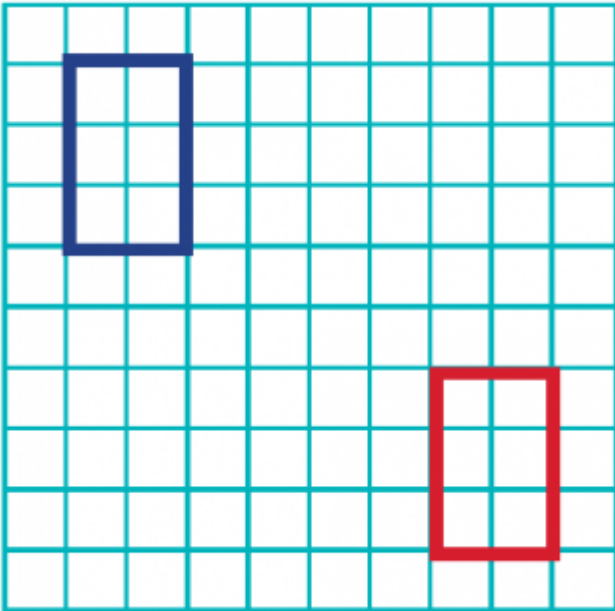


Introduction to Translations

What does it mean to translate a shape?

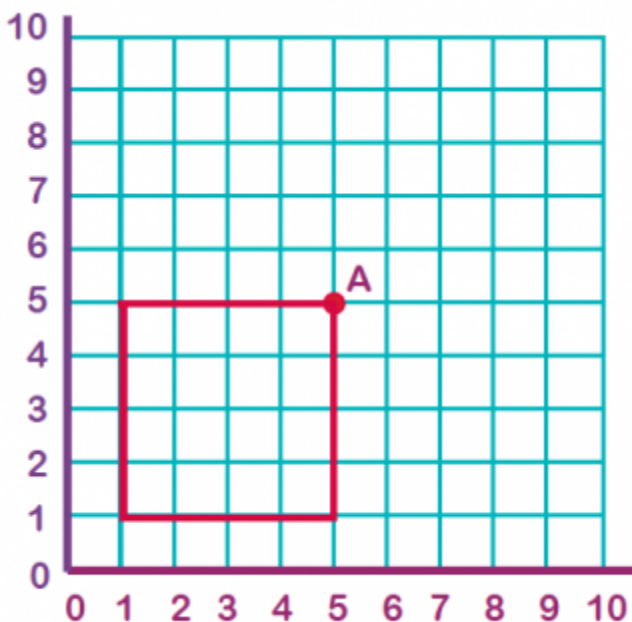
In geometry moving a shape into a different position, without changing it in any way is called translation.

For example, below, the blue rectangle has been moved or translated 5 squares down and 6 squares across to the right, resulting in the rectangle in red:



A good way to start making this concept clear to children is to give them a cut-out shape to physically move across the page.

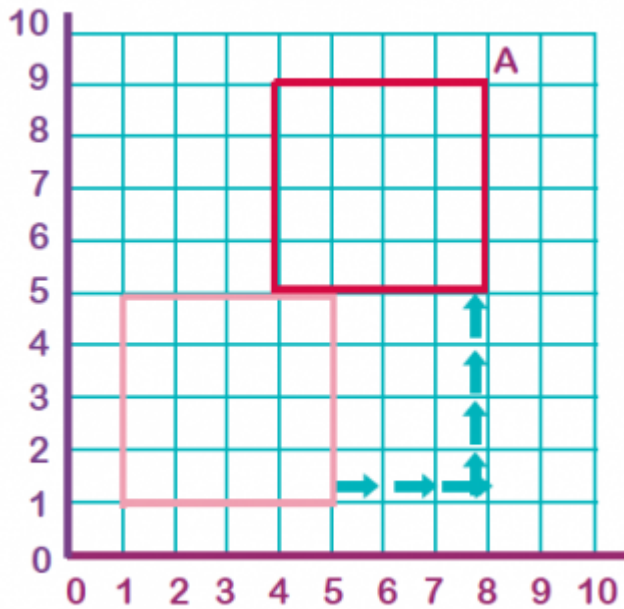
Children will be asked questions that combine coordinates with translation, for example, they will be given a shape on a coordinates grid:



An example question they may be asked could be:

What will the co-ordinates of point A be when this square is translated 3 to the right and 4 up?

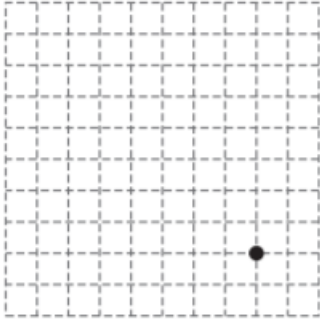
To answer this, they would need to translate the square and then give the co-ordinates of point A on the new shape, which would be (8, 9).



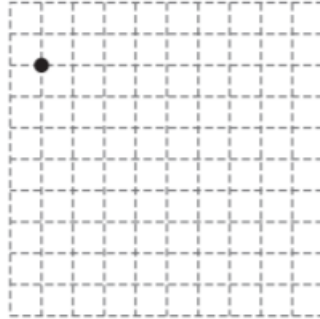
Maths Activity 1: Translation of a point

Graph the new position of each point using the translation given:

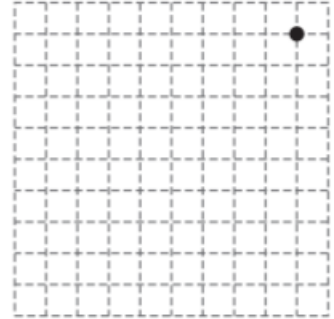
1) 4 units up and 2 units left



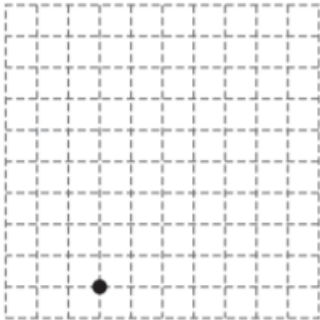
2) 5 units right



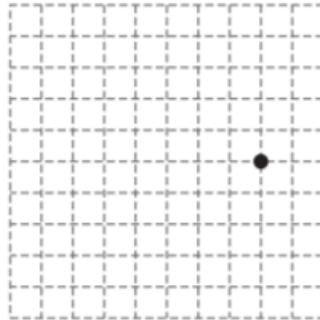
3) 8 units left and 6 units down



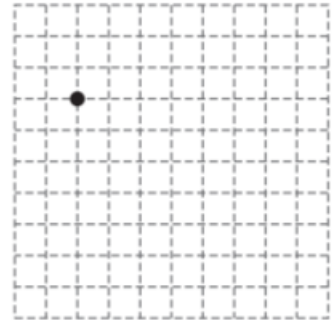
4) 1 unit right and 7 units up



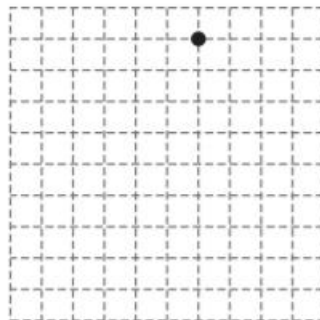
5) 6 units left and 4 units up



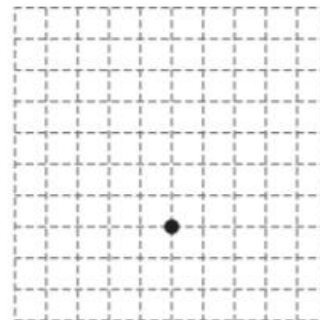
6) 5 units right and 2 units down



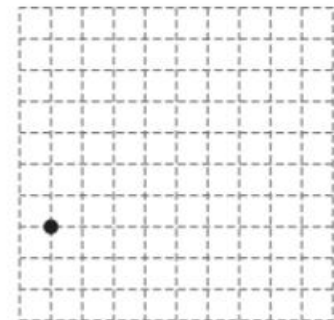
7) 8 units down



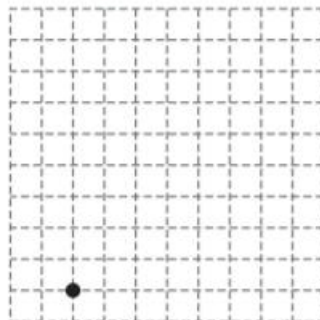
8) 2 units up and 3 units right



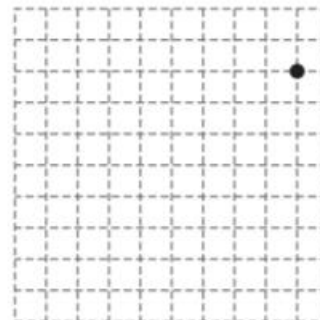
9) 1 unit down and 6 units right



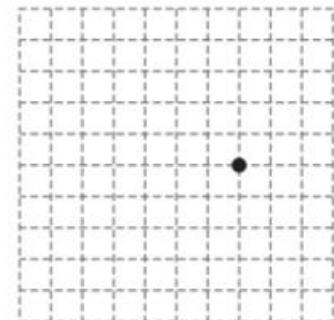
10) 2 units right and 6 units up



11) 7 units left

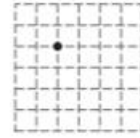


12) 4 units up and 4 units left



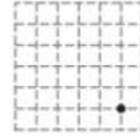
Select the correct multiple choice answer:

- 1) What will be the new position of the given point after translation of 3 units right and 2 units down?



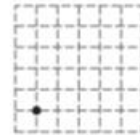
- a) b) c) d)

- 2) What will be the new position of the given point after translation of 4 units left and 4 units up?



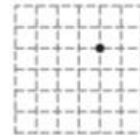
- a) b) c) d)

- 3) What will be the new position of the given point after translation of 2 units up and 5 units right?



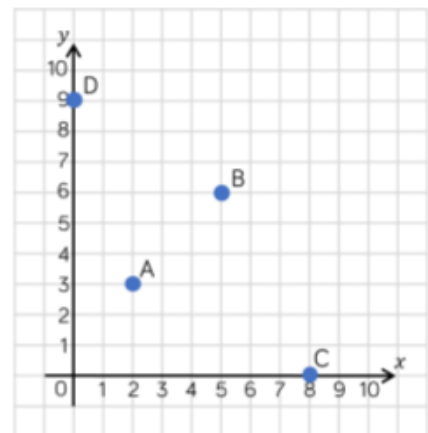
- a) b) c) d)

- 4) What will be the new position of the given point after translation of 1 unit down and 3 units left?



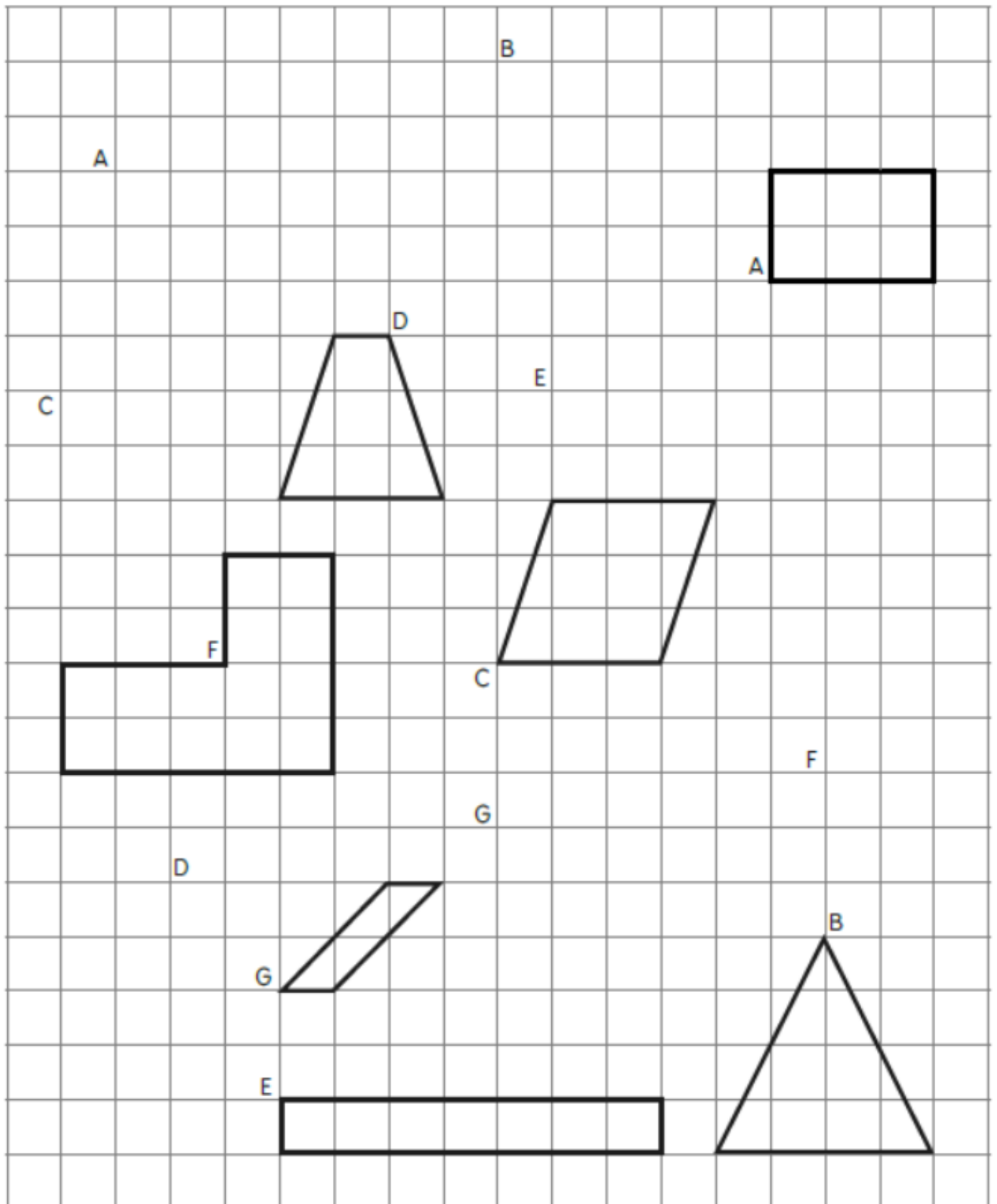
- a) b) c) d)

- Translate A 6 right and 3 down.
Record the coordinates before (_ , _)
and after (_ , _)
- Translate B 4 left and 3 up.
Record the coordinates before (_ , _)
and after (_ , _)
- Translate C 5 left and 2 up.
Record the coordinates before (_ , _)
and after (_ , _)

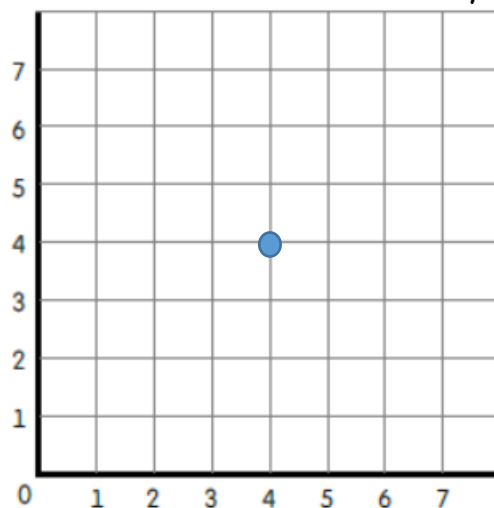
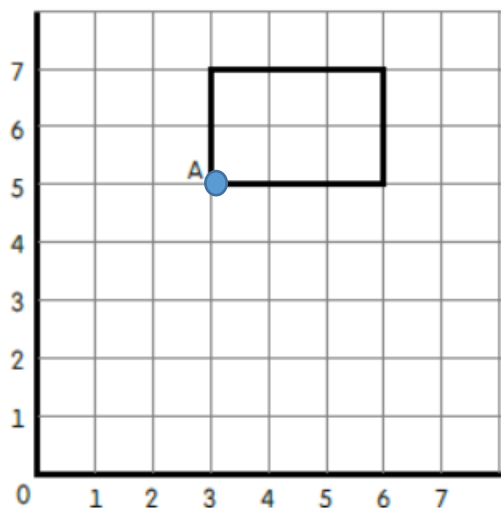


Maths Activity 2: Translation of a Shape

Translate each shape by moving the labelled point of the shape to the point with the same letter.

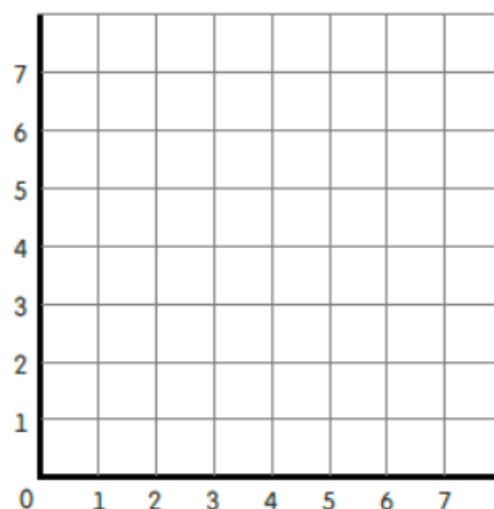
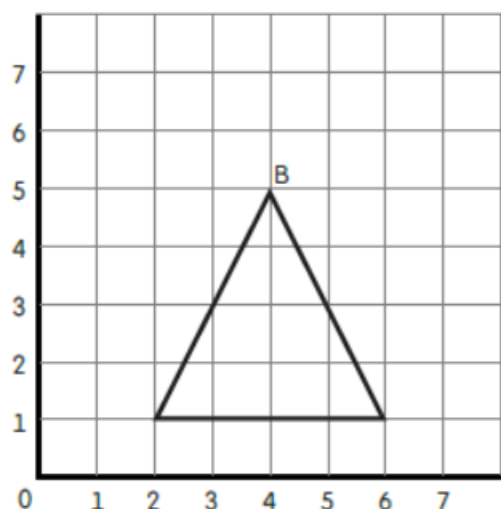


Translate the shape on the coordinate grid to the new coordinate grid. Describe the translation each time. The first one has been done for you

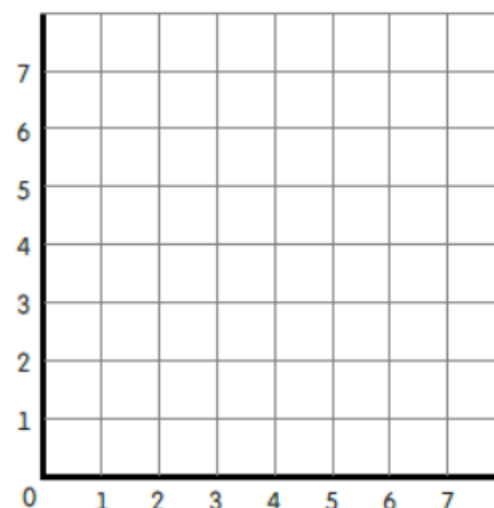
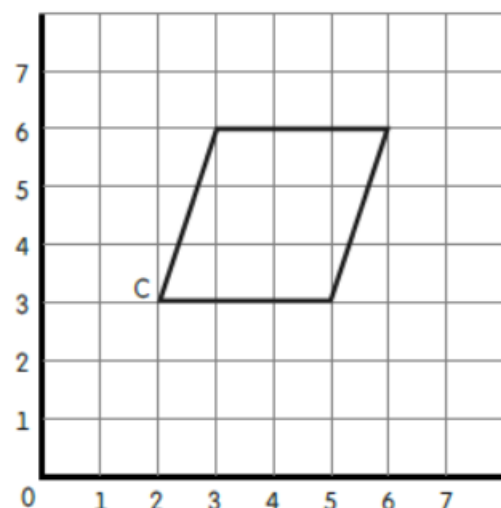


Point A has been translated 1 across and 2 down

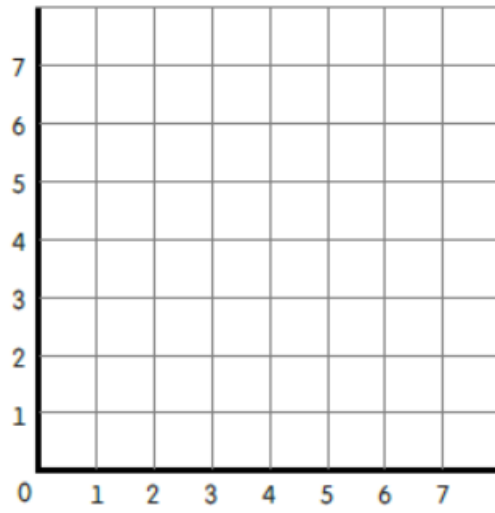
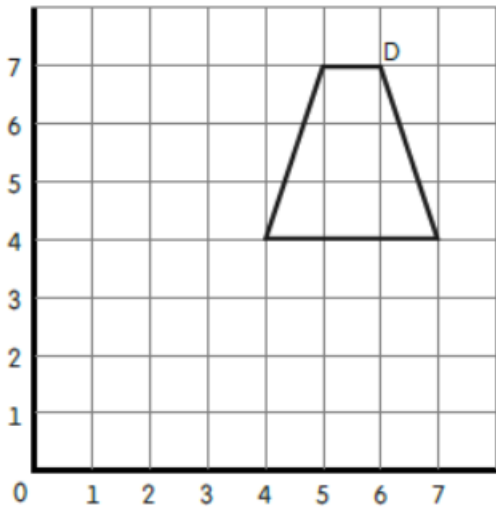
Move point A to (4,3)



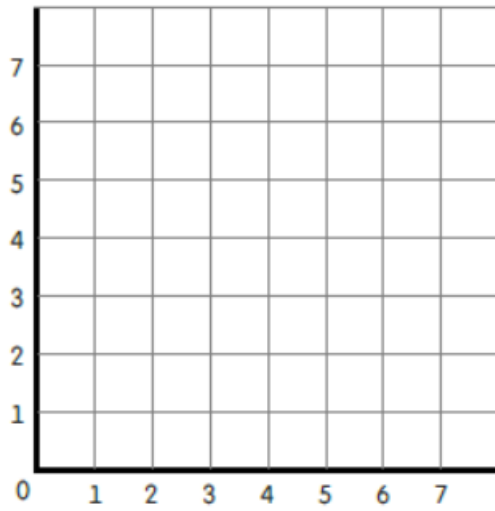
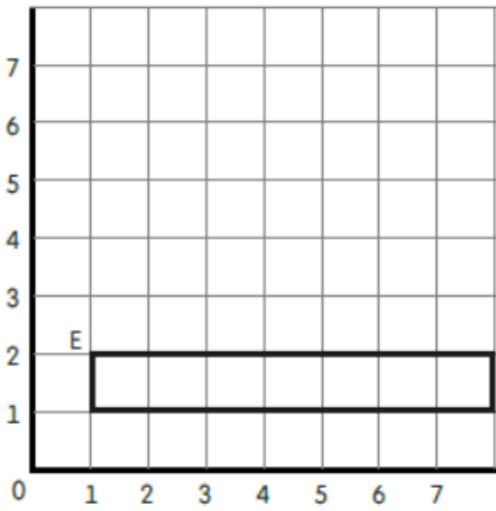
Move point B to (5,7)



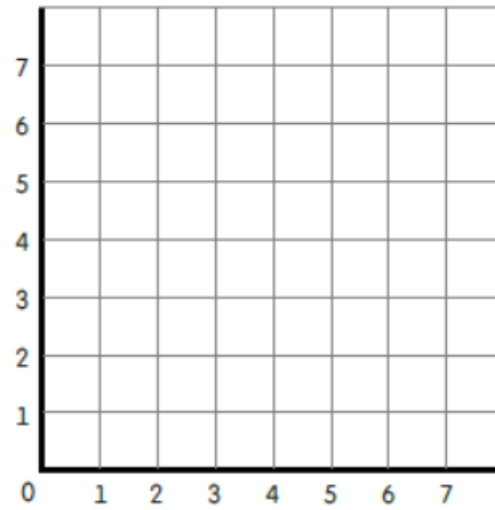
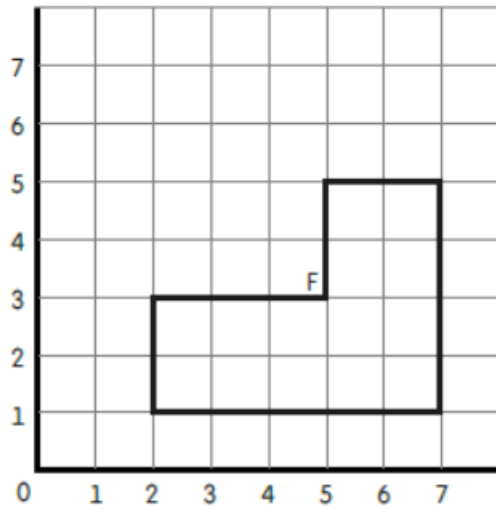
Move point C to (1,1)



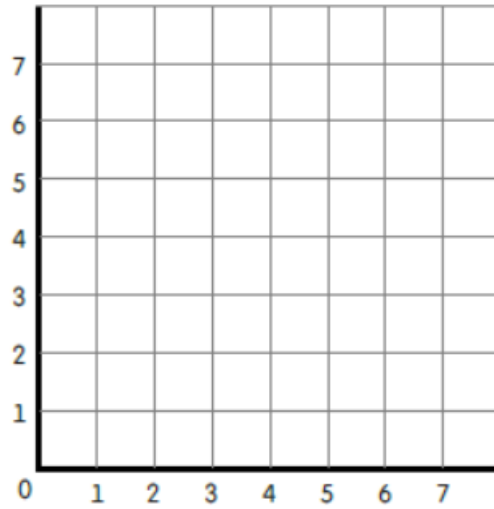
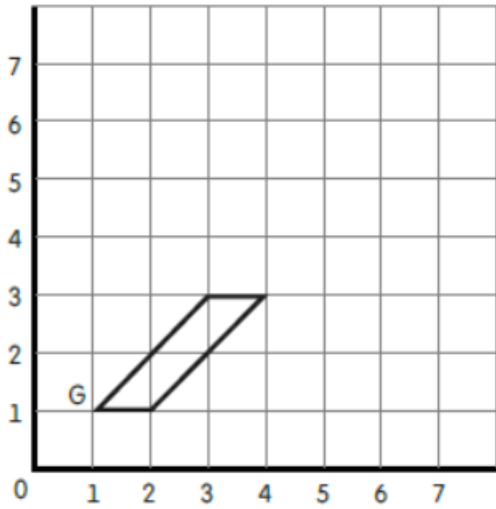
Move point D to (3,4)



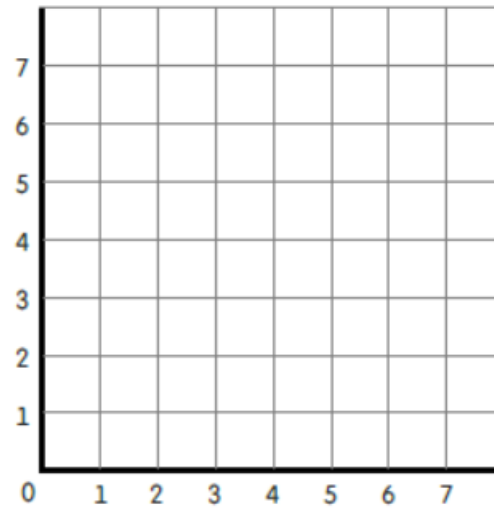
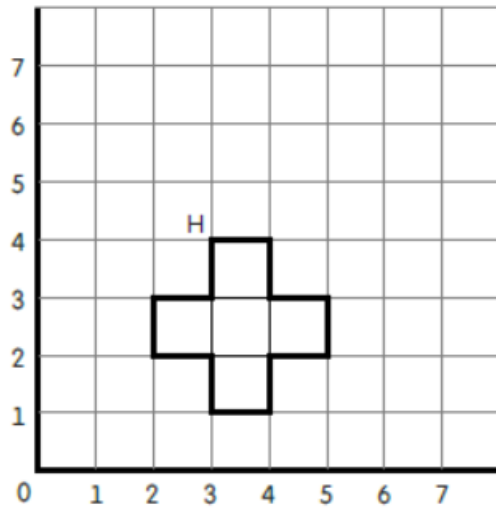
Move point E to (1,6)



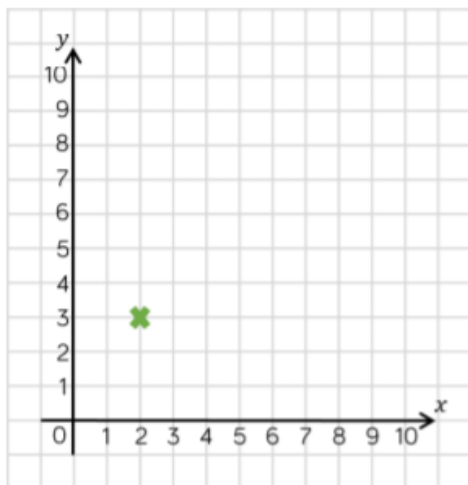
Move point F to (4,5)



Move point G to (3,5)



Move point H to (5,6)

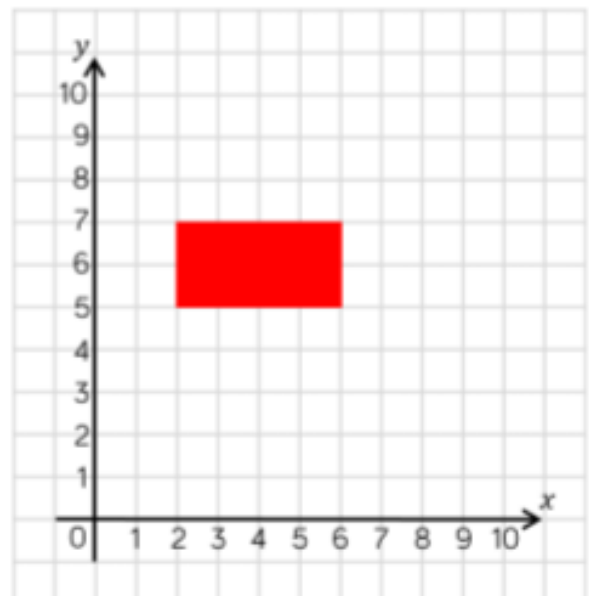


Ron translates the point (2, 3), but realises that it has returned to the same position.

What translation did he do?

Is there more than one answer?

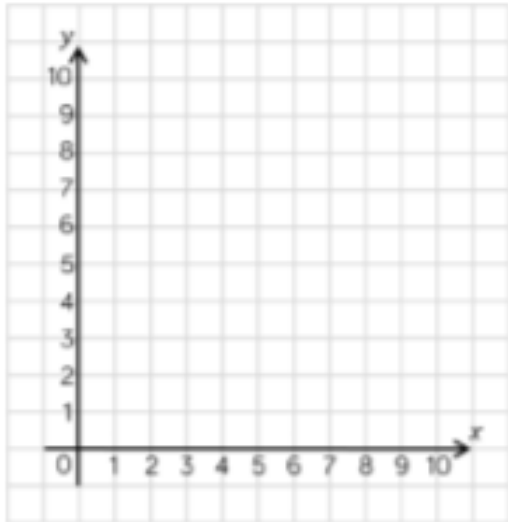
Translate the rectangle 2 left and 3 up. Write down the coordinate of each vertex of the rectangle before and after the translation.



Translation game:

Here is a game to play in pairs:

Each player needs:



1 small cube

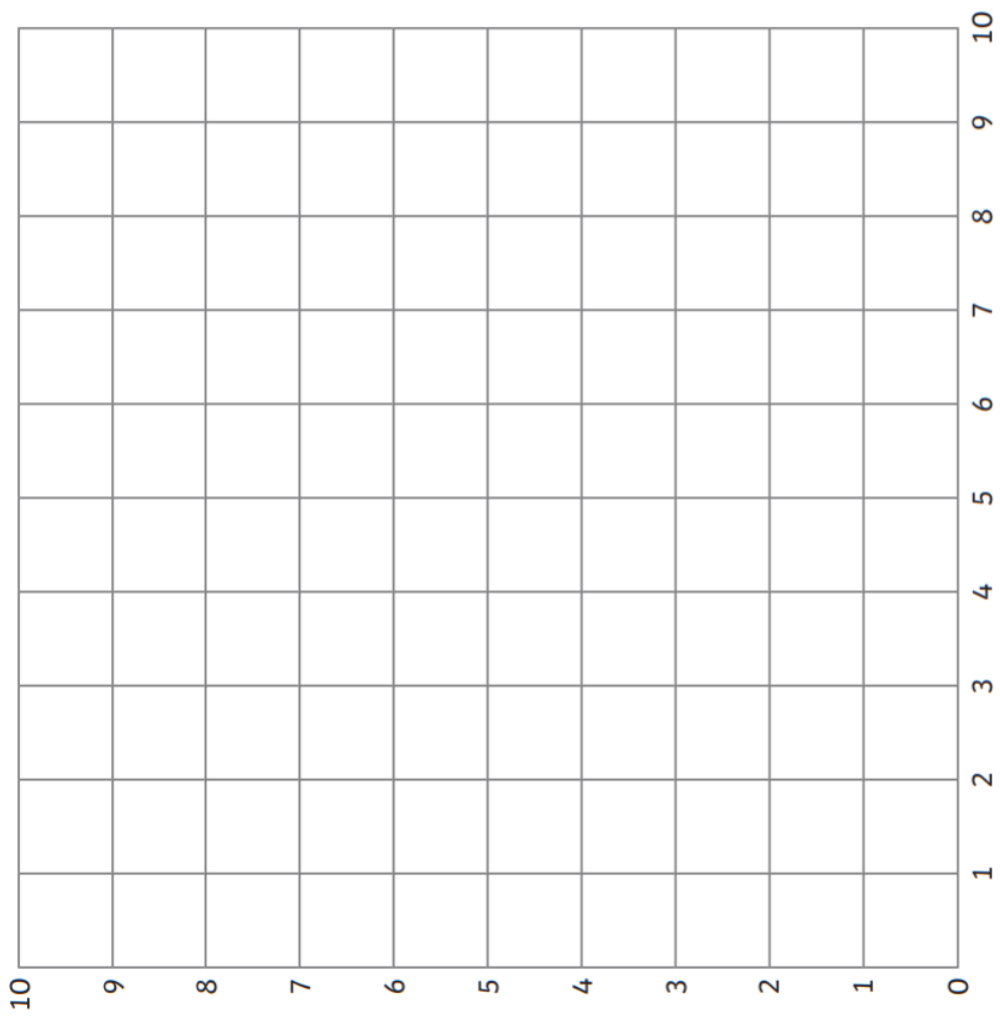
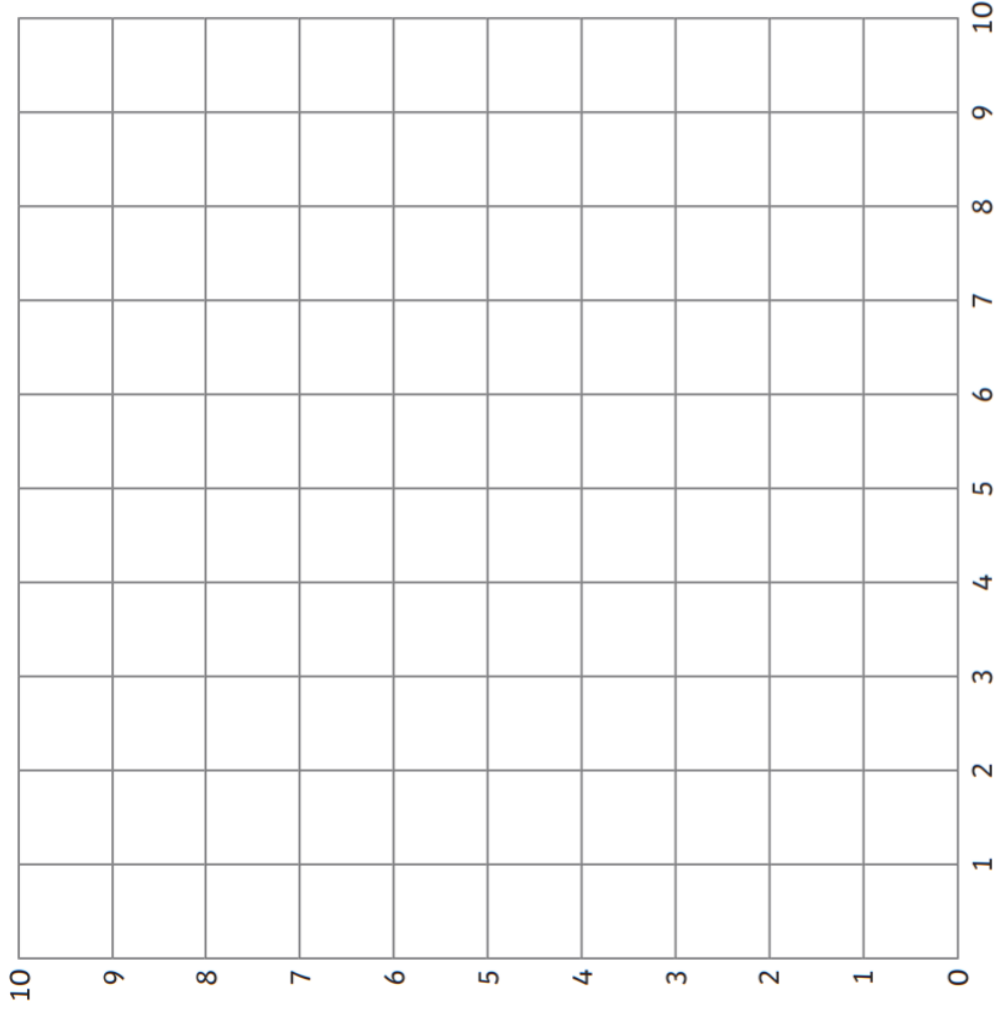
One barrier (e.g. a mini whiteboard)

The first player places a cube on their grid. They describe the original position and perform a translation.

The second player listens to the instructions and performs the same translation.

They check to see if they have placed their cube at the same coordinate.

Swap roles and repeat several times.



Maths Activity 3: Describing Translations

1) Describe the translation from:



2a) Describe the translation from:

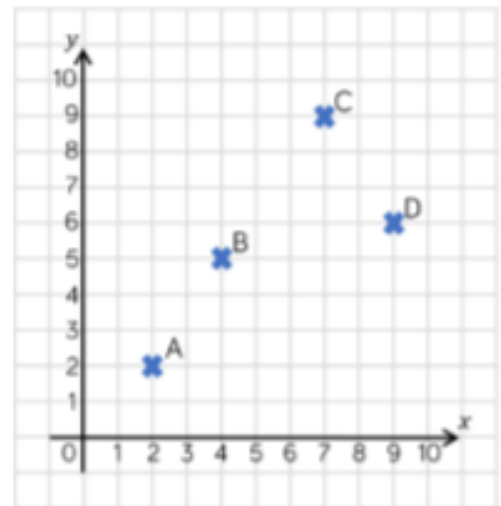
A to B

B to C

C to D

D to A

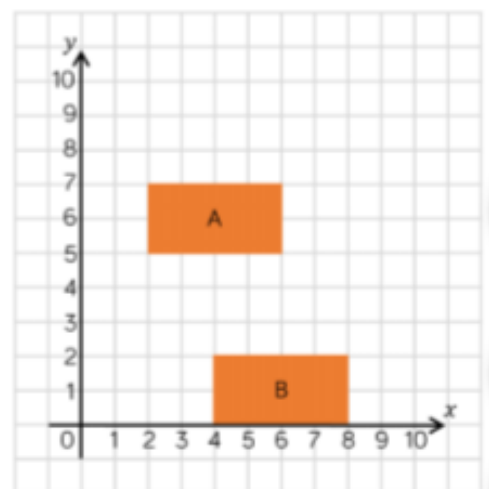
2b) Plot two new points and describe the translation from A to your new points.



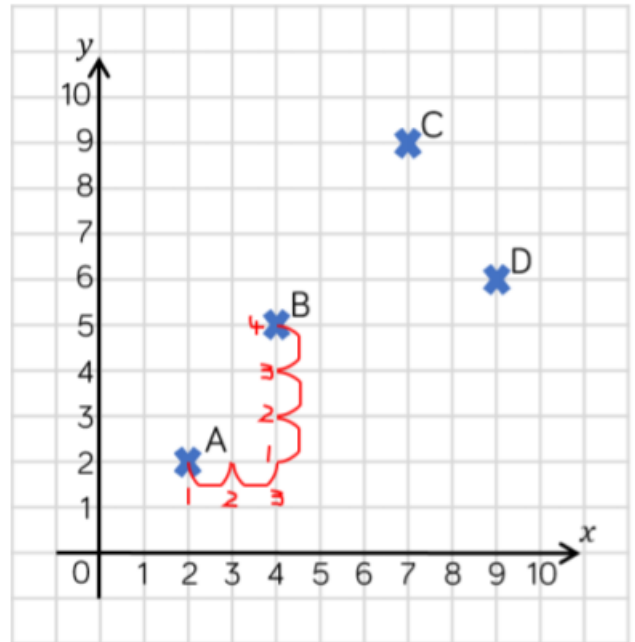
3a) Describe the translation of shape A to Shape B.

3b) Describe the translation of shape B to shape A.

3c) What do you notice?



4) Tommy has described the translation from A to B as 3 right and 4 up. Can you Explain his mistake?



5a) Can you plot other pairs of points where to move between the you travel the same to left or right as you travel up or down?

▲ to ✖ is 4 right and 4 down.
 ✖ to ▲ is 4 left and 4 up.

5b) What do you notice about the coordinates of these points?

