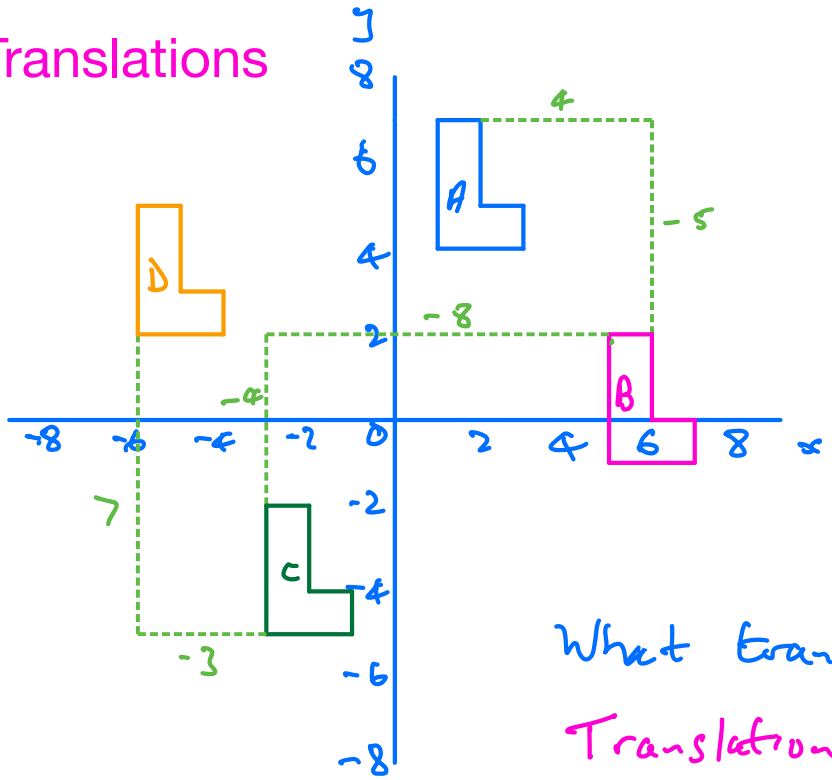
Transformations

Translations, Reflections, Rotations, Enlargements

Translations



Translate A by $\begin{pmatrix} 4 \\ -5 \end{pmatrix}$ to give B

Translate B by $\begin{pmatrix} -8 \\ -4 \end{pmatrix}$ to give C

Translate C by $\begin{pmatrix} -3 \\ 7 \end{pmatrix}$ to give D

What transformation maps D to A

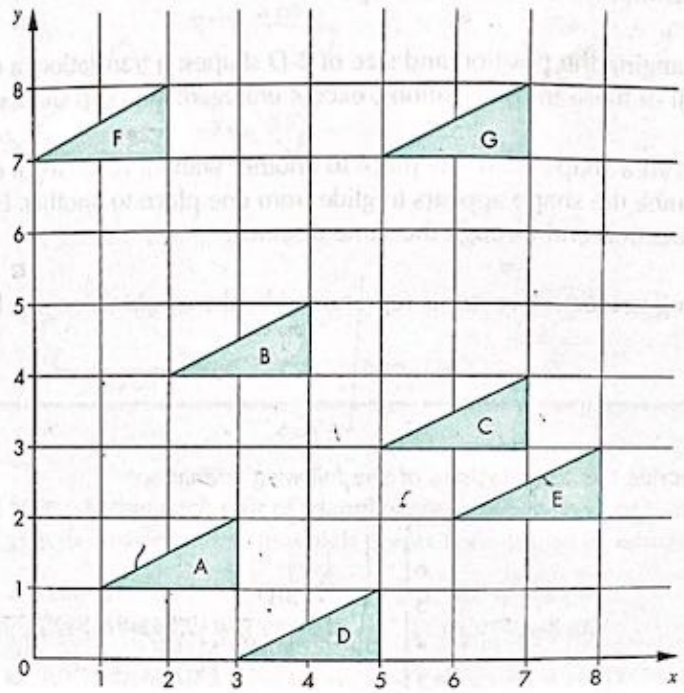
Translation by $\begin{pmatrix} 7 \\ 2 \end{pmatrix}$

$\begin{pmatrix} x \\ y \end{pmatrix}$ is called a column vector. The top number specifies the movement in the x-direction and the bottom number specifies the movement in the y-direction.

EXERCISE 8B

1 Use vectors to describe the following translations.

a	i A to B	ii A to C	iii A to D	iv A to E	v A to F	vi A to G
b	i B to A	ii B to C	iii B to D	iv B to E	v B to F	vi B to G
c	i C to A	ii C to B	iii C to D	iv C to E	v C to F	vi C to G
d	i D to E	ii E to B	iii F to C	iv G to D	v F to G	vi G to E



1 a) i A to B translation by $\begin{pmatrix} 1 \\ 3 \end{pmatrix}$

a) ii A to C translation by $\begin{pmatrix} 4 \\ 2 \end{pmatrix}$

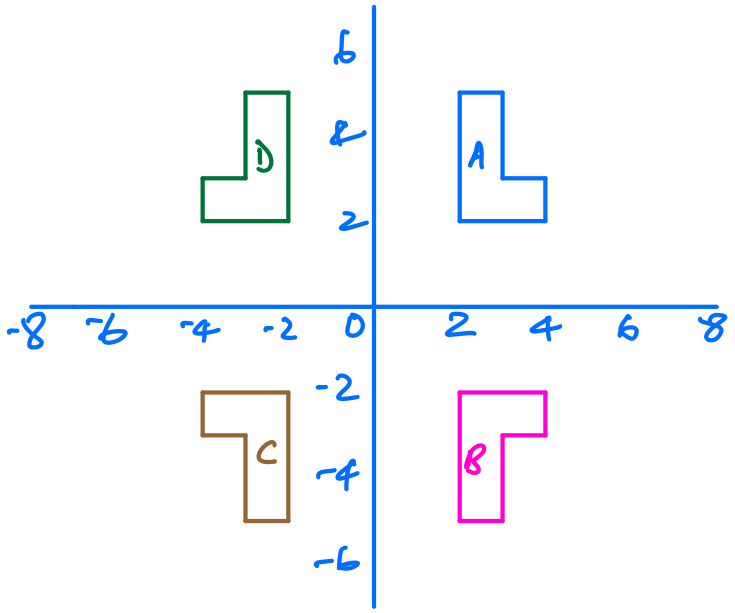
a) iii A to D translation by $\begin{pmatrix} 2 \\ -1 \end{pmatrix}$

a) iv A to E translation by $\begin{pmatrix} 5 \\ 1 \end{pmatrix}$

a) v A to F translation by $\begin{pmatrix} -1 \\ 6 \end{pmatrix}$

a) vi A to G translation by $\begin{pmatrix} 4 \\ 6 \end{pmatrix}$

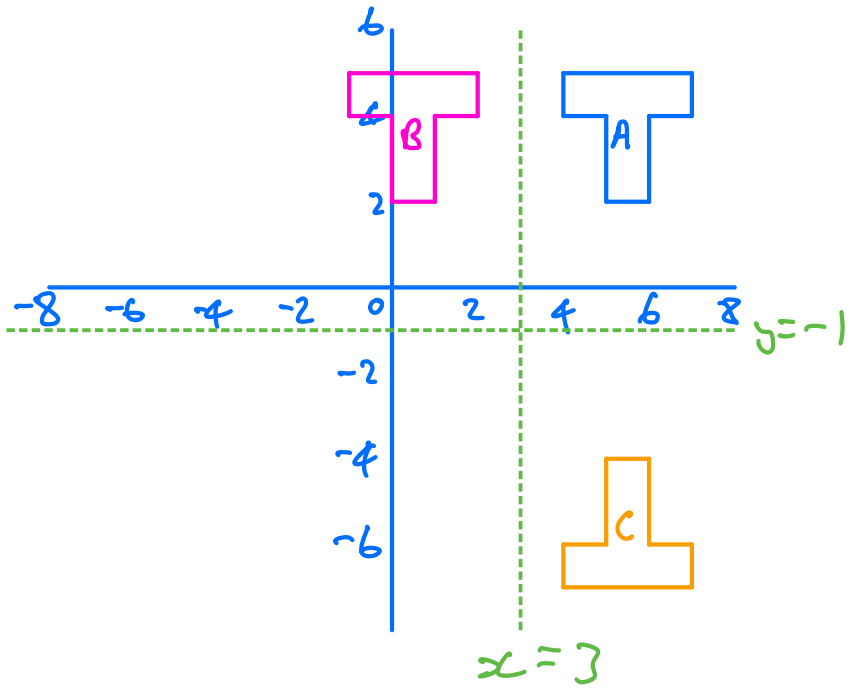
Reflections



Reflect A in x-axis to give B

Reflect B in y-axis to give C

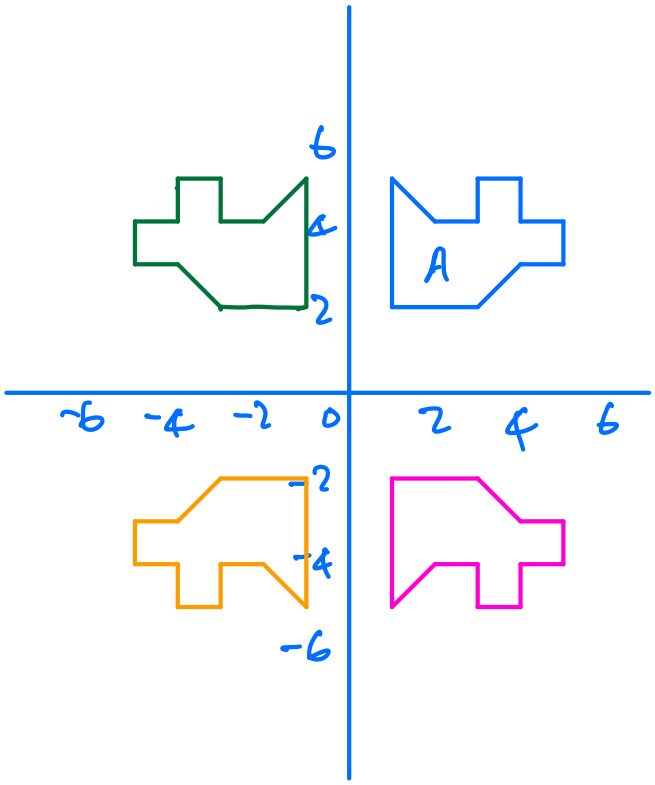
Either Reflect C in x-axis or reflect A in y-axis to give D



Reflect A in line $x = 3$ to give B

Reflect A in line $y = -1$ to give C

Exercise Reflect across axes to obtain an image in each quadrant



Reflect A across axes into every quadrant.