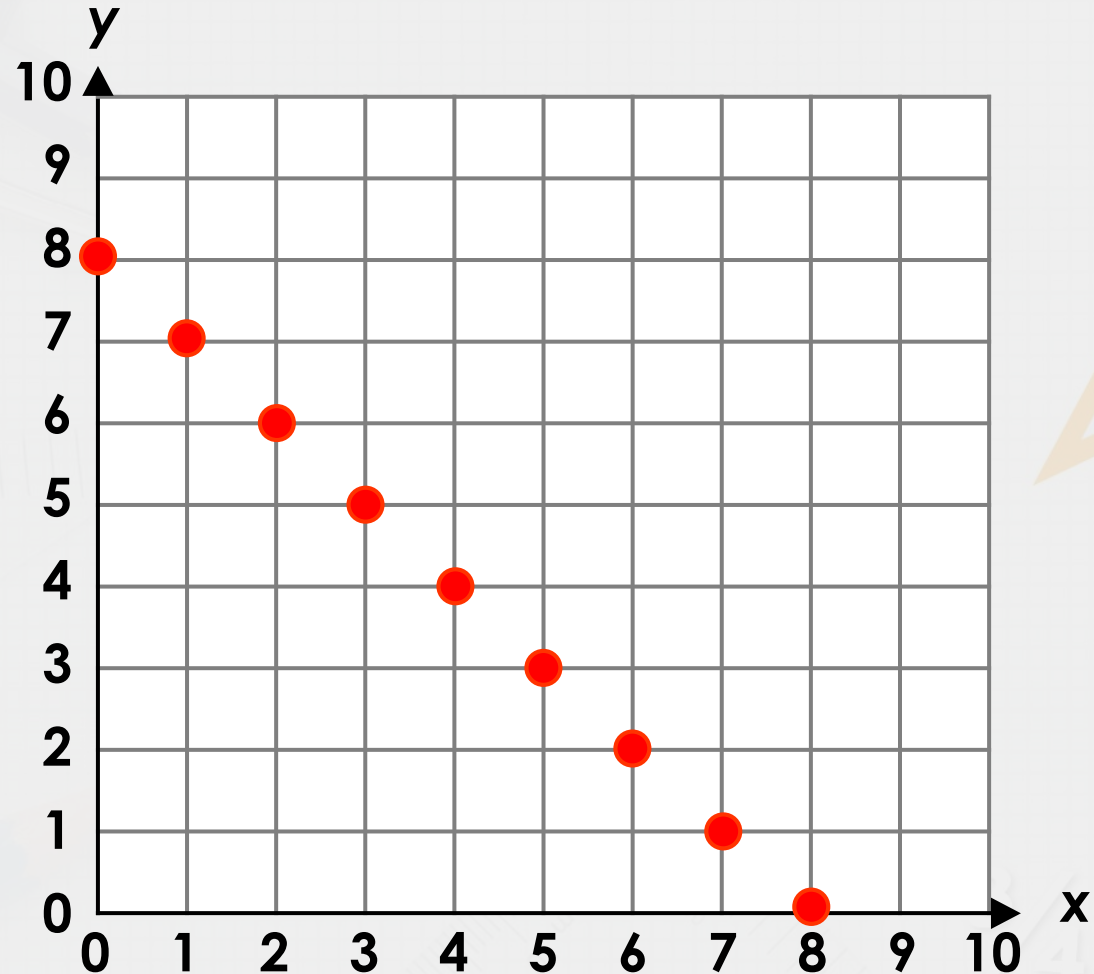


# Step 1 Answers

## Introduction

The digits in a pair of coordinates add to make 8. What could the coordinates be? Plot them and record them.



(0, 8)

(1, 7)

(2, 6)

(3, 5)

(4, 4)

(5, 3)

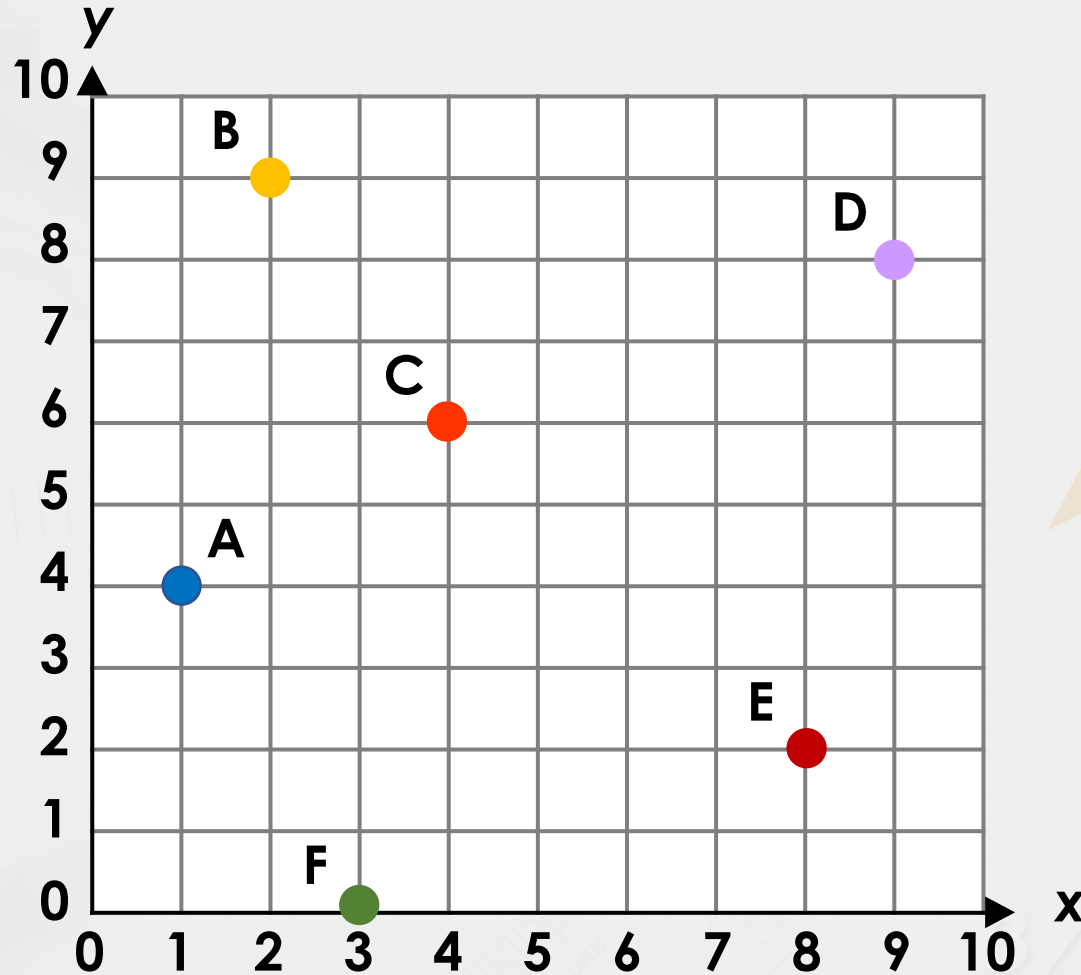
(6, 2)

(7, 1)

(8, 0)

## Varied Fluency 1

Are the coordinates of each point correct?



$A = (1, 4)$  ✓

$B = (9, 2)$  ✗  $(2, 9)$

$C = (4, 6)$  ✓

$D = (8, 9)$  ✗  $(9, 8)$

$E = (8, 2)$  ✓

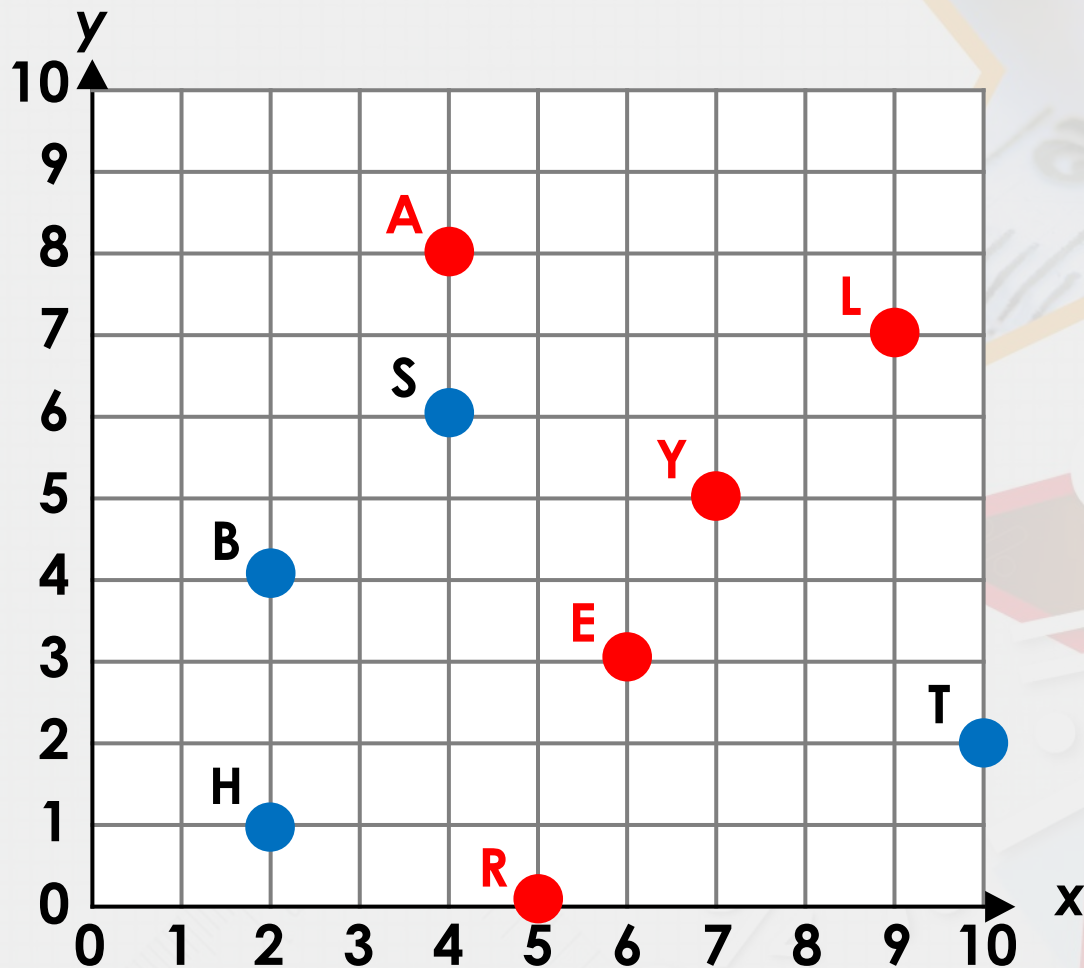
$F = (3, 1)$  ✗  $(3, 0)$

## Varied Fluency 2

Find these coordinates in order. What word do the letters spell?

(6, 3) (4, 8) (5, 0) (9, 7) (7, 5)

These  
coordinates  
spell EARLY.



### Varied Fluency 3

Complete the coordinates below and plot any missing points on the grid.

$$A = (5, 3)$$

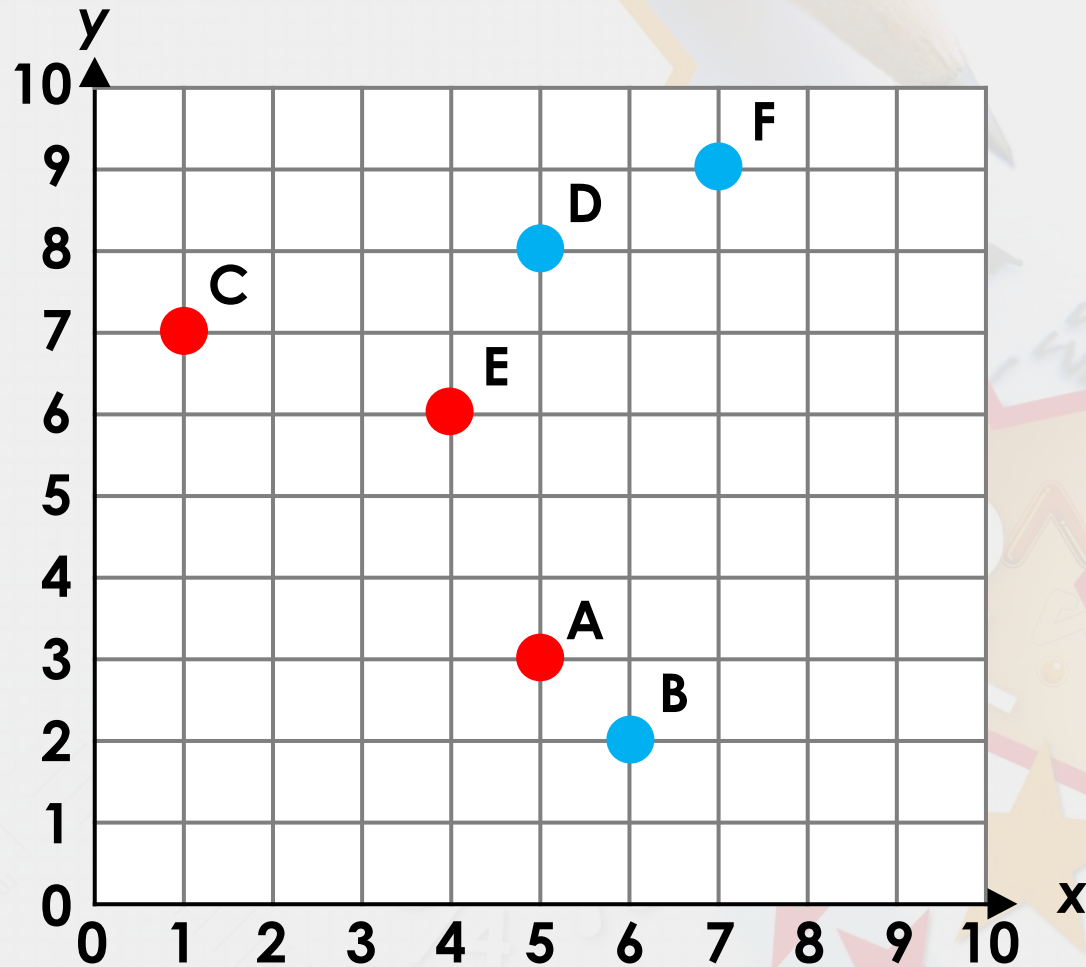
$$B = (6, 2)$$

$$C = (1, 7)$$

$$D = (5, 8)$$

$$E = (4, 6)$$

$$F = (7, 9)$$

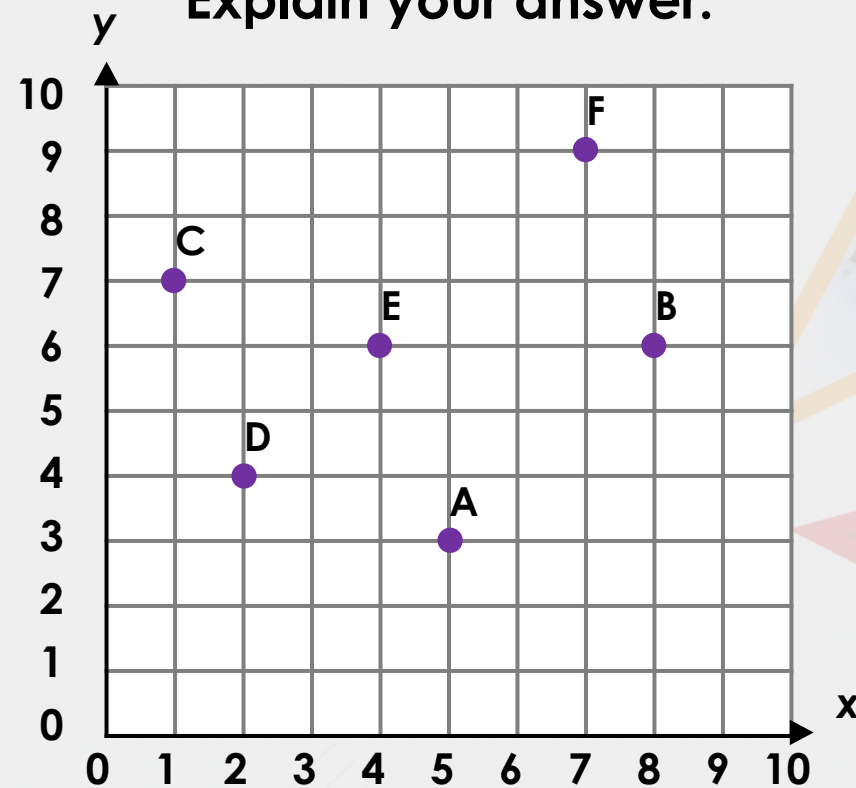




## Reasoning 1

I'm thinking of a coordinate. The value of  $x$  is between 3 and 6 and the value of  $y$  is between 2 and 5. Which coordinate could it be?

Explain your answer.

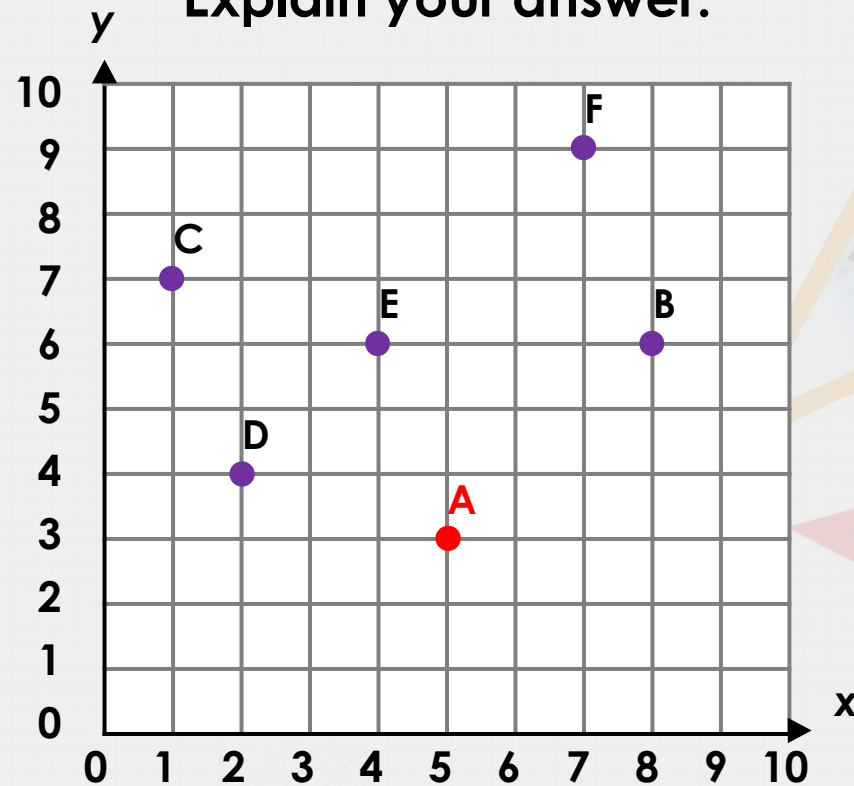


Coordinate A because...

## Reasoning 1

I'm thinking of a coordinate. The value of  $x$  is between 3 and 6 and the value of  $y$  is between 2 and 5. Which coordinate could it be?

Explain your answer.



**Coordinate A because it is the only point with an  $x$  coordinate between 3 and 6 and a  $y$  coordinate between 2 and 5.**

## Problem Solving 1

Billy has written the coordinates for a pentagon. Correct any mistakes he has made.

Billy read the  $y$  axis before the  $x$  axis for Points A and E, which should have been  $(3, 4)$  and  $(7, 2)$ .



Billy

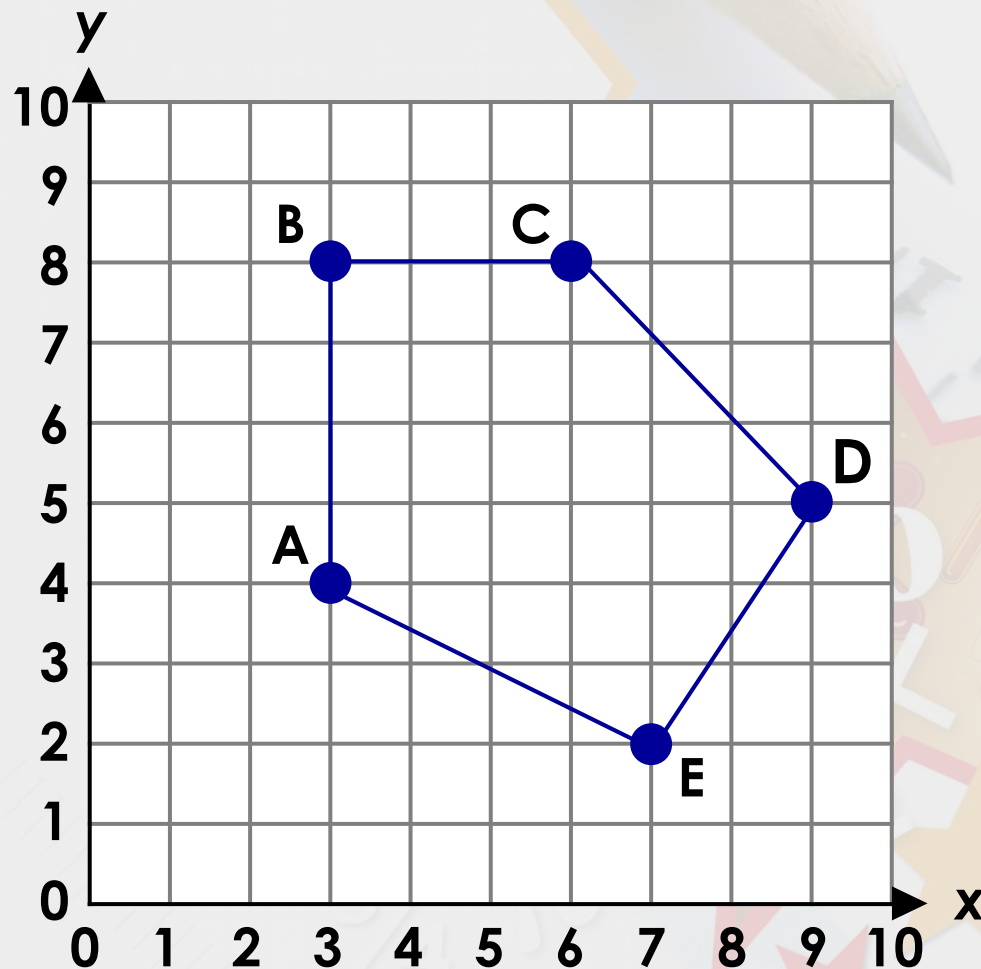
Point A =  $(3, 4)$

Point B =  $(3, 8)$

Point C =  $(6, 8)$

Point D =  $(9, 5)$

Point E =  $(7, 2)$





## Problem Solving 2

$A = (3, 5)$ ,  $C = (8, 3)$ . Use this information to work out the coordinates of points B, D, E and F.

Point A =  $(3, 5)$

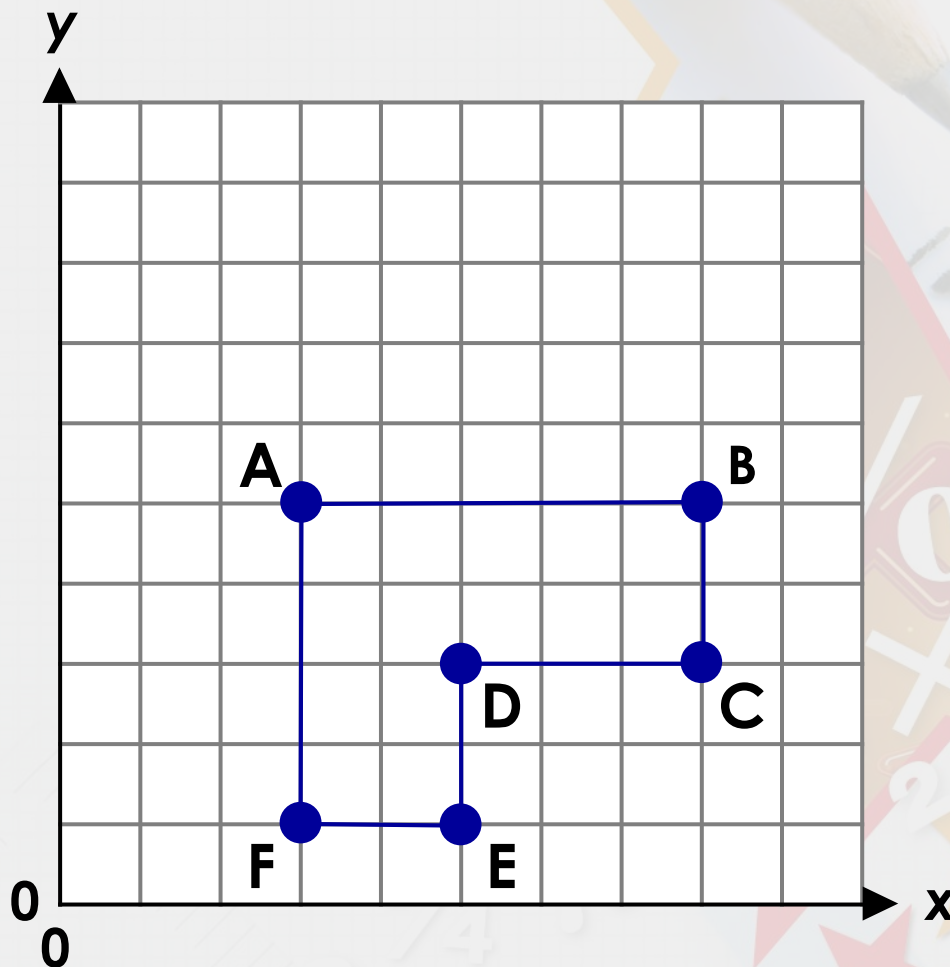
Point B =  $(8, 5)$

Point C =  $(8, 3)$

Point D =  $(5, 3)$

Point E =  $(5, 1)$

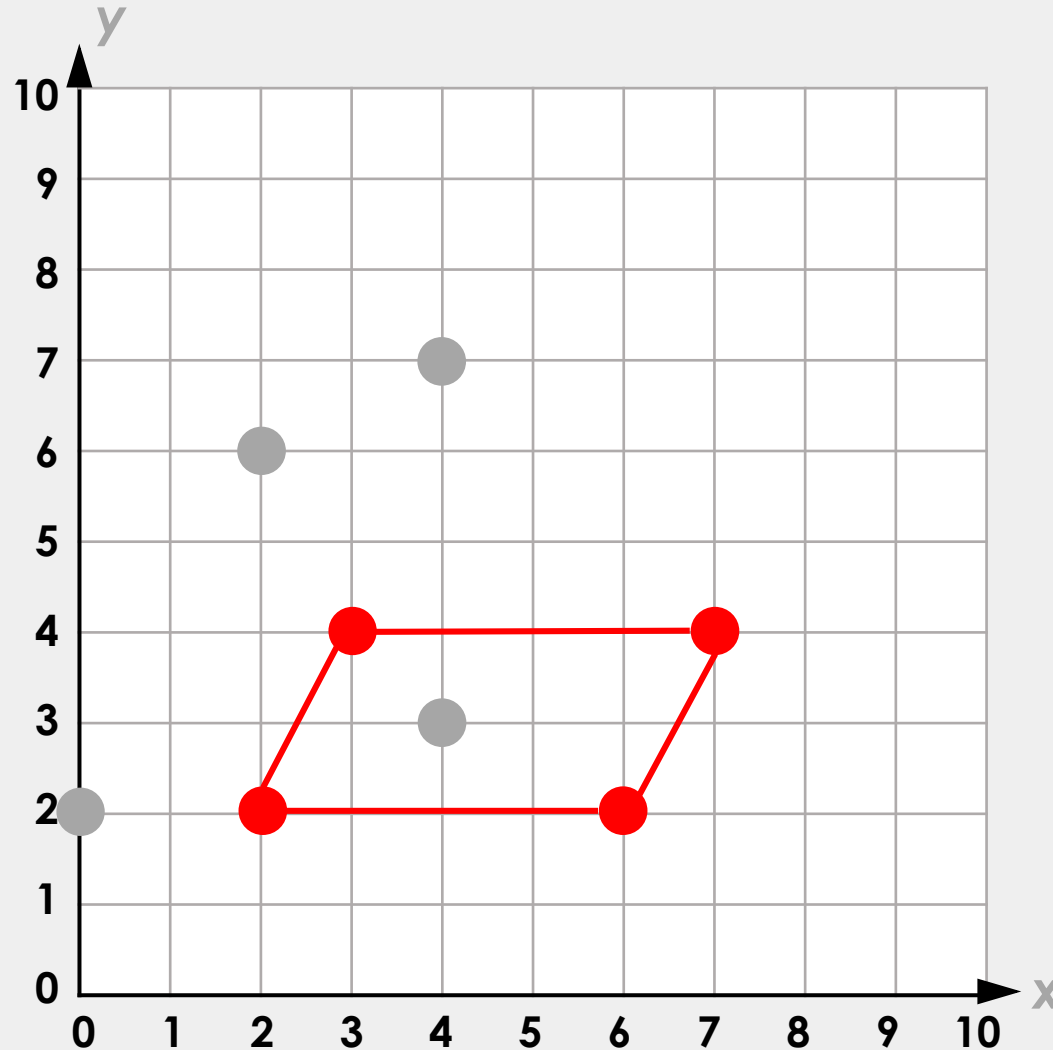
Point F =  $(3, 1)$



# Step 2 Answers

## Introduction

When plotted, which coordinates will make a parallelogram?



<b>(3, 4)</b>	(4, 3)
<b>(7, 4)</b>	(4, 7)
(2, 6)	<b>(6, 2)</b>
<b>(2, 2)</b>	(0, 2)

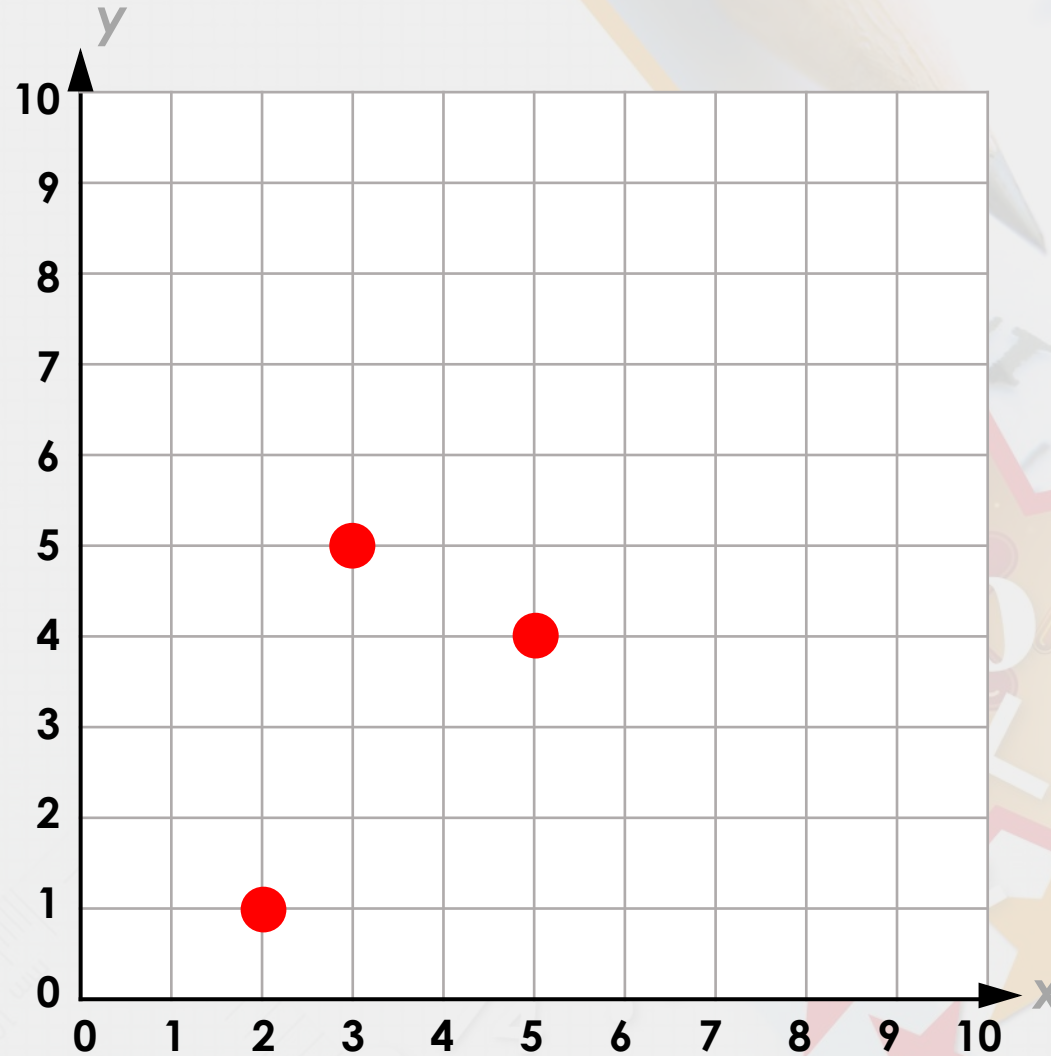
## Varied Fluency 1

Plot the points for the coordinates on the grid.

**(2, 1)**

**(5, 4)**

**(3, 5)**



## Varied Fluency 2

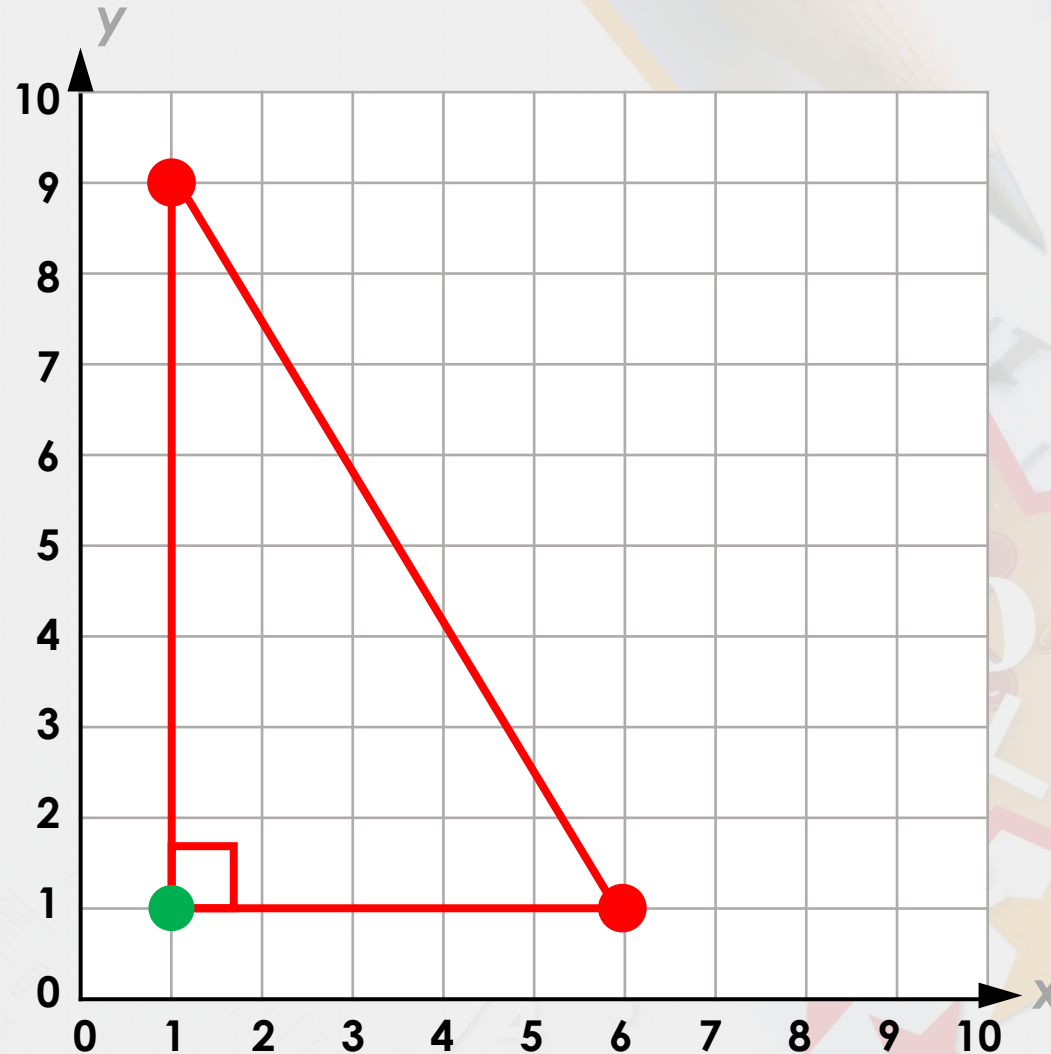
Draw a right-angled triangle. Start at point A. Write the coordinates.

Possible answer:

$(1, 1)$

$(1, 9)$

$(6, 1)$





### Varied Fluency 3

These are the coordinates for the vertices of a square. True or false?

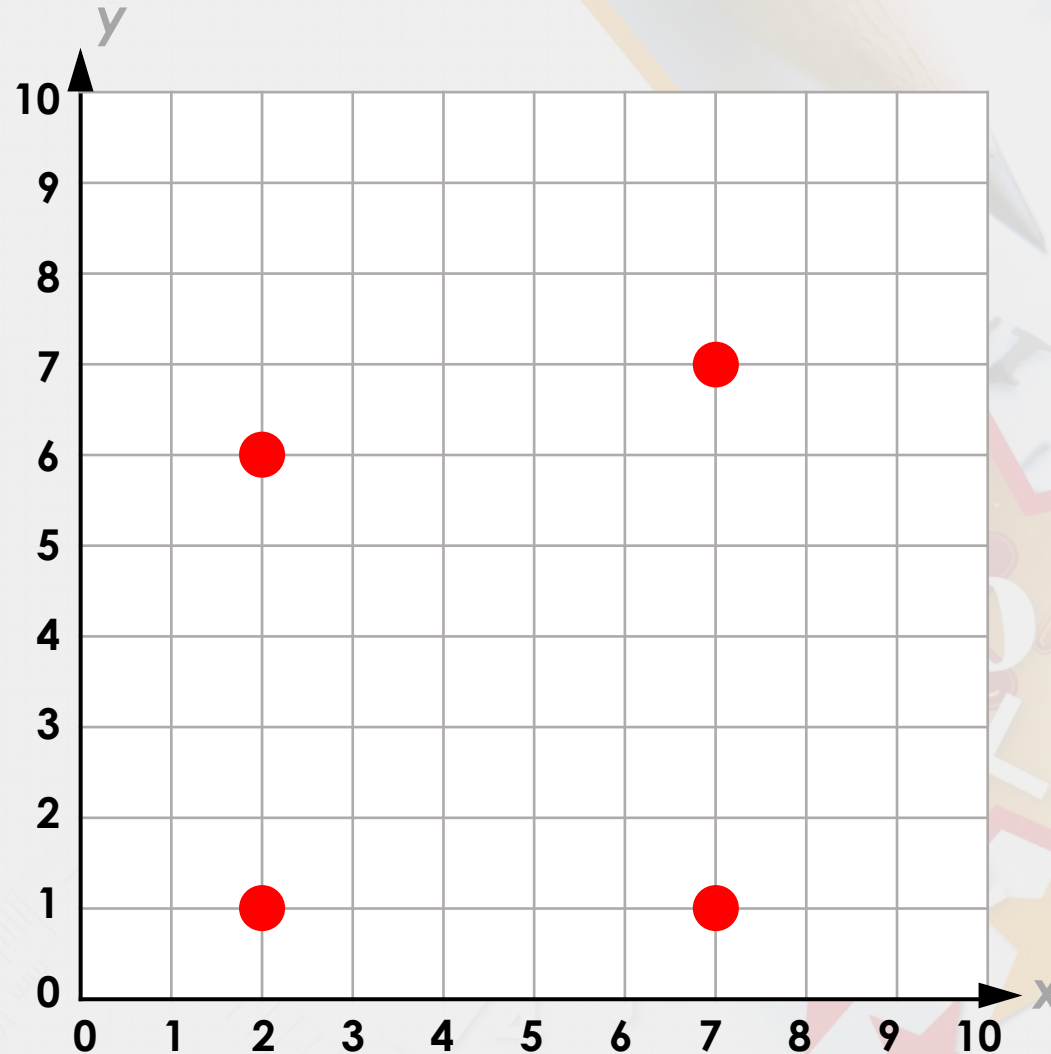
$(2, 1)$

$(7, 1)$

$(2, 6)$

$(7, 7)$

**False.**



## Reasoning 1

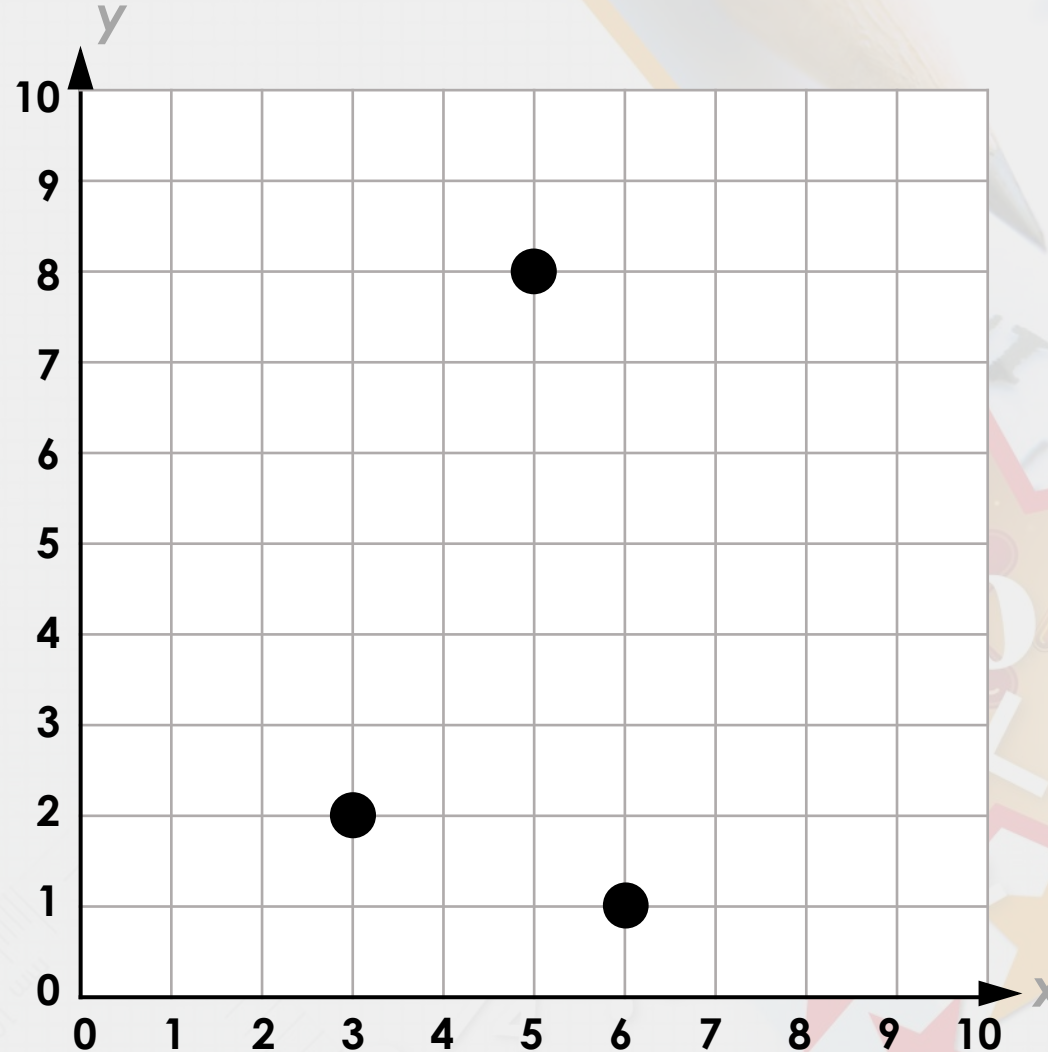
Chloe is plotting coordinates. Explain her mistake.

**(3, 2)**

**(5, 8)**

**(1, 6)**

Chloe has used the y axis first...



## Reasoning 1

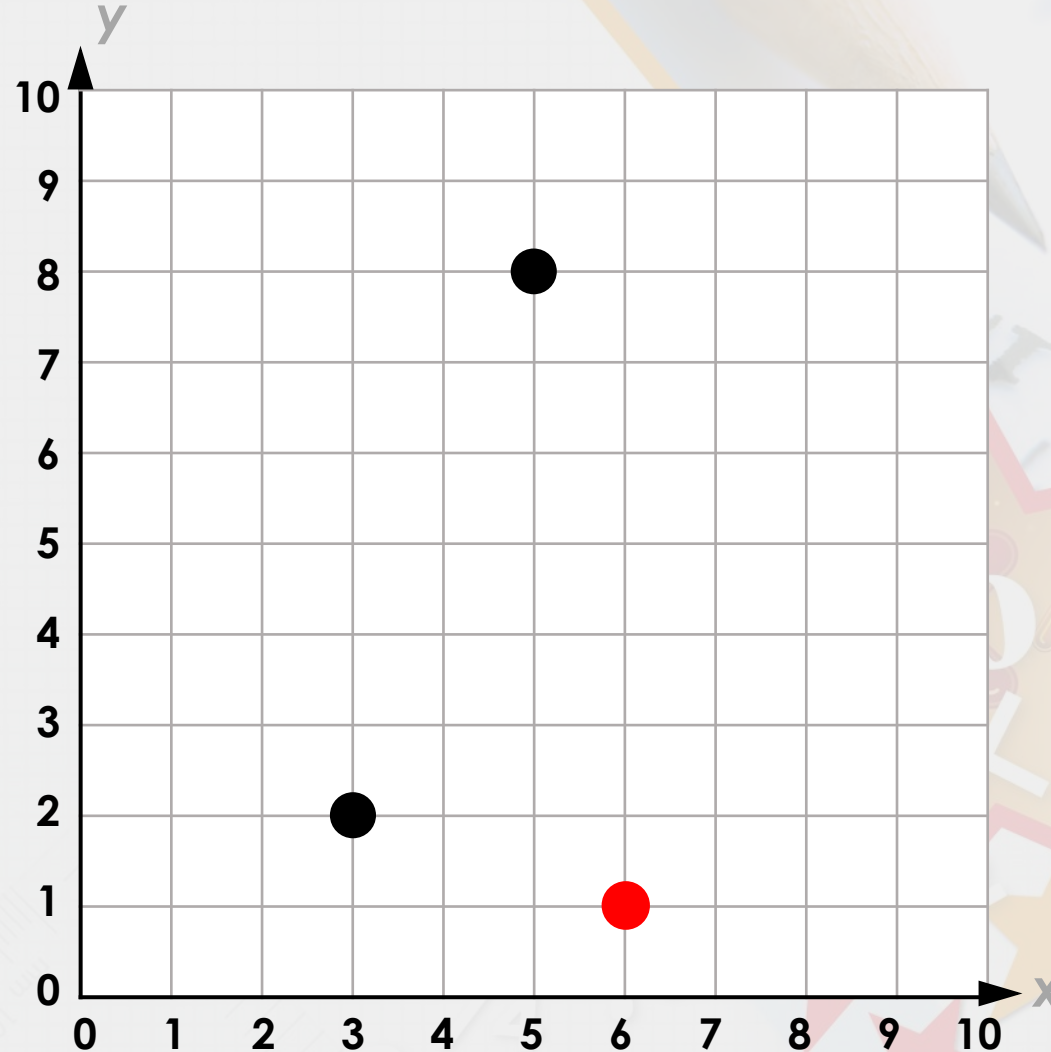
Chloe is plotting coordinates. Explain her mistake.

**(3, 2)**

**(5, 8)**

**(1, 6)**

Chloe has used the **y** axis first when plotting coordinate **(1, 6)**. She should use the **x** axis first when plotting coordinates.

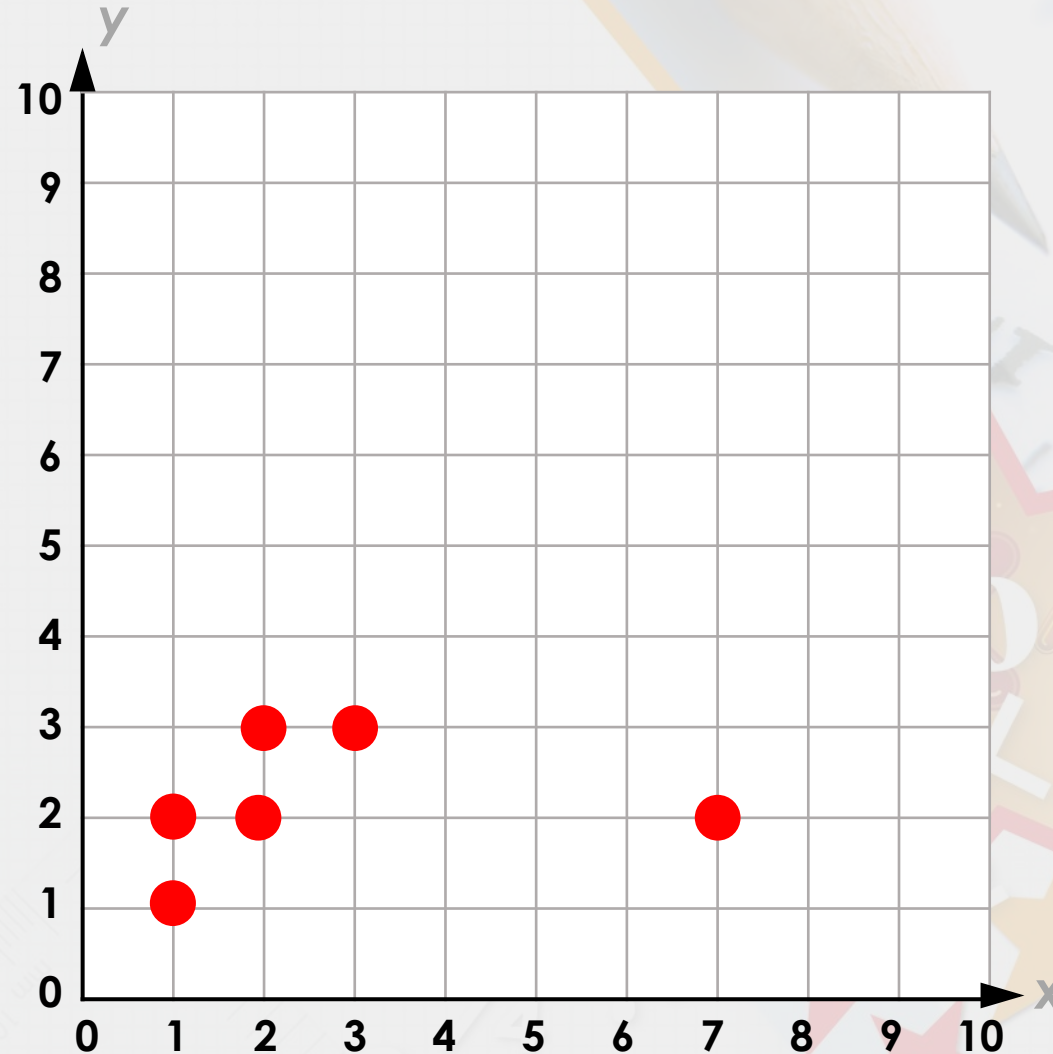


## Problem Solving 1

Identify and plot six pairs of coordinates, each with a total of less than 10.

Various answers, for example:

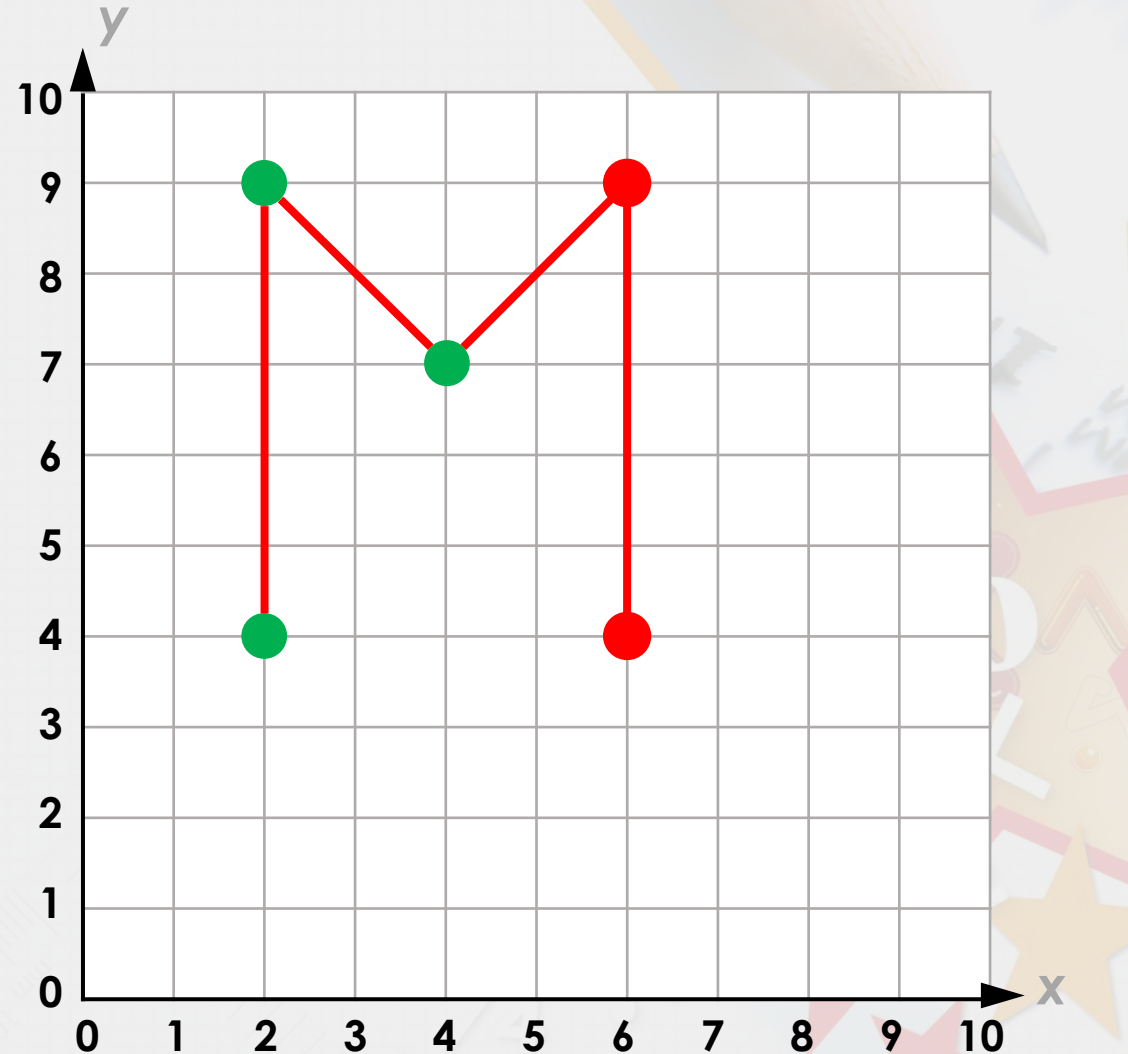
$(2, 3)$ ,  $(3, 3)$ ,  $(7, 2)$ ,  
 $(2, 2)$ ,  $(1, 1)$ ,  $(1, 2)$



## Problem Solving 2

Plot 2 missing coordinates to make a letter made up of straight lines.

Various answers,  
for example:

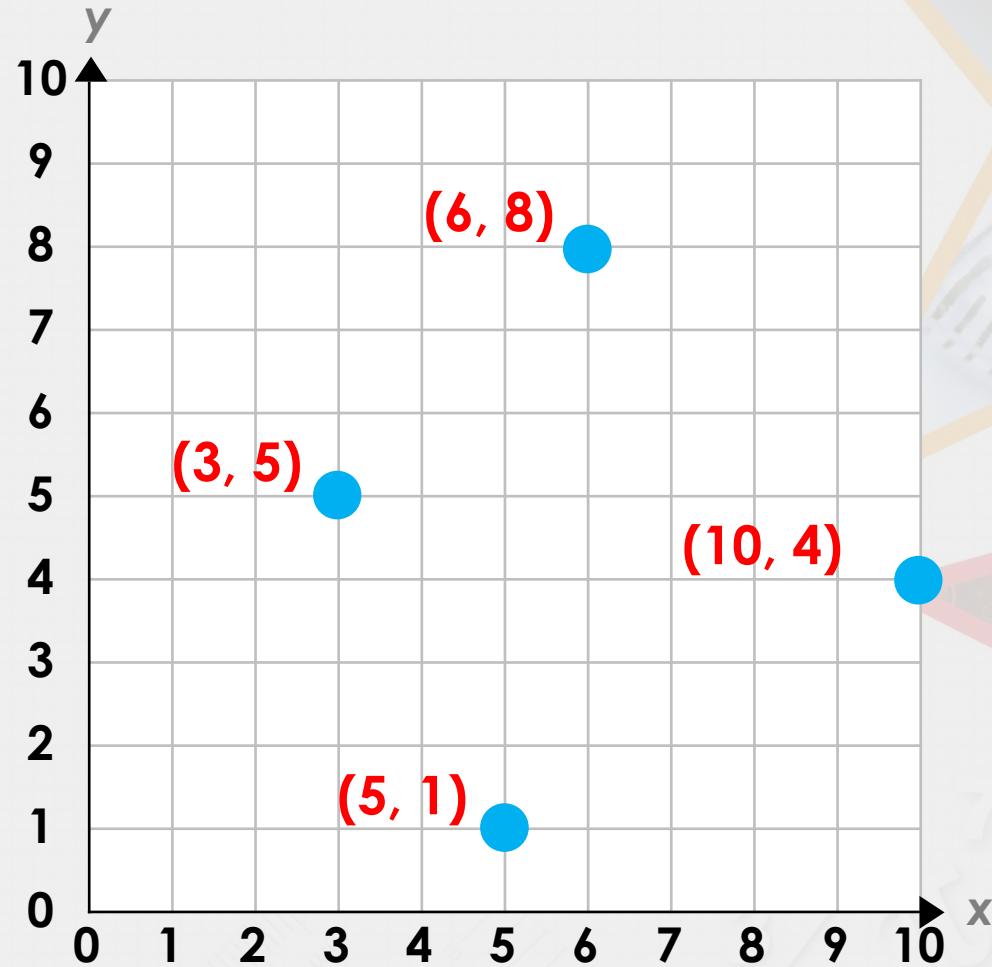




# Step 3 Answers

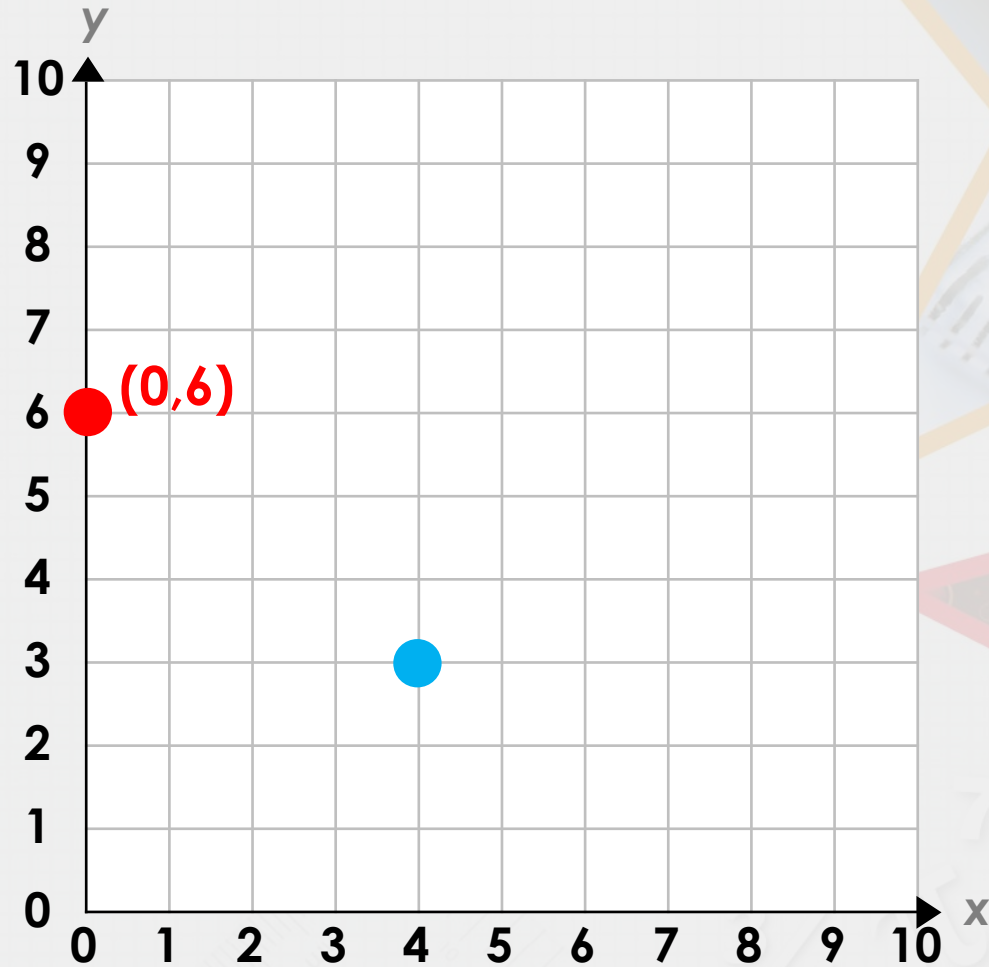
## Introduction

Identify the coordinates for each point on the grid.



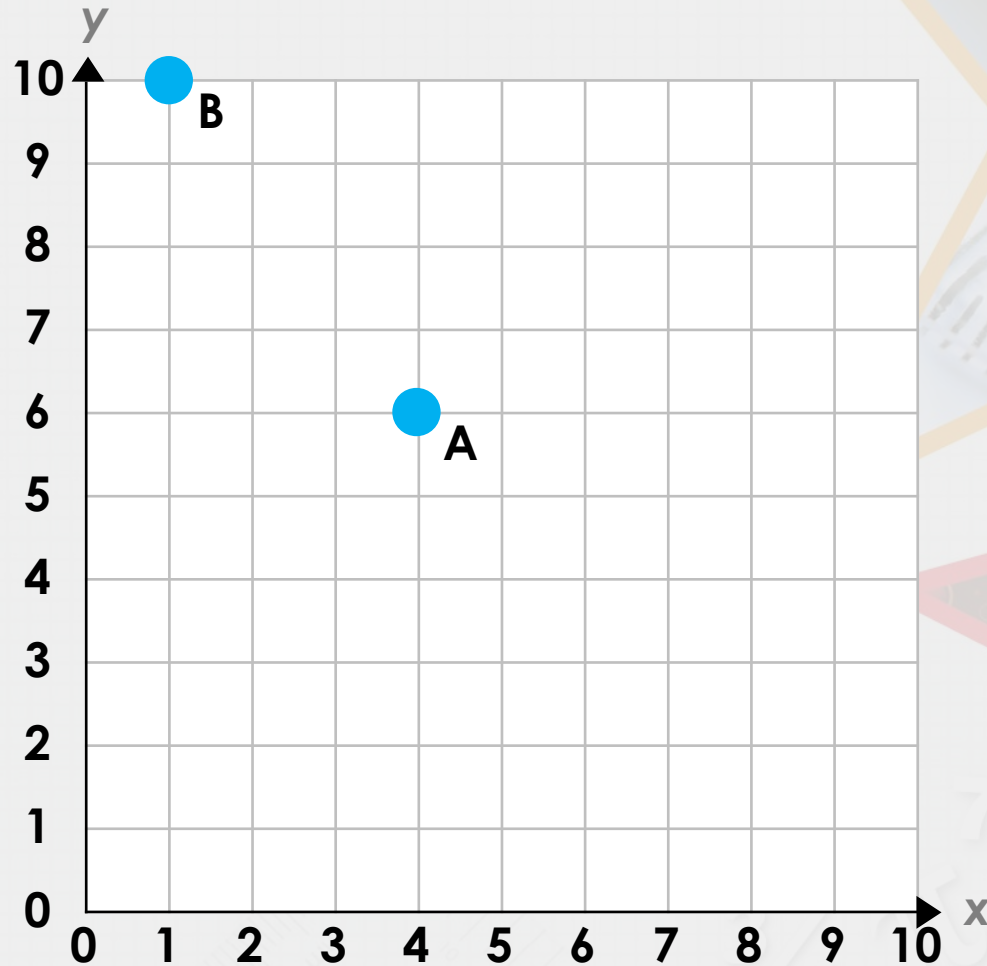
## Varied Fluency 1

Translate the point 4 left and 3 up. Record the new coordinates.



## Varied Fluency 2

**True or False? Point A has been translated 3 right and 4 up to point B.**

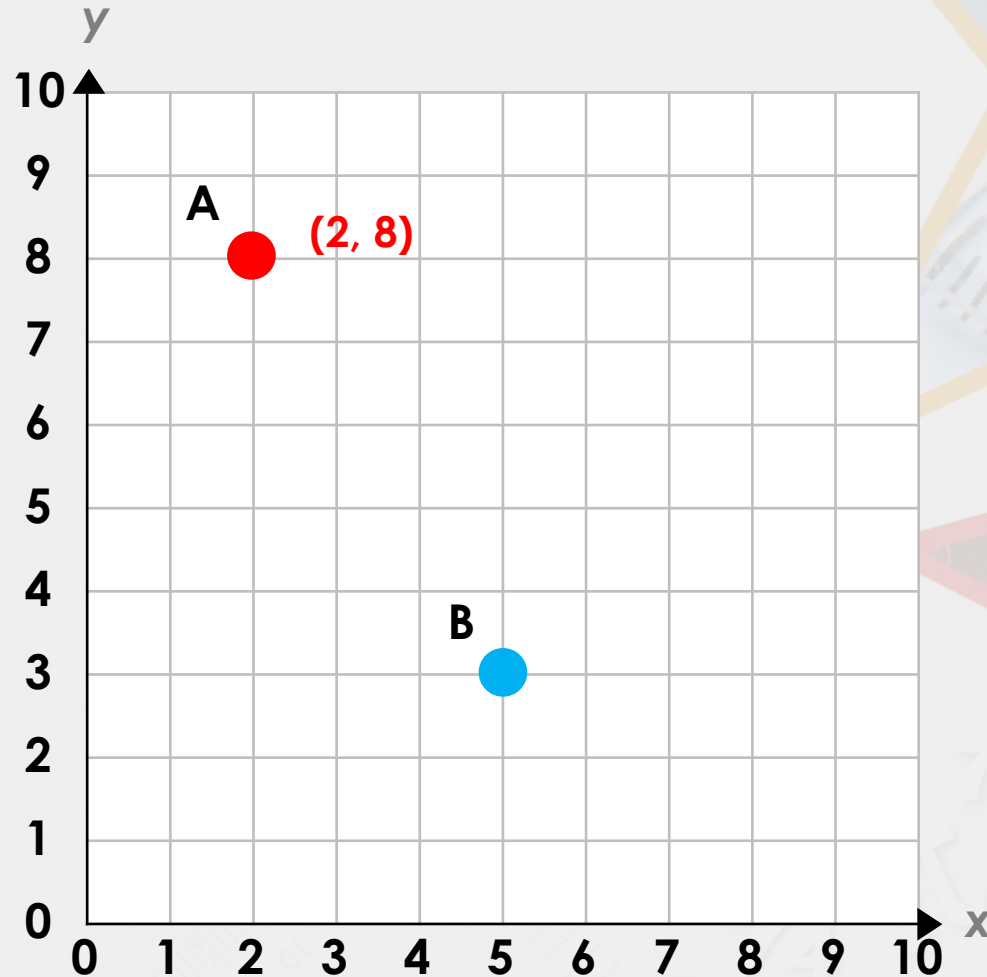


**False.**

**A has been translated 3 left and 4 up.**

### Varied Fluency 3

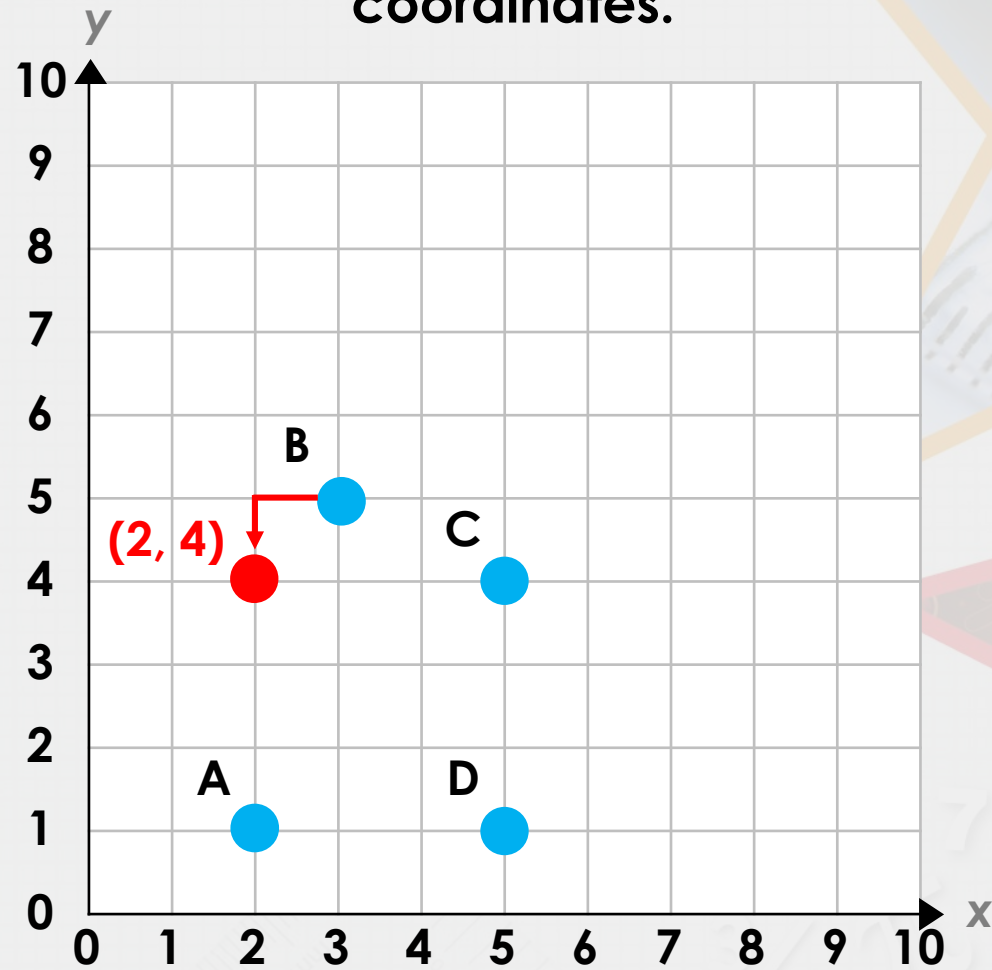
Point A has been translated 3 squares right and 5 squares down to point B. Record the original coordinates for point A.





### Problem Solving 1

Move one point to create the vertices for a square. Record the new coordinates.



## Reasoning 1

Points are placed on the following coordinates:

$(7, 5)$   $(4, 7)$   $(5, 4)$

Each of the points have been moved 2 squares in one direction and 3 squares in another.

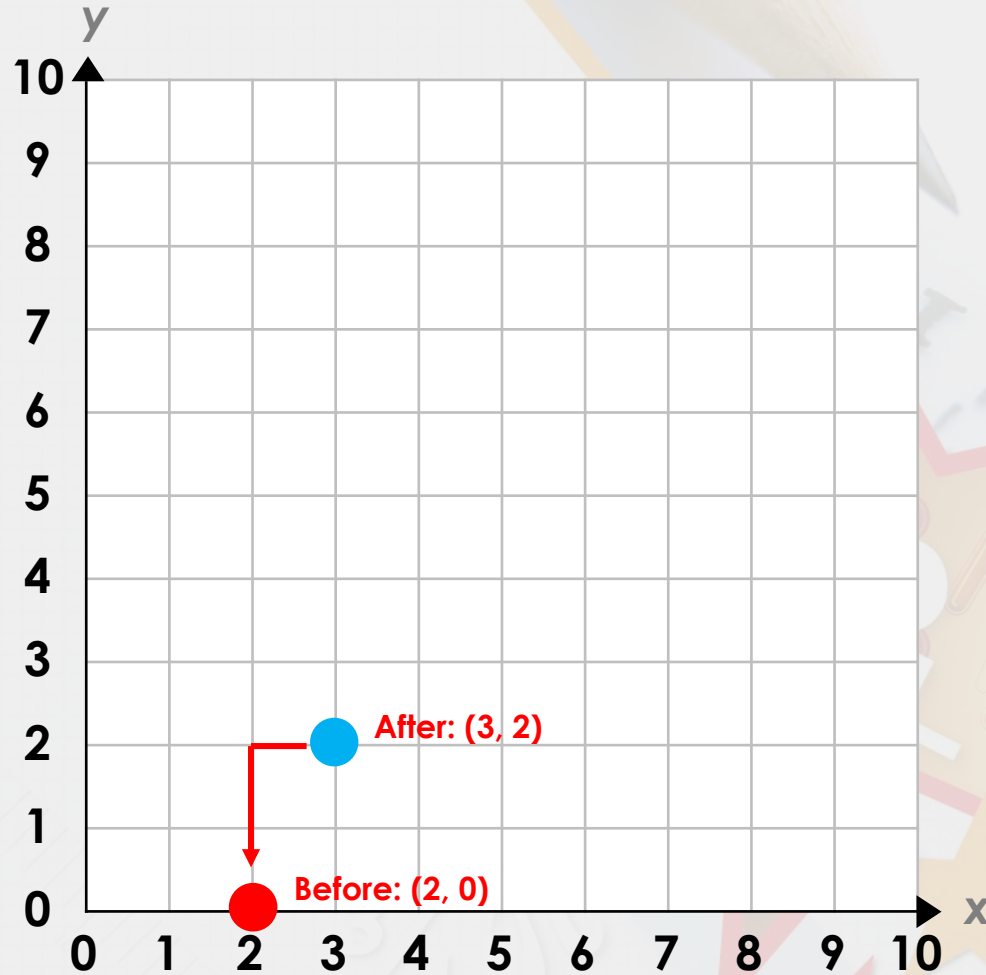
What could the new coordinates be?  
Find 2 possibilities.

$(9, 8)$ ,  $(6, 10)$ ,  $(7, 7)$  or  $(5, 2)$ ,  $(2, 4)$ ,  $(3, 1)$

## Reasoning 2

The point was moved 1 right and 2 up.  
Greg thinks the original co-ordinates were (4, 4).  
Is he correct? Prove it.

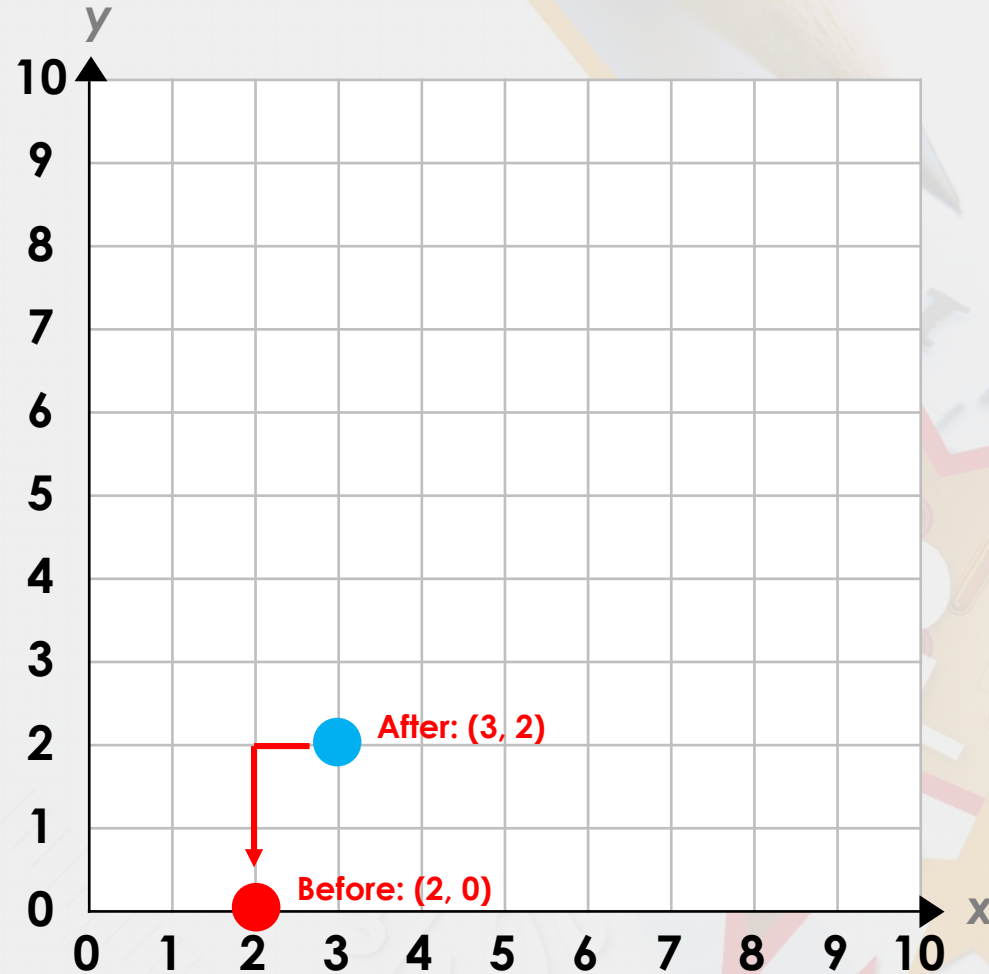
Greg is incorrect  
because...



## Reasoning 2

The point was moved 1 right and 2 up.  
Greg thinks the original co-ordinates were  $(4, 4)$ .  
Is he correct? Prove it.

**Greg is incorrect because he has translated the point on the grid 1 right and 2 up to find the coordinates  $(4, 4)$ . The original co-ordinates were  $(2, 0)$  which is 1 right and 2 up from  $(3, 2)$ .**

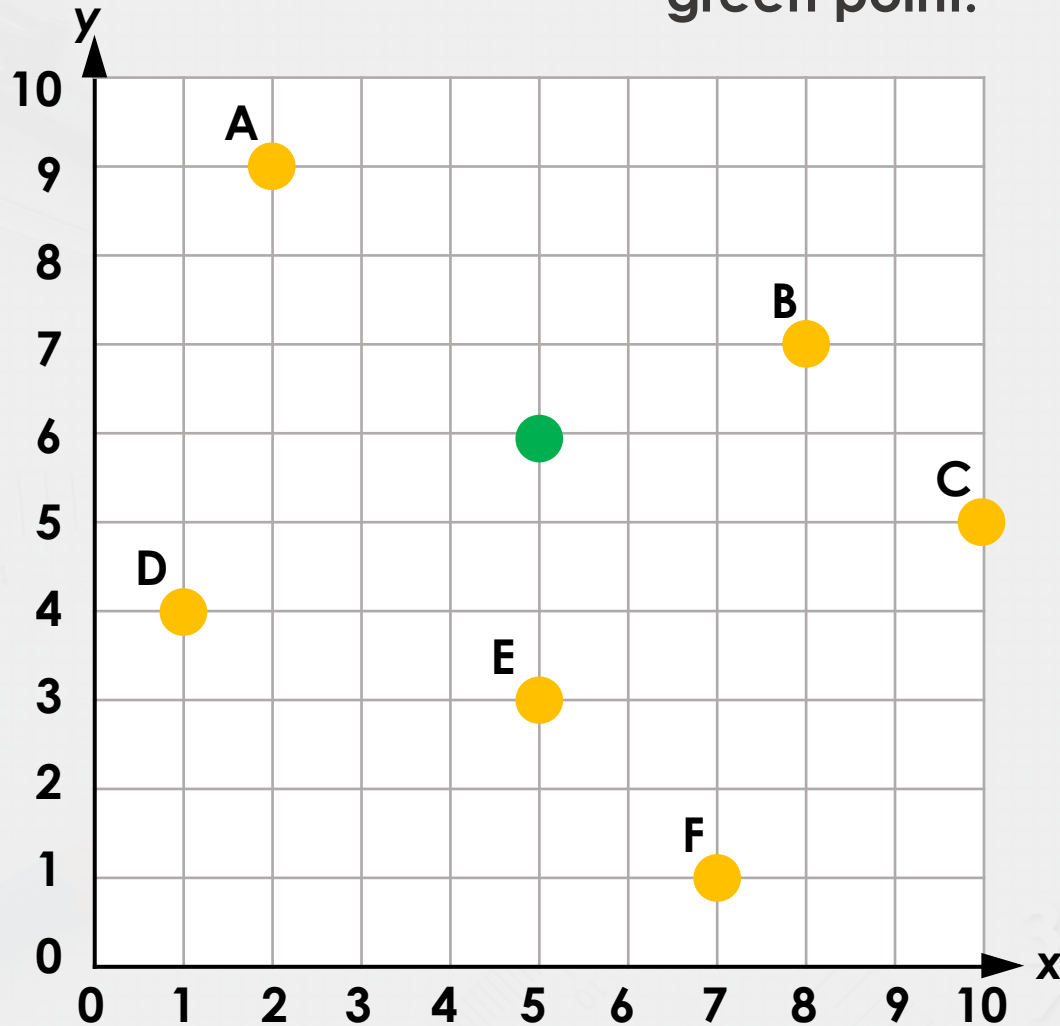


# Step 4 Answers



## Introduction

Describe how each of the orange points must move to get to the green point.



**A: 3 right and 3 down**

**B: 3 left and 1 down**

**C: 5 left and 1 up**

**D: 4 right and 2 up**

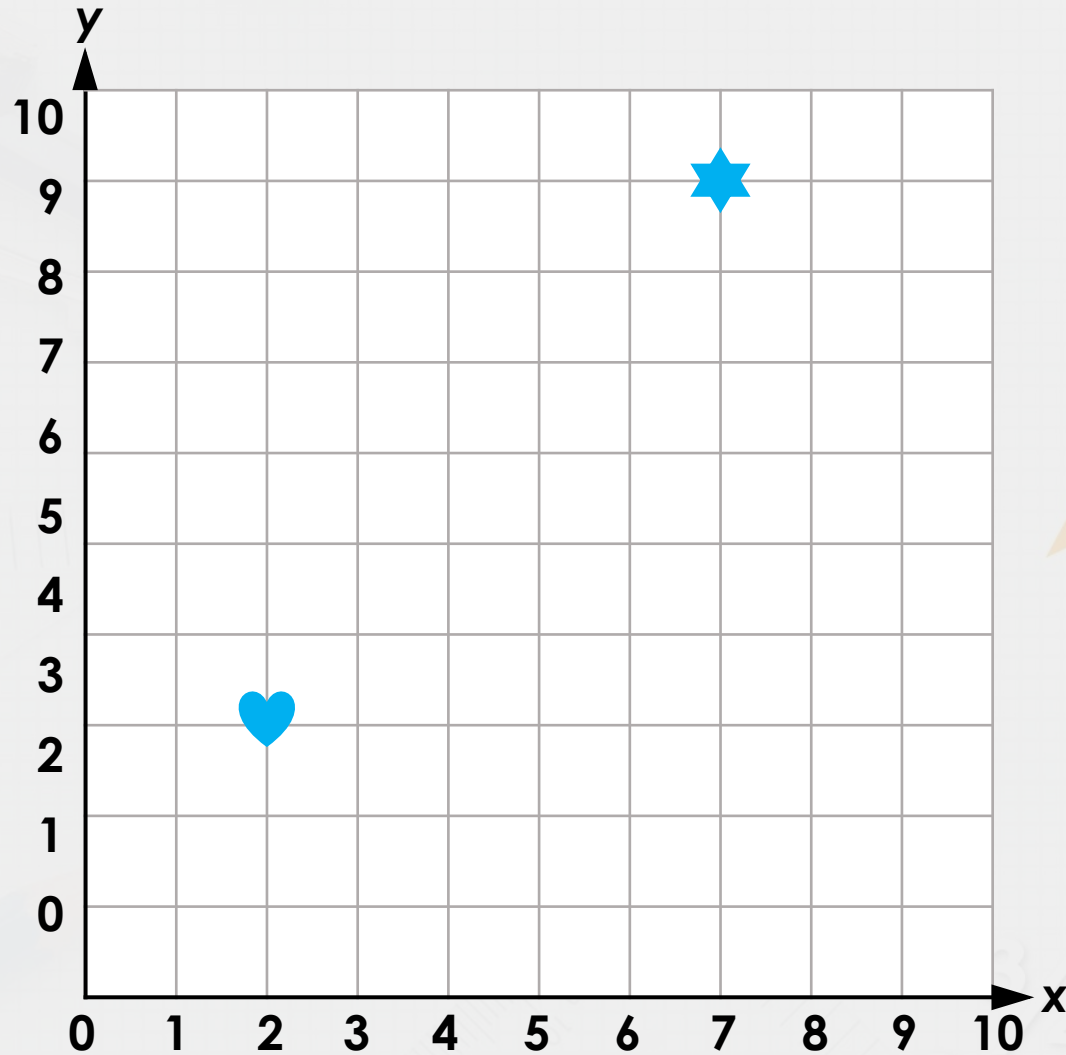
**E: 3 up**

**F: 2 left and 5 up**



## Varied Fluency 1

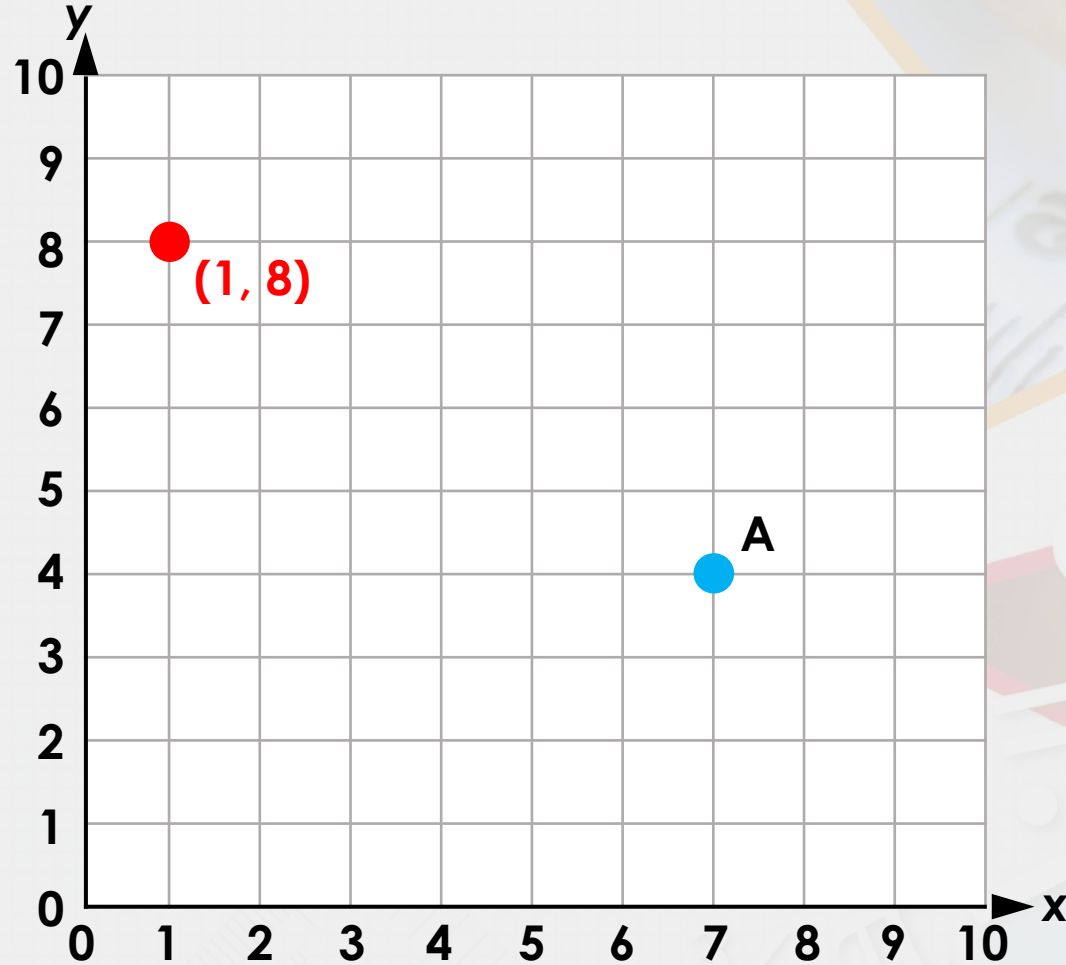
Describe the movement needed for the heart to get to the star.



**5 squares right  
and 6 squares  
up.**

## Varied Fluency 2

Translate point A 6 left and 4 up. What are the new coordinates?



### Varied Fluency 3

A point is plotted on a grid at  $(5, 8)$ .

It is translated 3 left and 4 down.

What are the new coordinates?

**$(2, 4)$**

## Varied Fluency 4

Rebecca has plotted a point on a grid at  $(2, 5)$ .

It is translated to  $(9, 7)$ .

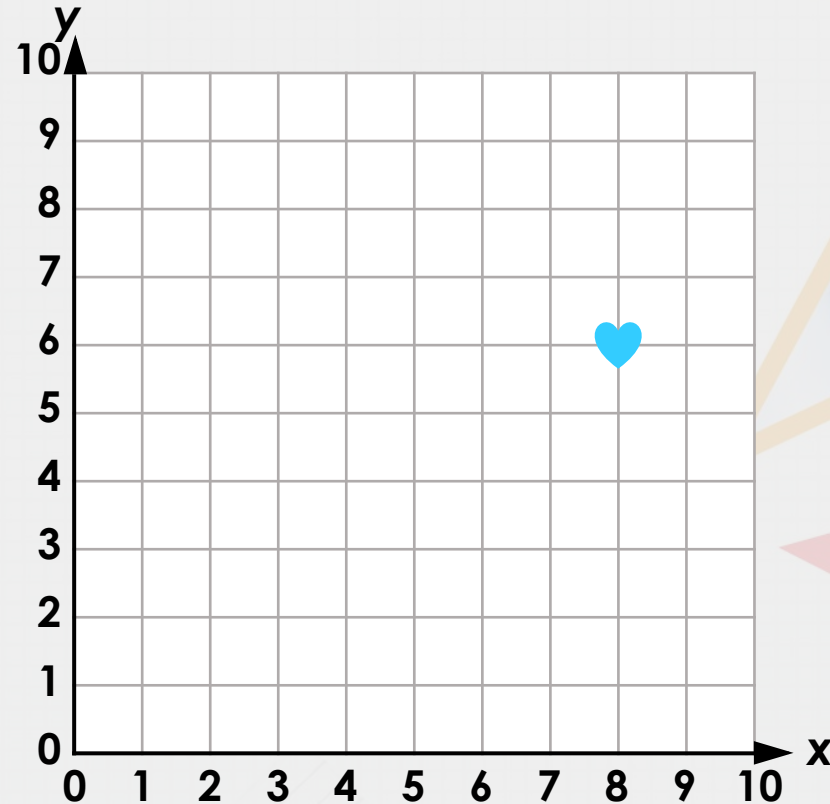
How is it translated?

**7 right and 2 up**



## Reasoning 1

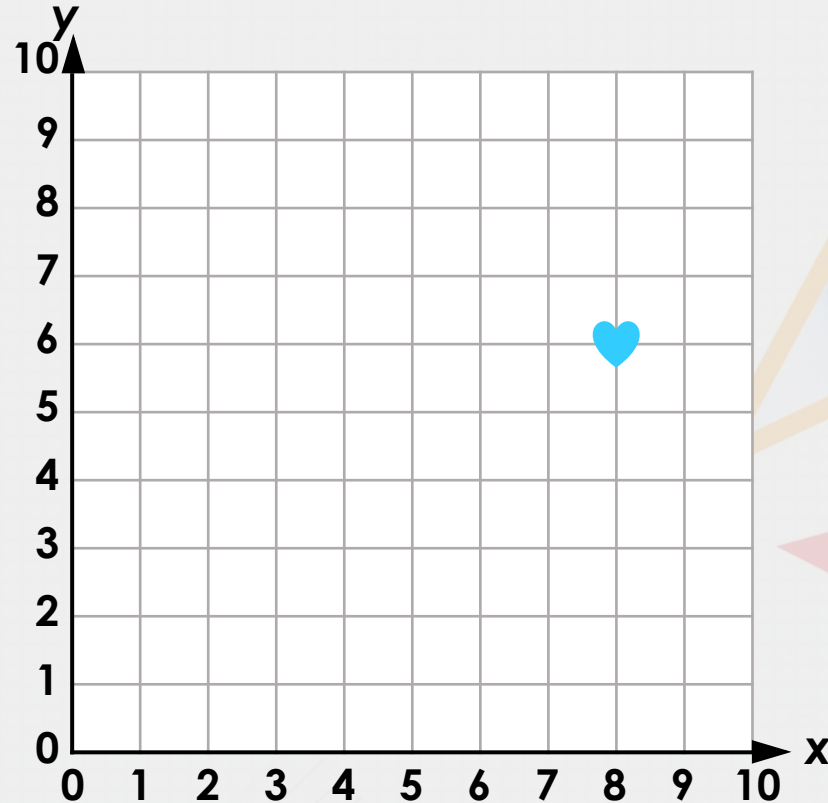
The heart has been translated. Its starting coordinates were  $(3, 9)$ .  
Kate says it has moved 3 right and 4 down.



Is she correct? Explain.  
Kate is incorrect because...

## Reasoning 1

The heart has been translated. Its starting coordinates were  $(3, 9)$ .  
Kate says it has moved 3 right and 4 down.



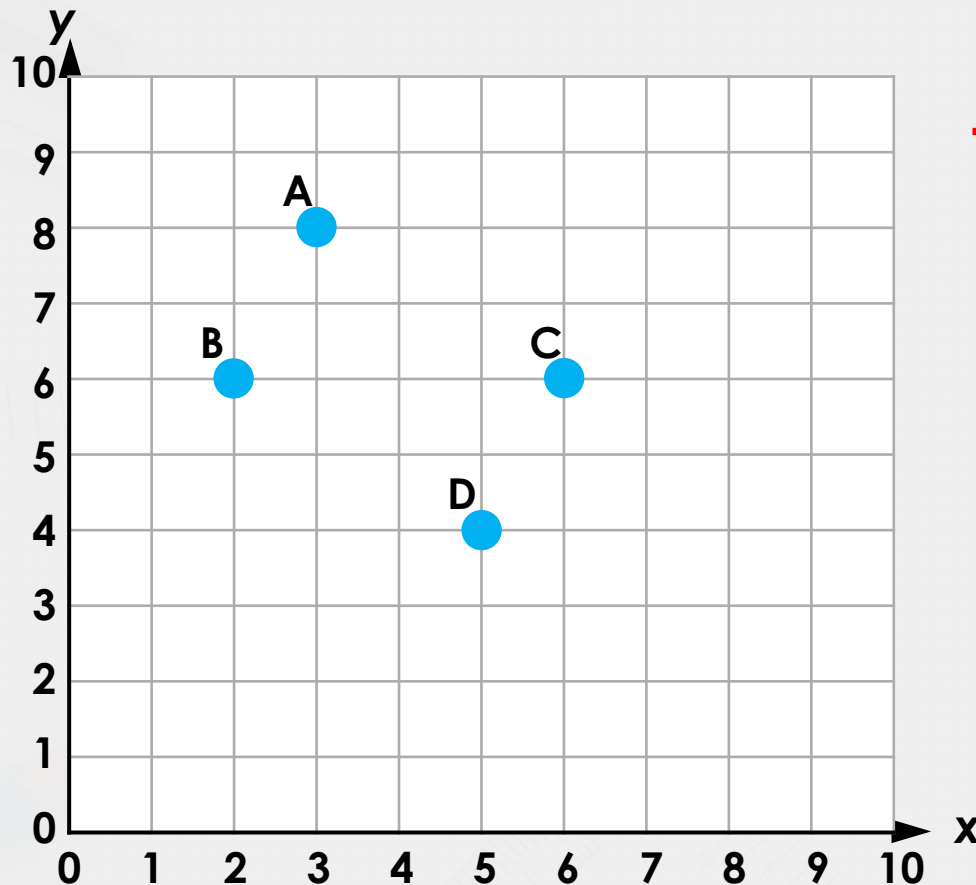
Is she correct? Explain.

**Kate is incorrect because the heart has moved 5 right and 3 down.**



## Problem Solving 1

Points A and B make exactly the same translations. Write the translations made and the coordinates of the start and finish positions of each point.



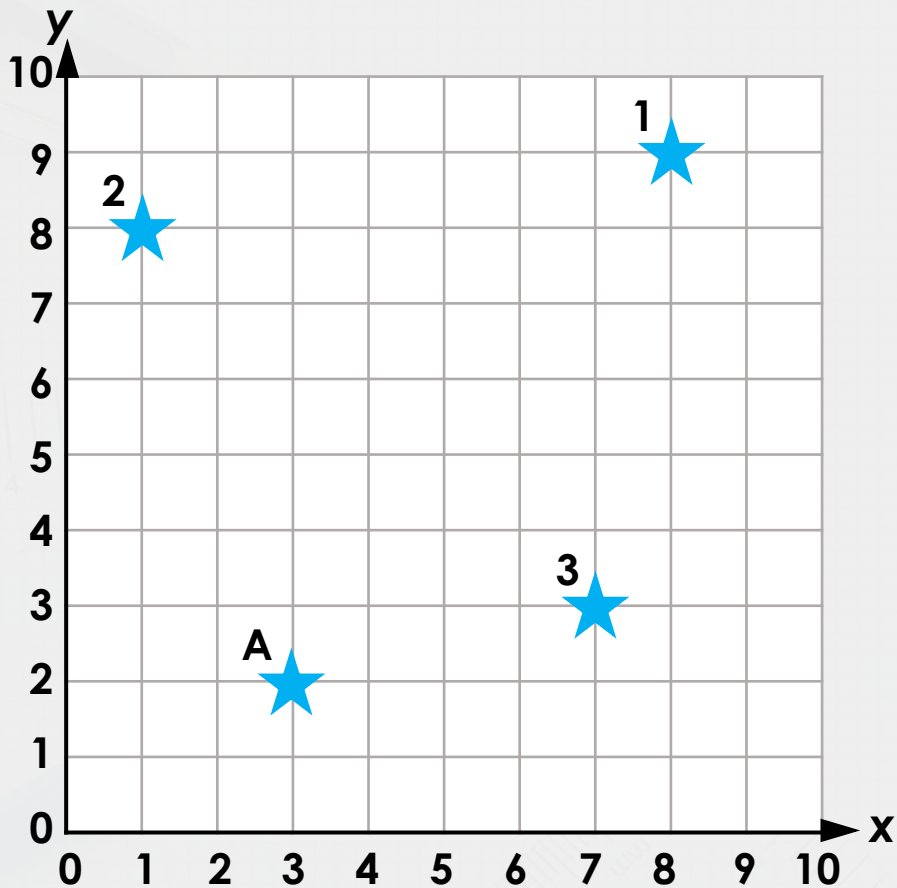
They have both moved 3 squares right and 2 squares down.

A (3, 8) has moved to C (6, 6).

B (2, 6) has moved to D (5, 4).

## Problem Solving 2

Star A has been translated three times. Match each numbered point to the correct translation statement.



**2A. 2 left and 6 up**

**3B. 4 right and 1 up**

**1C. 5 right and 7 up**