

- 1) a) The first digit; the x coordinate changes when a point is translated left or right.  
b) The second digit; the y coordinate changes when a point is translated up or down.  
c) (2,1)
- 2) a) (3 left, 1 down)  
b)  $c = (1,1)$  and  $d = (2,1)$



- 1) a) False, the first digit, which is the x coordinate, would change.  
b) False. The translation is (1 left, 4 down). The instructions are written the wrong way round.  
c) True  
d) False, those coordinates would make a trapezium.

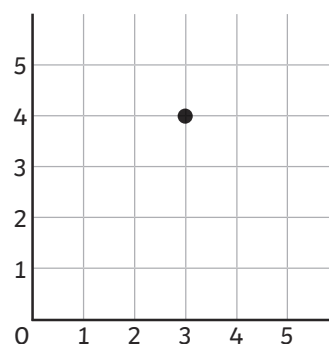


- 1) Original coordinates of D were (8,6).
- 2) The translation is (3 right, 1 down).
- 3) Children could find eleven different possible translations: (left 1), (left 1, down 1), (left 1, down 2), (down 1), (down 2), (right 1), (right 1, down 1), (right 1, down 2), (right 2), (right 2, down 1), (right 2, down 2).





1) Ramesh has plotted a coordinate in the first quadrant.  
 a) If the coordinate was moved one place to the left, which digit would change?  
 \_\_\_\_\_



b) If the coordinate was moved three places down, which digit would change?  
 \_\_\_\_\_

c) What would the new coordinates be? (     ,     )

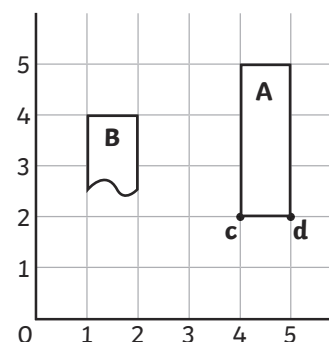
2) James has translated rectangle A to its new position, B.

a) What is the translation? \_\_\_\_\_

b) What are the coordinates of the two missing vertices? Plot and label c and d.

c (     ,     )

d (     ,     )



1) Swarvek has plotted the vertices of a square.



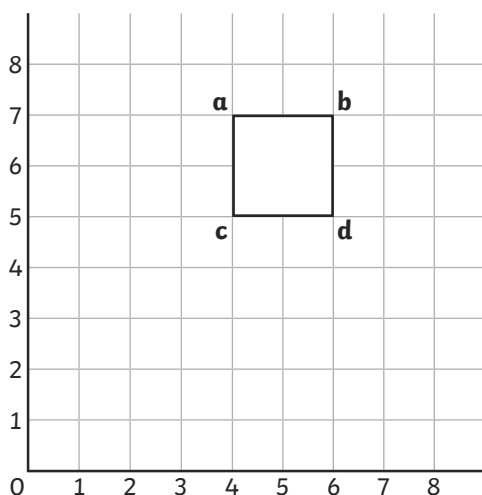
True or False?

a) If the square was translated to the left, the y coordinate would change. \_\_\_\_\_

b) The square has been translated and vertex A is now at (3,3). The translation is (4 down, 1 left). \_\_\_\_\_

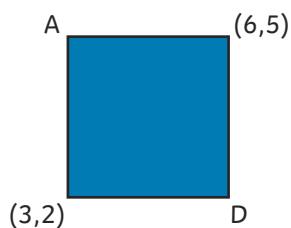
c) The square is being translated up and down. The only coordinate to change is the second digit. \_\_\_\_\_

d) The coordinates of the translated square could be (5,6), (6,6), (5,7) and (7,7). \_\_\_\_\_



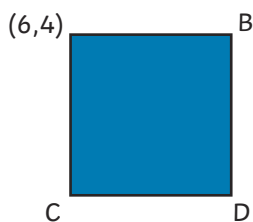


- 1) Shauna has translated a square in the first quadrant (2 left, 4 down). Here is the translated square. What were the original coordinates of vertex D?



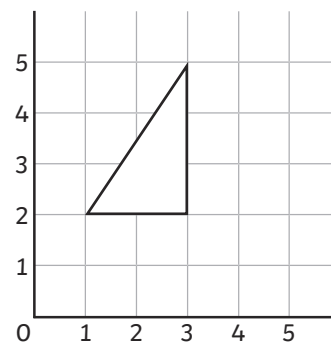
Original coordinates of vertex D (     ,     )

- 2) The same square has now been moved to a different place on the first quadrant. Celia has given one set of coordinates for one of the vertices. Describe the translation.

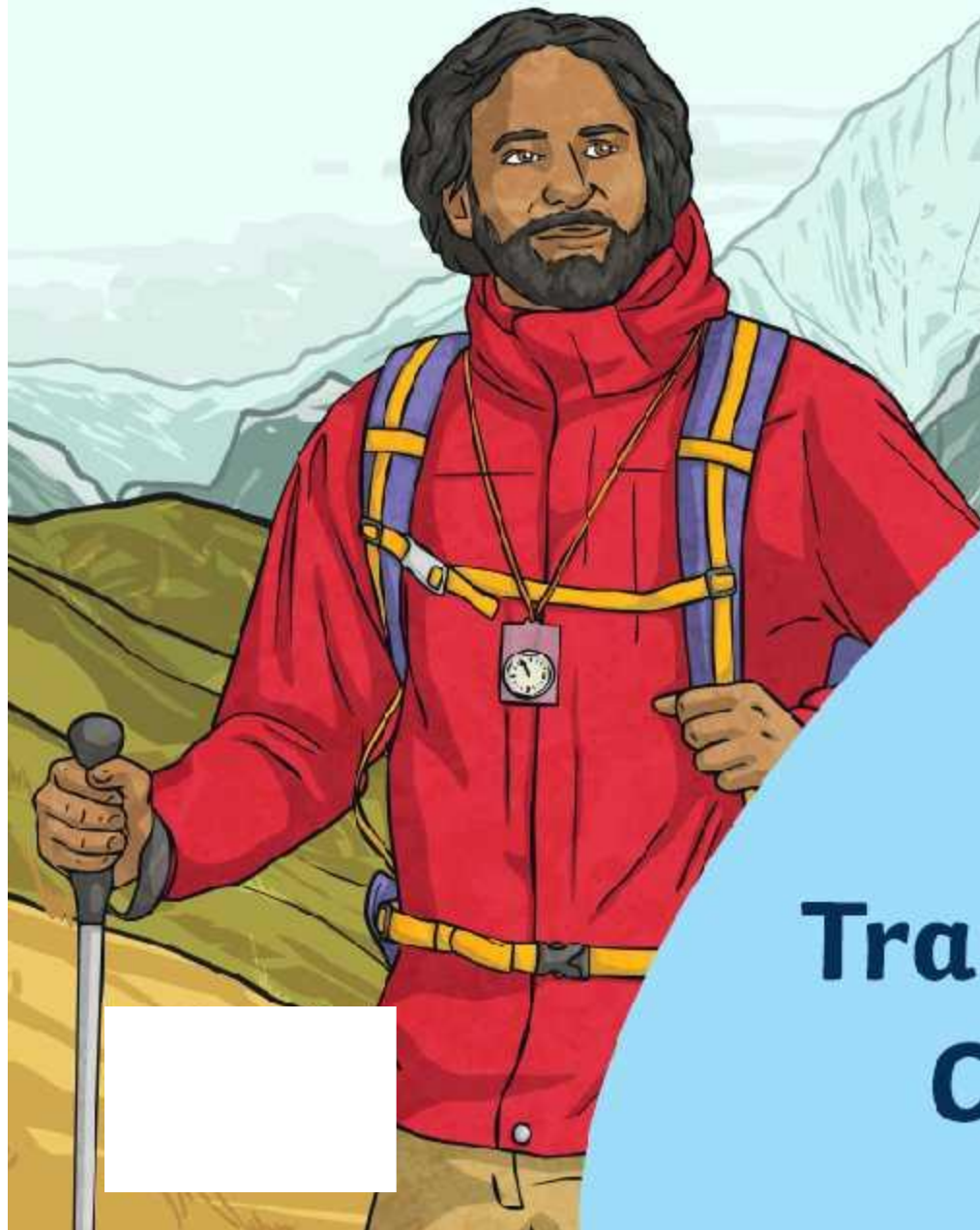


The translation is (     ,     )

- 3) Look at the triangle on the  $5 \times 5$  grid. How many different ways can you find of translating it so that it moves but stays entirely on the grid? Try to work systematically to find all the possibilities.



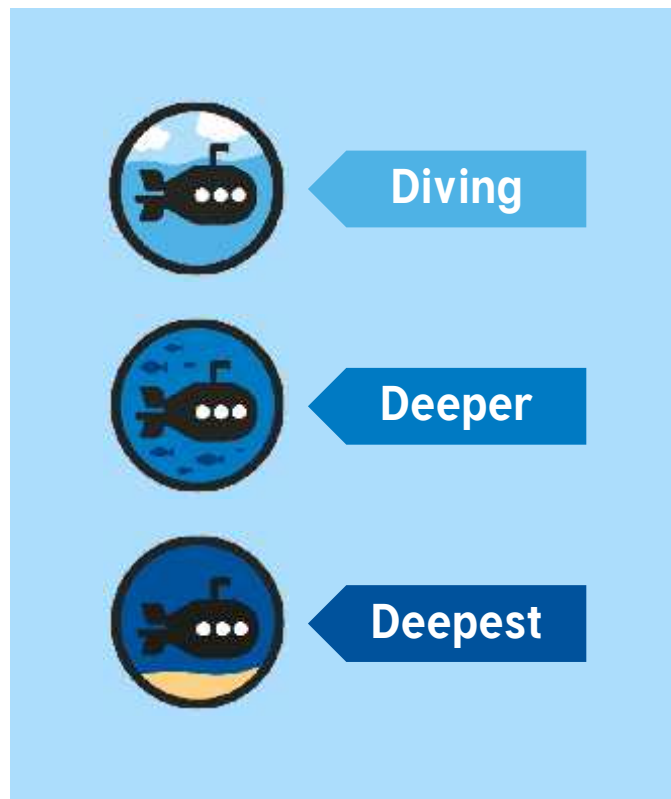
**Diving into Mastery**



# Translation with Coordinates

# Diving into Mastery Guidance for Educators

Each activity sheet is split into three sections, diving, deeper and deepest, which are represented by the following icons:



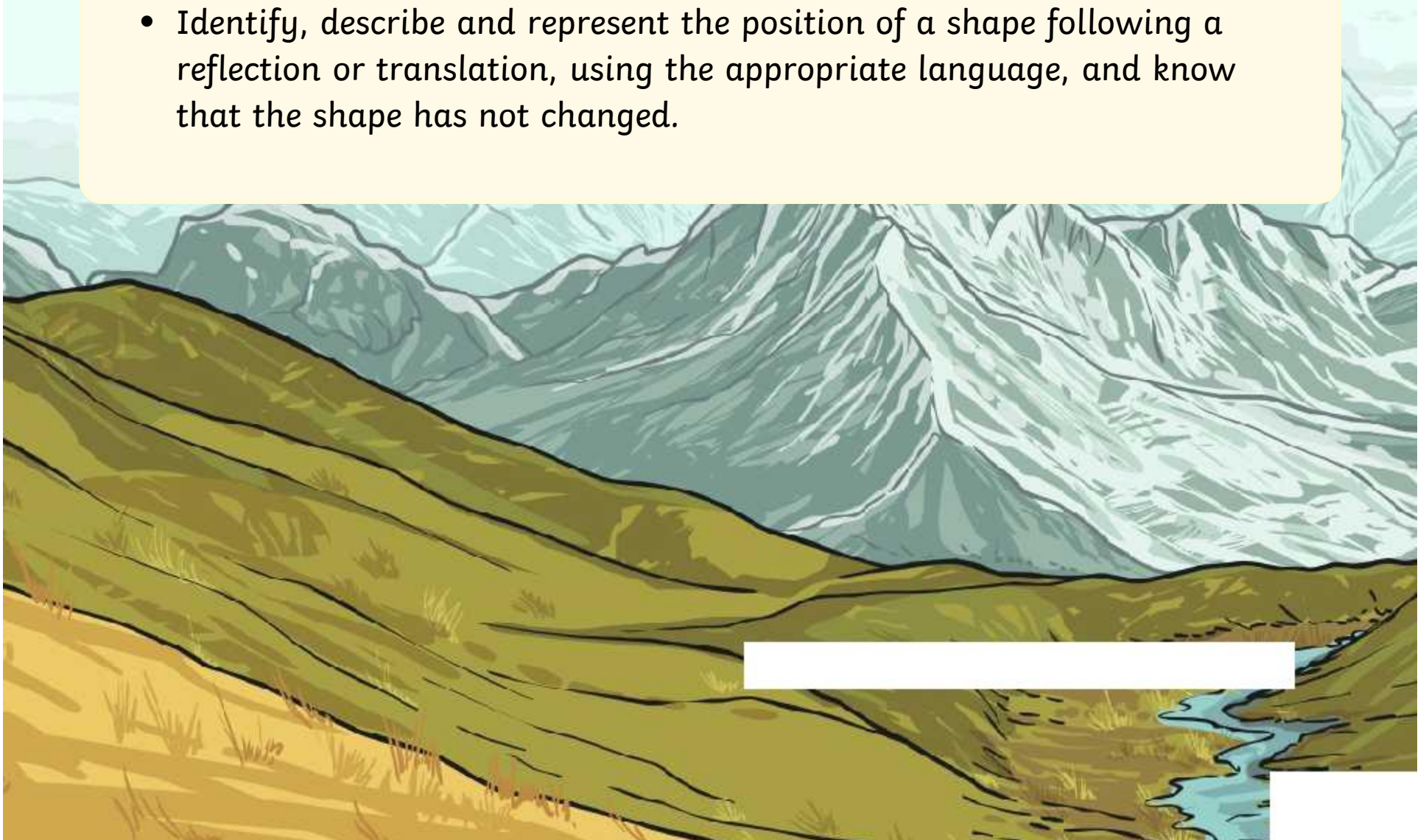
These carefully designed activities take your children through a learning journey, initially ensuring they are fluent with the key concept being taught; then applying this to a range of reasoning and problem-solving activities.

These sheets might not necessarily be used in a linear way. Some children might begin at the 'Deeper' section and in fact, others may 'dive straight in' to the 'Deepest' section if they have already mastered the skill and are applying this to show their depth of understanding.



# National Curriculum Objective

- Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed.



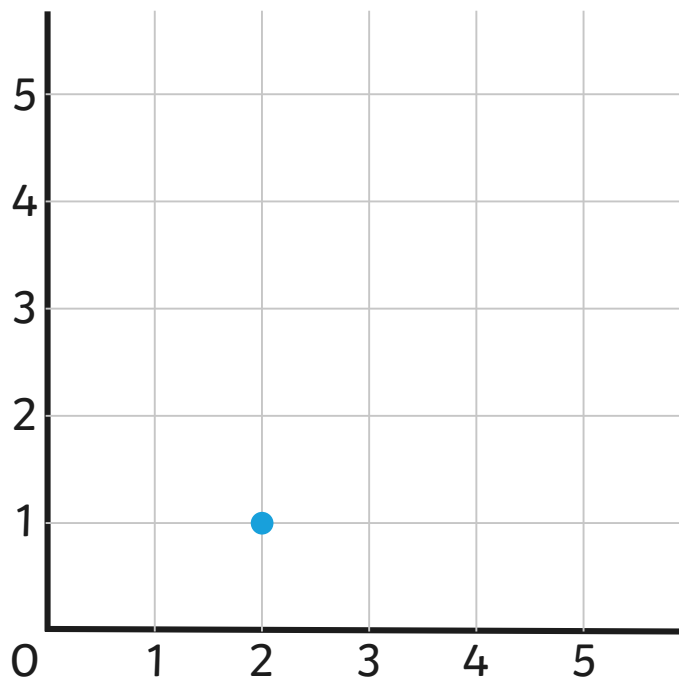
## Translation with Coordinates

## Diving



The second digit would change:  
the y coordinate.

If it were to move upwards, which digit would change?



## Translation with Coordinates

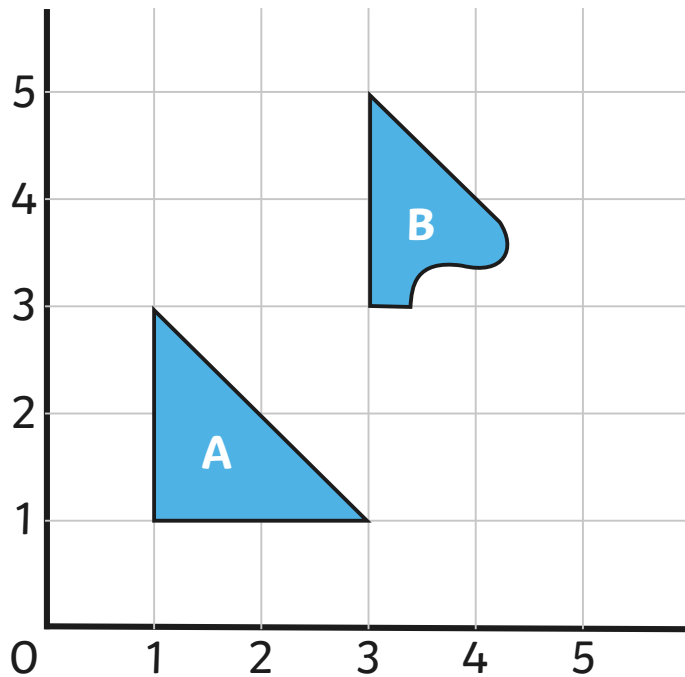
## Diving



James has translated triangle A to its new position, B.

Describe the translation to your learning partner. 2 right, 2 up.

What are the coordinates of the missing vertex? (5,3)





## Translation with Coordinates

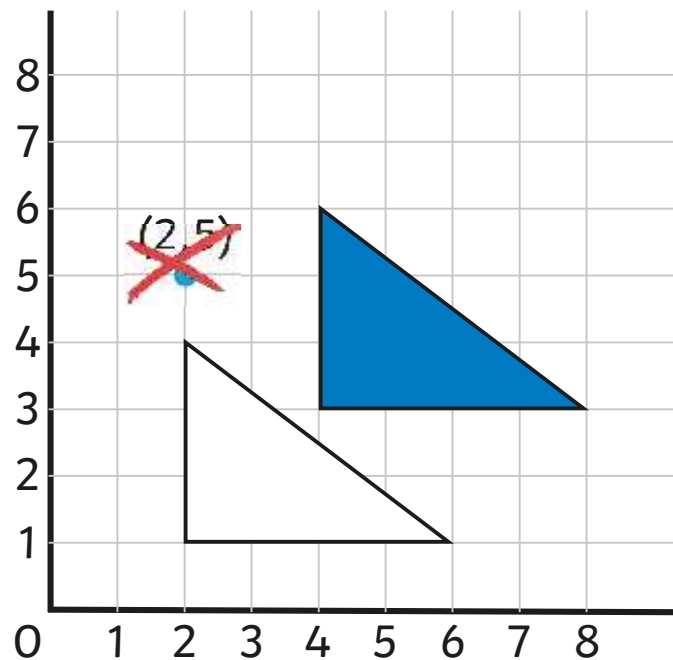
### Deeper



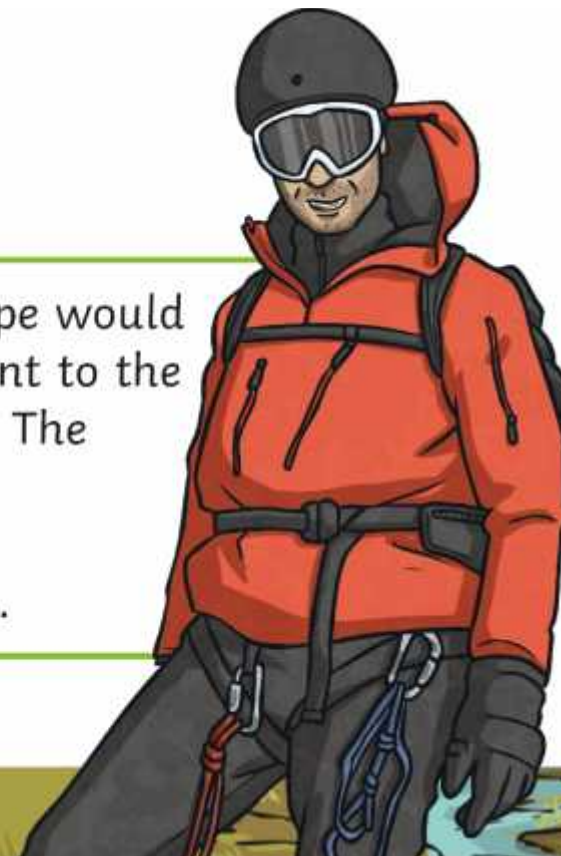
Are these statements true or false?

If the triangle was translated down, the  $y$  coordinate would change.

The coordinates of the translated shape could be  $(2,1)$   $(6,1)$   $(2,5)$ .



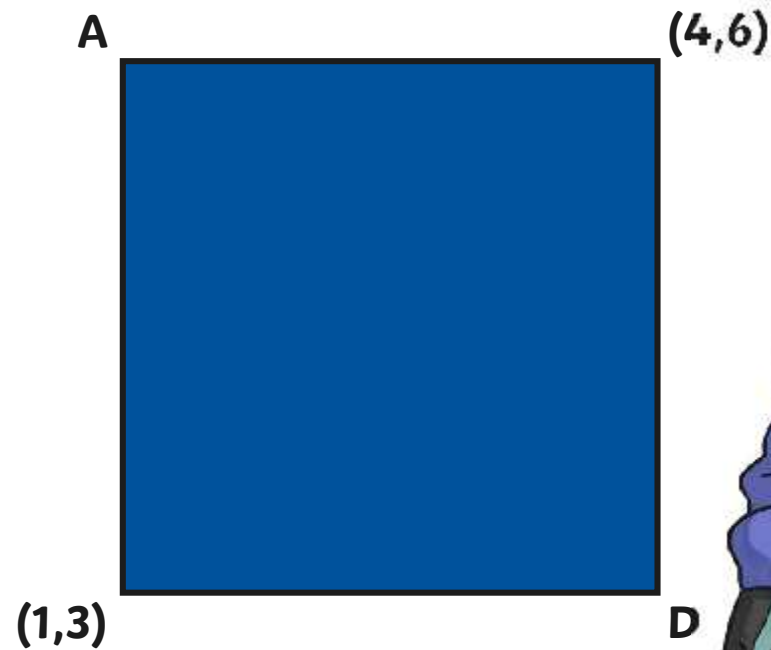
False. This shape would not be congruent to the original shape. The final pair of coordinates should be  $(2,4)$ .





Sienna has translated a square in the first quadrant (1 left, 2 up). Here is the translated square. What were the original coordinates of vertices A and D?

Vertex A (2,4)  
Vertex D (5,1)



## Translation with Coordinates

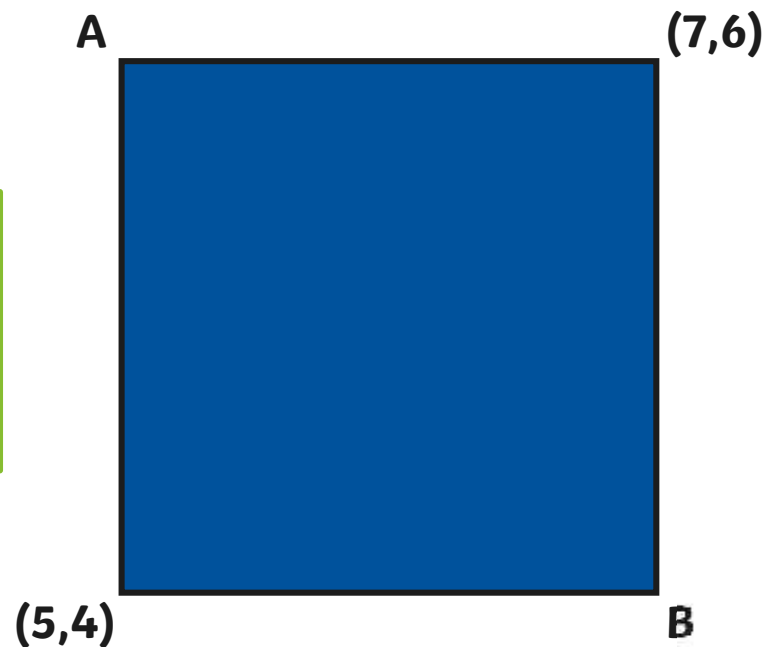
## Deepest



Celia has drawn a square in the first quadrant but has hidden the grid. She reveals the coordinates of two vertices.

When Celia translates the square, one of the coordinates is  $(6,5)$ . What are the possible ways the square has been translated?

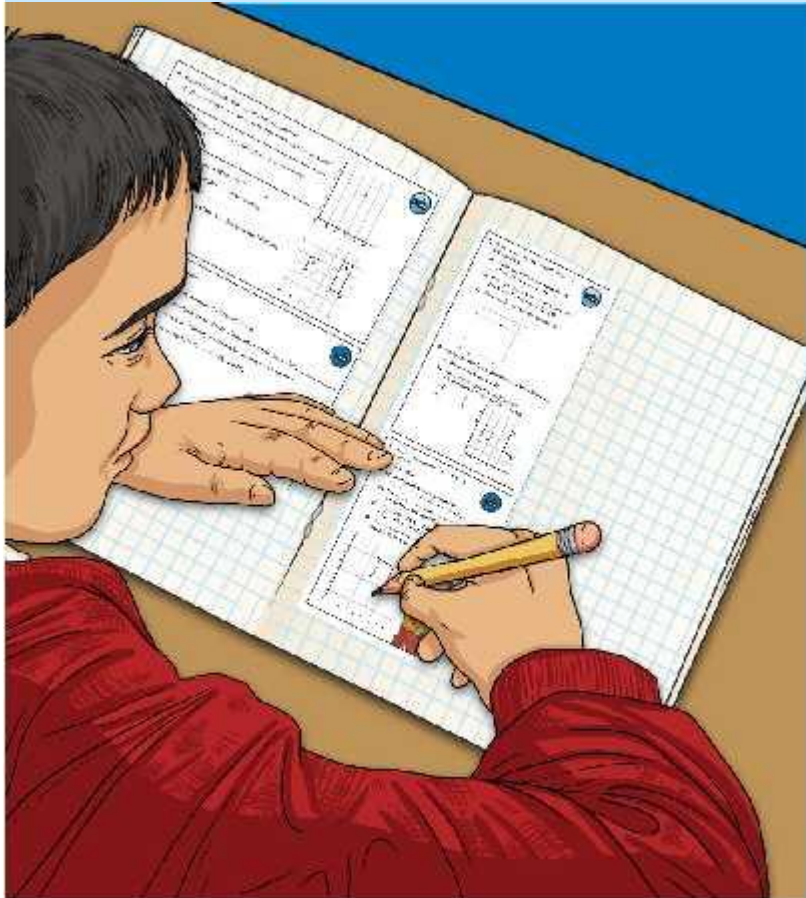
(left 1, up 1)  
(left 1, down 1)  
(right 1, up 1)  
(right 1, down 1)





## Translation with Coordinates

Dive in by completing your own activity!



11. Translate the point  $P(2, 3)$  and label the quadrants.

a)  $2$  units up and  $3$  units right  
b)  $2$  units down and  $3$  units left  
c)  $2$  units up and  $3$  units left  
d)  $2$  units down and  $3$  units right

12. Translate the point  $P(2, 3)$  and label the quadrants.

a)  $2$  units up and  $3$  units right  
b)  $2$  units down and  $3$  units left  
c)  $2$  units up and  $3$  units left  
d)  $2$  units down and  $3$  units right

13. Translate the point  $P(2, 3)$  and label the quadrants.

a)  $2$  units up and  $3$  units right  
b)  $2$  units down and  $3$  units left  
c)  $2$  units up and  $3$  units left  
d)  $2$  units down and  $3$  units right

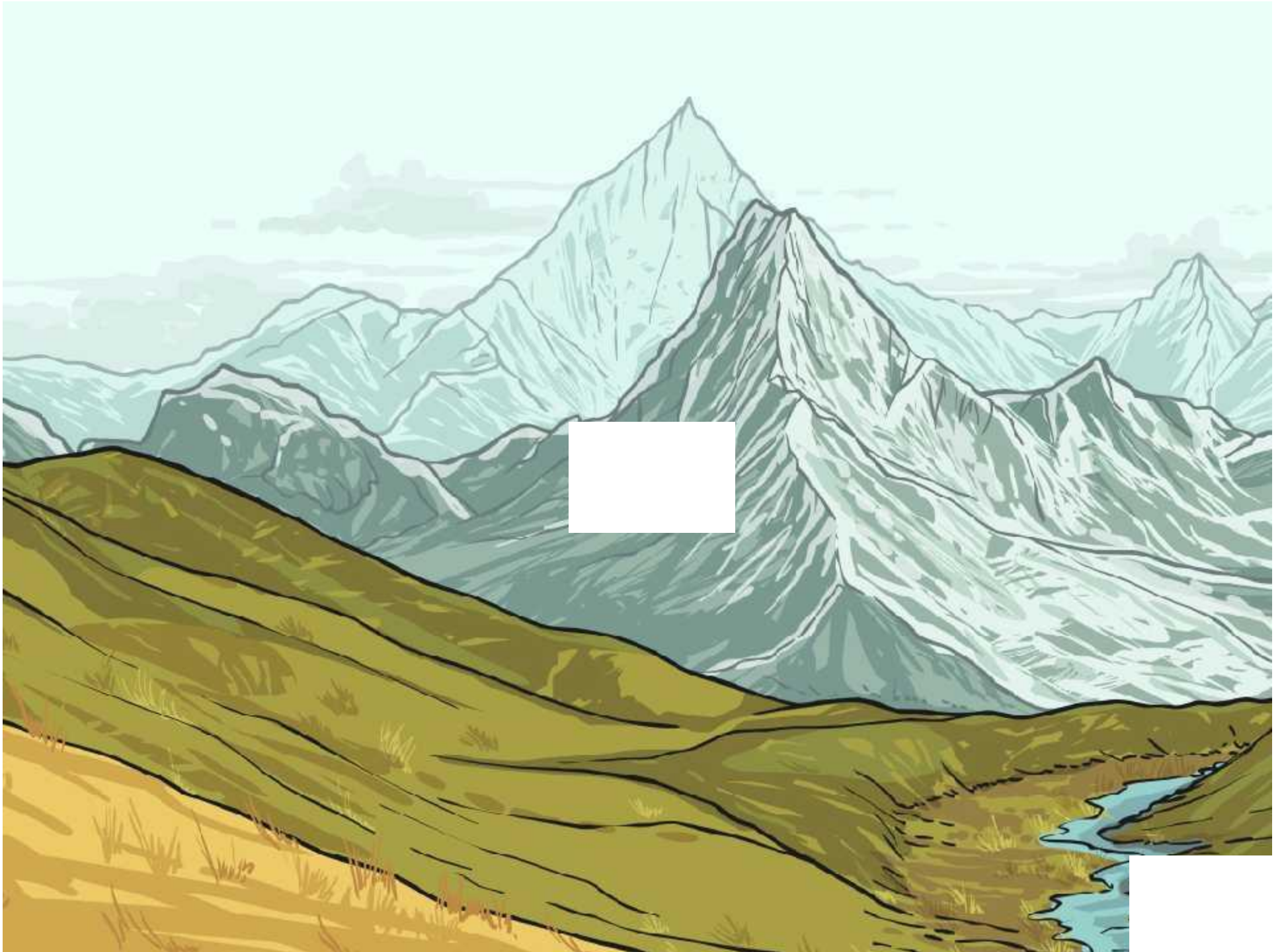
14. Translate the point  $P(2, 3)$  and label the quadrants.

a)  $2$  units up and  $3$  units right  
b)  $2$  units down and  $3$  units left  
c)  $2$  units up and  $3$  units left  
d)  $2$  units down and  $3$  units right

15. Translate the point  $P(2, 3)$  and label the quadrants.

a)  $2$  units up and  $3$  units right  
b)  $2$  units down and  $3$  units left  
c)  $2$  units up and  $3$  units left  
d)  $2$  units down and  $3$  units right

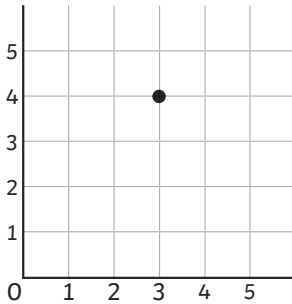




1) Ramesh has plotted a coordinate in the first quadrant.



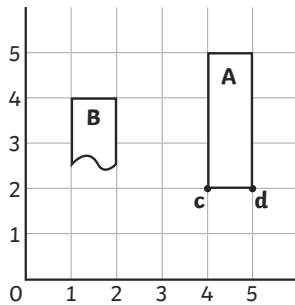
- If the coordinate was moved one place to the left, which digit would change?
- If the coordinate was moved three places down, which digit would change?
- What would the new coordinates be?



2) James has translated rectangle A to its new position, B.

- What is the translation?
- What are the coordinates of the two missing vertices? Plot and label c and d.

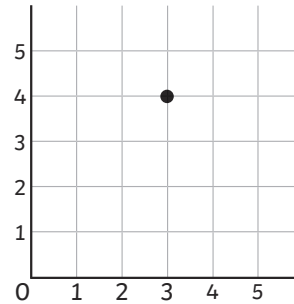
c (     ,     )  
d (     ,     )



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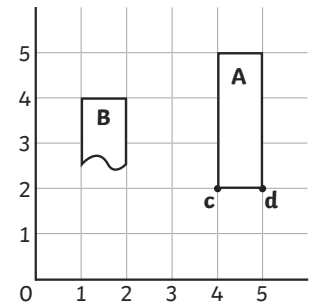
- If the coordinate was moved one place to the left, which digit would change?
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c (     ,     )  
d (     ,     )

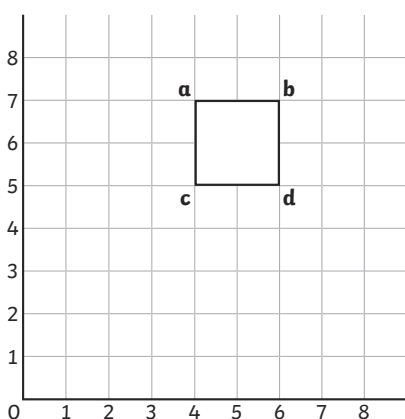


1) Swarvek has plotted the vertices of a square.



True or False?

- If the square was translated to the left, the y coordinate would change.
- The square has been translated and vertex A is now at (3,3). The translation is (4 down, 1 left).
- The square is being translated up and down. The only coordinate to change is the second digit.
- The coordinates of the translated square could be (5,6), (6,6), (5,7) and (7,7).

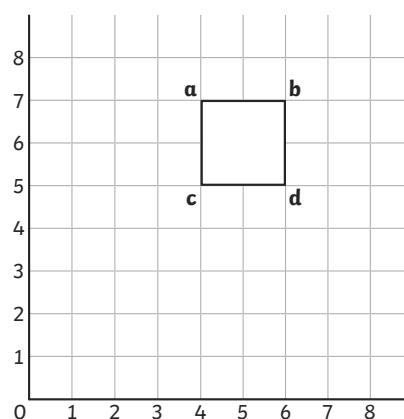


1) Swarvek has plotted the vertices of a square.

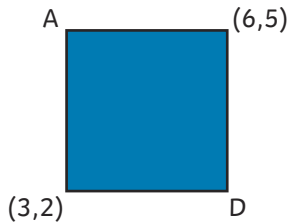


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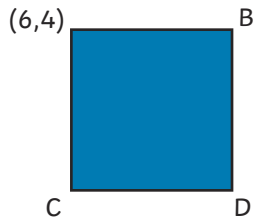


- 1) Shauna has translated a square in the first quadrant (2 left, 4 down). Here is the translated square. What were the original coordinates of vertex D?



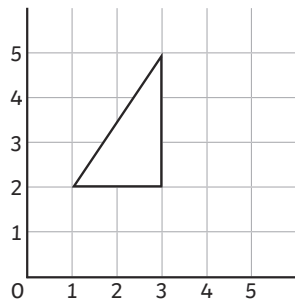
Original coordinates of vertex D ( , )

- 2) The same square has now been moved to a different place on the first quadrant. Celia has given one set of coordinates for one of the vertices. Describe the translation.

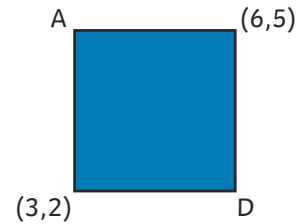


The translation is ( , )

- 3) Look at the triangle on the  $5 \times 5$  grid. How many different ways can you find of translating it so that it moves but stays entirely on the grid? Try to work systematically to find all the possibilities.

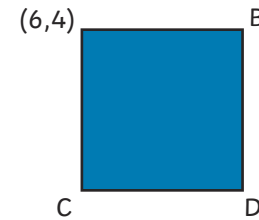


- 1) Shauna has translated a square in the first quadrant (2 left, 4 down). Here is the translated square. What were the original coordinates of vertex D?



Original coordinates of vertex D ( , )

- 2) The same square has now been moved to a different place on the first quadrant. Celia has given one set of coordinates for one of the vertices. Describe the translation.



The translation is ( , )

- 3) Look at the triangle on the  $5 \times 5$  grid. How many different ways can you find of translating it so that it moves but stays entirely on the grid? Try to work systematically to find all the possibilities.

