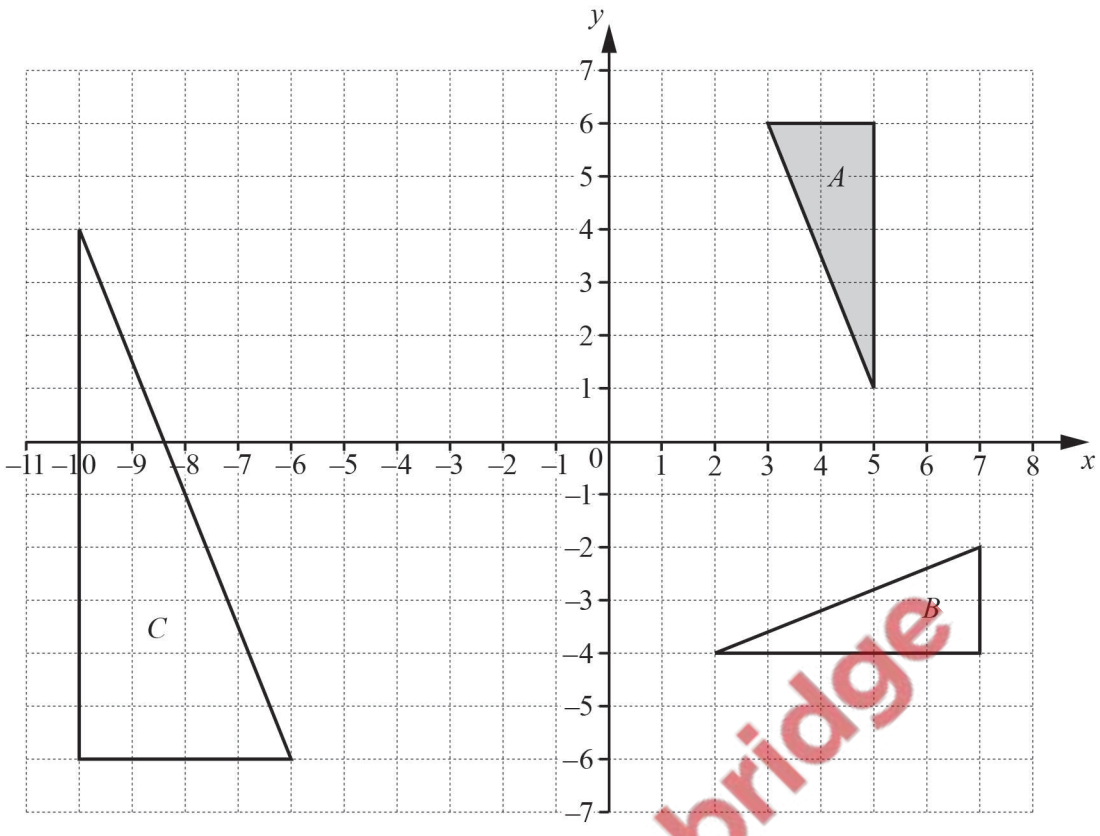
(b) On the grid,

(i) translate triangle A by the vector $\begin{pmatrix} 6 \\ -2 \end{pmatrix}$, [2]

(ii) reflect triangle A in the line $y = 1$. [2]

[Total: 10]

5



Describe fully the **single** transformation that maps

(a) triangle *A* onto triangle *B*,

.....

..... [3]

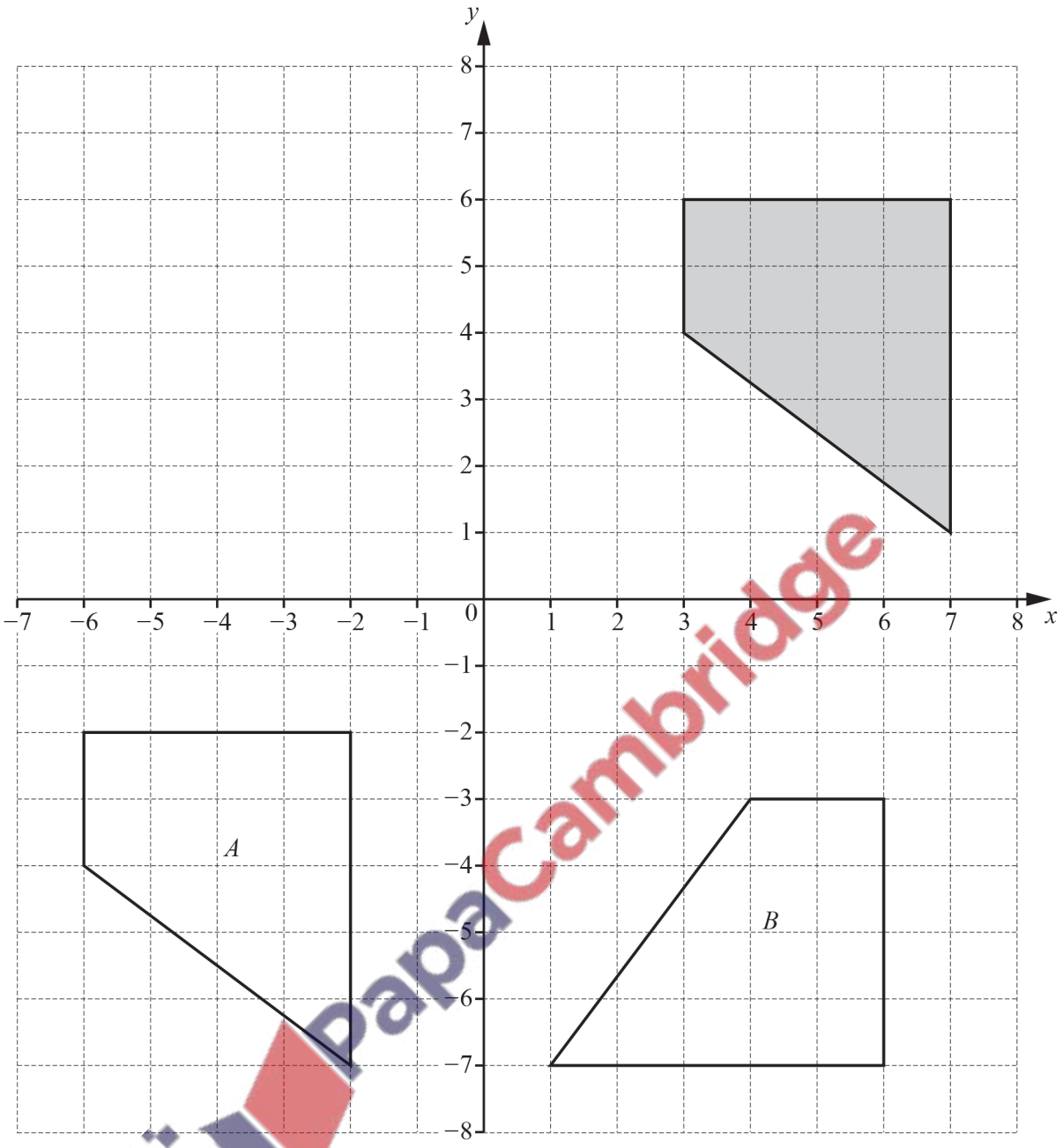
(b) triangle *A* onto triangle *C*.

.....

..... [3]

[Total: 6]

6 Three quadrilaterals are shown on a 1 cm^2 grid.



(a) Write down the mathematical name of the shaded quadrilateral.

..... [1]

(b) For the shaded quadrilateral

(i) **measure** the perimeter,

..... cm [1]

(ii) work out the area.

..... cm^2 [1]

(c) Describe fully the **single** transformation that maps the shaded quadrilateral onto

(i) quadrilateral *A*,

.....

..... [2]

(ii) quadrilateral *B*.

.....

..... [3]

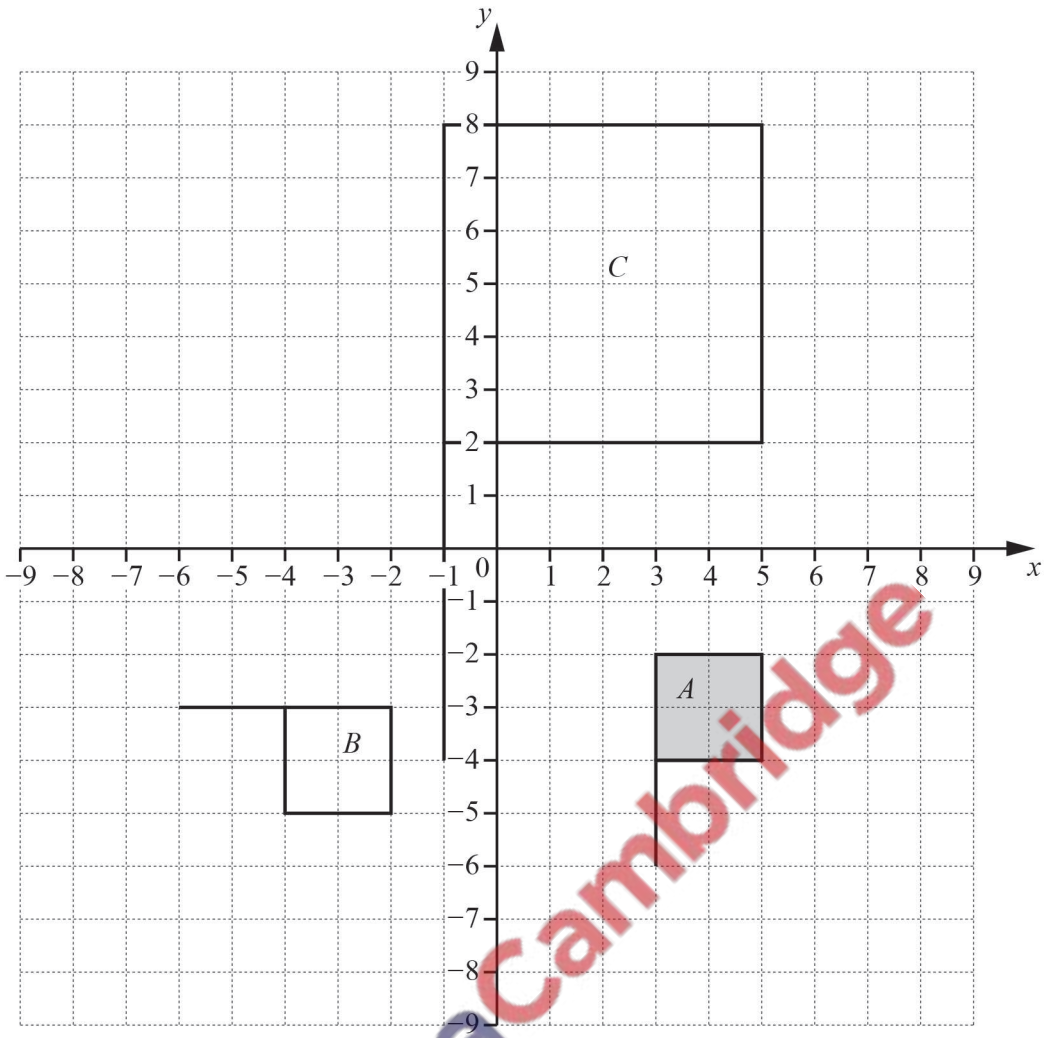
(d) On the grid,

(i) reflect the shaded quadrilateral in the line $x = 1$, [2]

(ii) enlarge the shaded quadrilateral by scale factor $\frac{1}{2}$, centre $(-1, 0)$. [2]

[Total: 12]

7



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

.....

..... [3]

(b) Describe fully the **single** transformation that maps shape *A* onto shape *C*.

.....

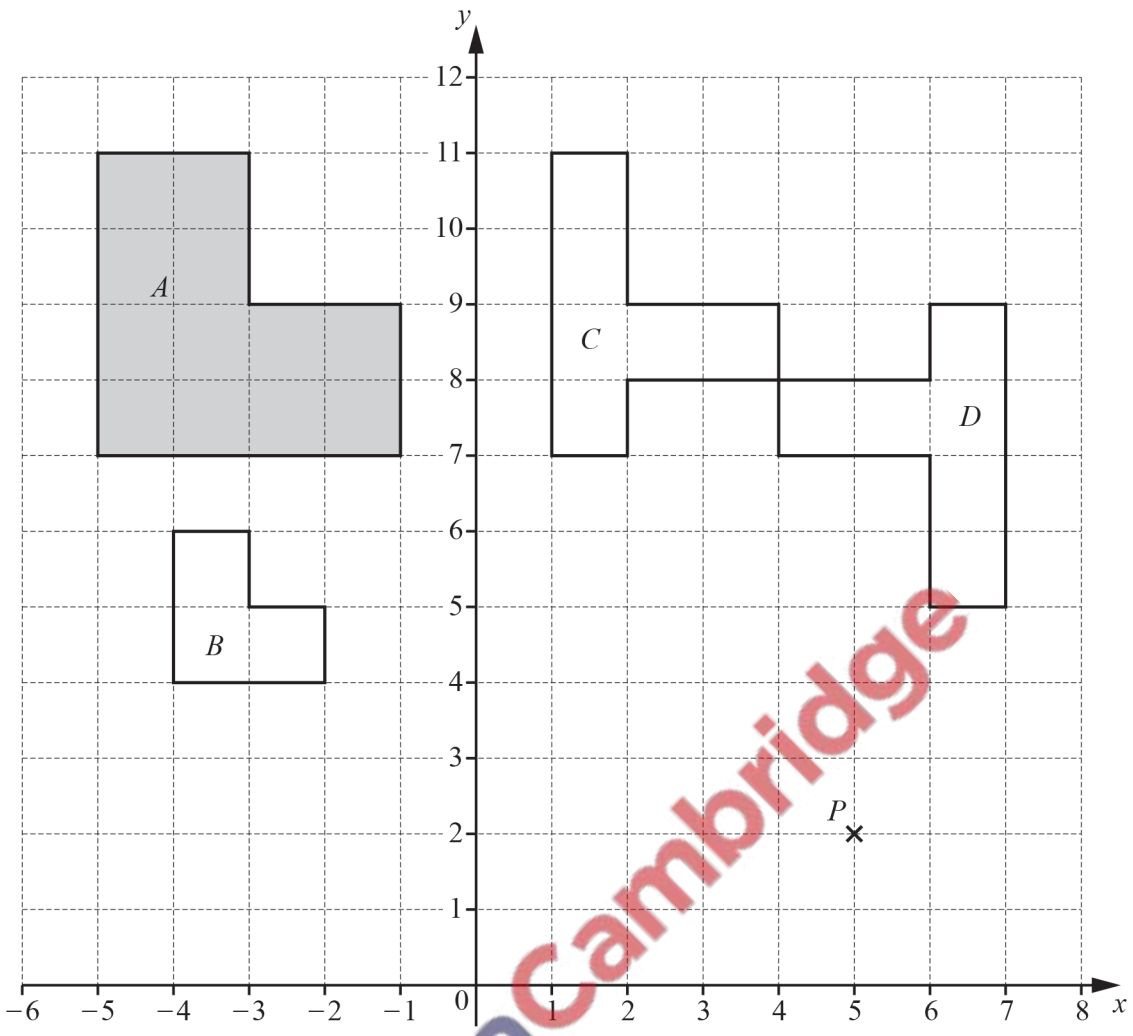
..... [3]

(c) On the grid, draw the image of shape *A* after a translation by the vector $\begin{pmatrix} 3 \\ 1 \end{pmatrix}$. [2]

(d) On the grid, draw the image of **shape *B*** after a reflection in the line $y = 1$. [2]

[Total: 10]

8 The diagram shows four shapes *A*, *B*, *C* and *D* and a point *P* on a 1 cm^2 grid.



(a) Find

(i) the perimeter of shape A,

..... cm [1]

(ii) the area of shape A.

..... cm^2 [1]

(b) **(i)** Write down the co-ordinates of point P.

(..... , ...) [1]

(ii) Find the co-ordinates of the image of point P when

A P is reflected in the y-axis,

(..... , ...) [1]

B P is reflected in the line $y = 6$.

(..... , ...) [2]

(iii) Find the vector that translates point P to the point (49, −12).

$\begin{pmatrix} \quad \\ \quad \end{pmatrix}$ [2]

(c) Describe fully the **single** transformation that maps

(i) shape A onto shape B,

.....

..... [3]

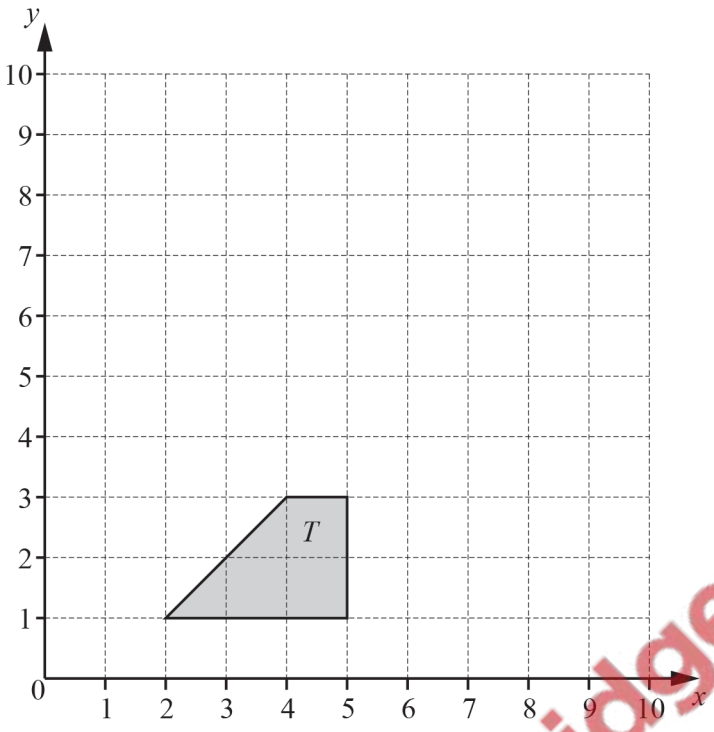
(ii) shape C onto shape D.

.....

..... [3]

[Total: 14]

9



(a) Translate shape T by the vector $\begin{pmatrix} -1 \\ 6 \end{pmatrix}$.

Label the image A.

[2]

(b) Rotate shape T about the point (5, 3) through 180°.
Label the image B.

[2]

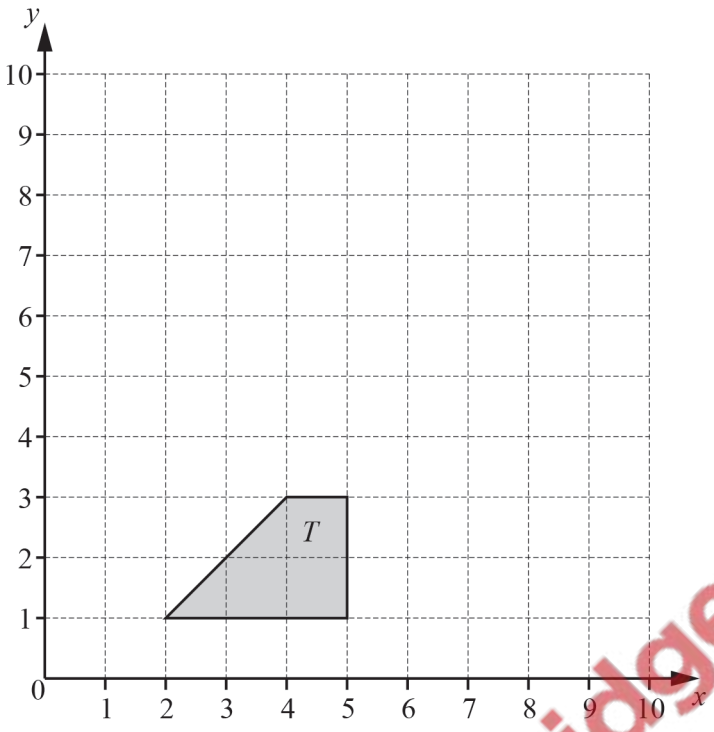
(c) Describe fully the **single** transformation that maps shape A onto shape B.

.....

..... [3]

[Total: 7]

10



Reflect shape T in the line $y = x$. [2]

[Total: 2]