Year 4

Small Steps Guidance and Examples

Block 6 – Position & Direction

White Rose Maths

Year 4 – Yearly Overview

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number – Place Value				Number- Addition and Subtraction			Measurement - Length and Perimeter	Number- Multiplication and Division			Consolidation
Spring	Number- Multiplication and Division			Measurement - Area	Fractions				Decimals			Consolidation
Summer	Decimals		Measurement- Money		Time	Statistics		Geometry- Properties of Shape			Geometry- Position and Direction	Consolidation

Overview

Small Steps

Describe position

Draw on a grid

Move on a grid

Describe a movement on a grid

NC Objectives

Describe positions on a 2-D grid as coordinates in the first quadrant. Plot specified points and draw sides to complete a given polygon.

Describe movements between positions as translations of a given unit to the left/ right and up/ down.

Describe Position

Notes and Guidance

Children are introduced to co-ordinates for the first time and they describe positions in the first quadrant.

They read, write and use pairs of coordinates. Children need to be taught the order in which to read the axis.

Mathematical Talk

Which is the x axis?
Which is the y axis?
In which order do we read the axis?
Does it matter which way we read the numbers on the axis?
What are the co-ordinates for _____?
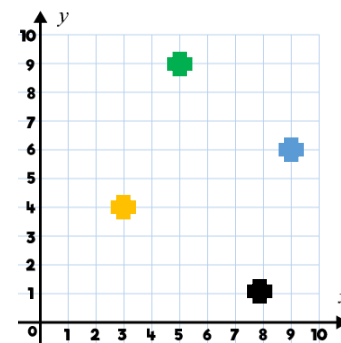Where would (__ , __) be?

Varied Fluency

1 Create a large grid using chalk/masking tape. Give the children co-ordinates to physically stand at. Encourage the children to move along the axis in the order they read them.
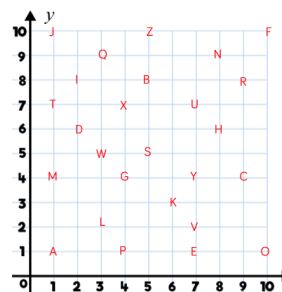
2 Write the co-ordinates for the shapes shown.

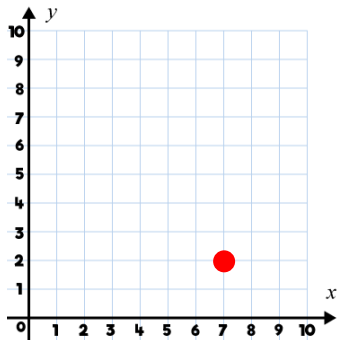(__ , __)   (__ , __)

(__ , __)   (__ , __)

3 Write out the co-ordinates that spell your name.

Describe Position

Reasoning and Problem Solving
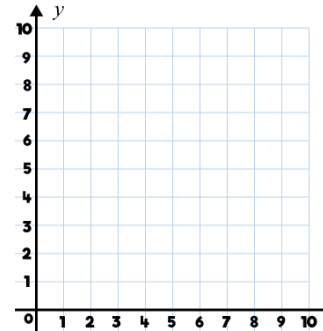

The circle is plotted at (7, 2)

Matthew

The circle is plotted at (2, 7)

Eden

Who is correct?
What mistake has one of the children made?

Matthew is correct. Eden has read the y axis before the x axis.

Plot the animals in the correct place on the grid.

(2, __)   (__, __)   (__, 9)

- The panda's co-ordinates are the same on both axis and come between 4 and 6.
- The x co-ordinate for the horse is two more than the panda.
- The y c—ordinate for the bird is 3 more than the panda.

Bird: (2, 8)

Panda: (5, 5)

Horse: (7, 9)

Draw on a Grid

Notes and Guidance

Children develop their understanding of co-ordinates by plotting given points on a 2D grid.

They read, write and use pairs of coordinates. Children need to be taught the order in which to read the axis and plot the points.

Mathematical Talk

Which is the x axis?
Which is the y axis?
In which order do we read and plot the co-ordinate?
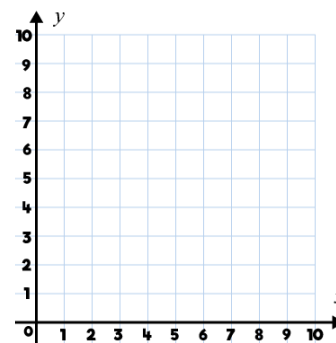Does it matter which way we plot the numbers on the axis?
What are the co-ordinates for _____?
Where would (__, __) be?
Can you show _____ on the grid?

Varied Fluency

1 Draw the shapes at the correct points on the grid.
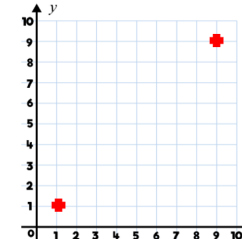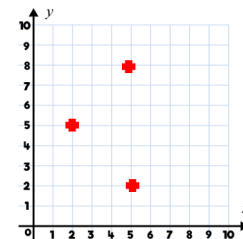
(7, 8)   (4, 6)

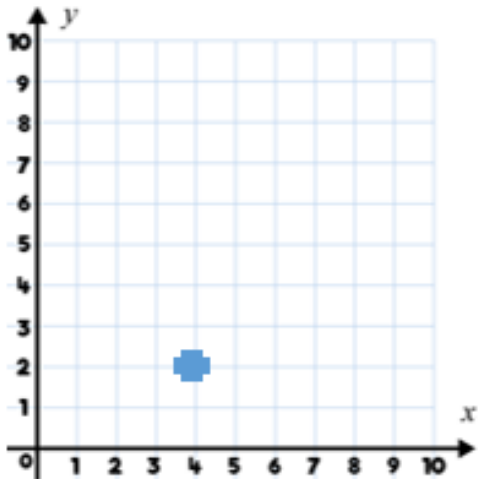(9, 1)   (10, 0)

2 Plot the final points to create squares.

3 Plot these points on a 2D grid.
(2, 4)   (4, 2)   (5, 8)   (7, 6)

What shape has been created?

Draw on a Grid

Reasoning and Problem Solving

What shapes could be made by plotting three more points?

The children could make a range of quadrilaterals dependent on where they plot the points.
If children plot some of the points in a line they could make a triangle.

When you are plotting a point on a grid it does not matter whether you go up or across first as long as you do one number on each axis.

Arjun

Do you agree with Arjun? Convince me.

Arjun is incorrect. The x axis must be plotted before the y axis. Children prove this by plotting a pair of co-ordinates both ways and showing the difference.

Always, Sometimes, Never.

The number of points plotted is the same number of vertices the shape has.

Sometimes.
If points are plotted in a straight line they will not create a vertex.

Move on a Grid

Notes and Guidance

Children move images, shapes and points on a co-ordinate grid following specific directions using language such as: left/right and up/down.

They apply their understanding of co-ordinates when translating by starting with the left/right translation followed by up/down.

Mathematical Talk

Can you describe the translation?

Can you describe the translation in reverse?

Why do we go left and right first when describing translations.
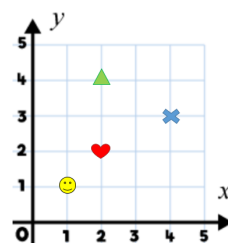
What a re the co-ordinates for point _____?

Write a translation for D for your partner to complete.

What do you notice about the new and old co-ordinates?

What is the same and what is different about the new and original co-ordinates?

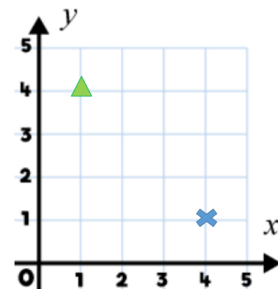## Varied Fluency

1. Write the co-ordinates for each shape:

❤ = (__ , __)   ✖ = (__ , __)

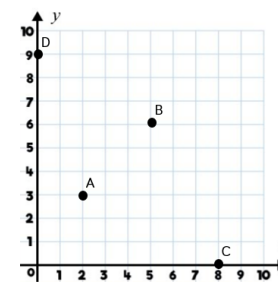🔺 = (__ , __)   😊 = (__ , __)

2. Translate 🔺 2 right and 3 down.
Record the co-ordinates before (__ , __)
and after (__ , __)
Translate ✖ 3 left and 2 up.
Record the co-ordinates before (__ , __)
and after (__ , __)

3. Translate A 6 right and 3 down.
Record the co-ordinates before (__ , __)
and after (__ , __)
Translate B and C 4 left and 3 up.
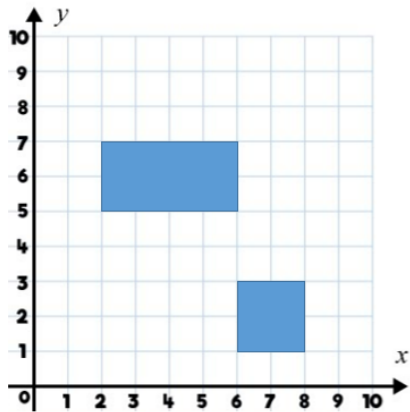Record the co-ordinates before (__ , __)
and after (__ , __)

Move on a Grid

Reasoning and Problem Solving

Translate the rectangle 2 left and 3 up. Record the co-ordinates of each vertices for the rectangle before and after the translation.

The square has already been translated 3 right and 5 down.
Record the new and original co-ordinates of each vertices for square.

Answer:
Before:
(2,5) (2,7) (6,5) (6,7)
After:
(0,8) (0,10) (4,8) (4,10)

New:
(6,1) (6,3) (8,1) (8,3)
Original:
(3,6) (3,8) (5,6) (5,8)

Points have been placed on the following co-ordinates:

(0,4) (4,0) (7,2) (2,7)

Each point is translated in the same way. They are each translated 4 right and 7 up. What would the new co-ordinates be?

Write a question similar to this for your partner.

Answer:
(4,11) (8,7)
(11,9) (6,14)

Describe Movement

Notes and Guidance

Children describe the movement of images, shapes and points on a co-ordinate grid using specific language such as: left/right and up/down.

They apply their understanding of co-ordinates when describing translations and start with the left/right translation followed by up/down.
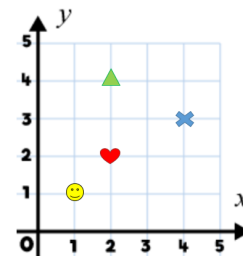
Mathematical Talk

Can you describe the translation?

Can you describe the translation in reverse?

Why do we go left and right first when describing translations.

What are the co-ordinates for point _____?

Varied Fluency

1 Write the new co-ordinates for each shape after they have been translated 2 right and 3 up:

♥ = (__ , __)   ☺ = (__ , __)

Write the new co-ordinates for each shape after they have been translated 2 right and 3 down:

▲ = (__ , __)   ✖ = (__ , __)

2 Use the grid above to describe the translation from:

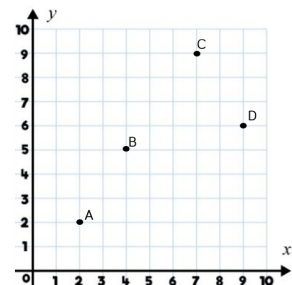▲ to ✖   ♥ to ☺   ♥ to ✖

▲ to ♥   ☺ to ✖   ▲ to ☺

3 Describe the translation from:
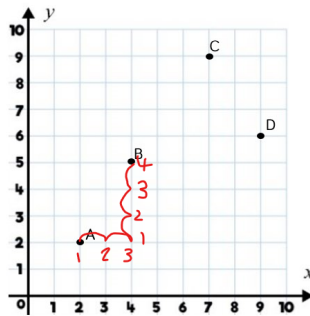A to B   B to C   C to D   D to A

Plot points E, F and G and describe the translations from A to your new points, then from B.

Describe Movement

Reasoning and Problem Solving

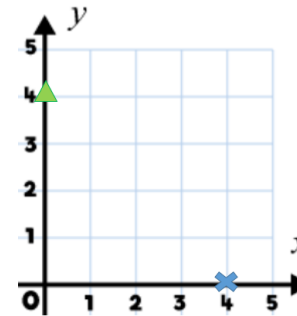Justin has described the translation from A to B as 3 right and 4 up.

Can you explain his mistake?

 to is 4 right and 4 down.

 to is 4 left and 4 up.

Can you plot other points where you travel the same left or right as you travel up or down?
What do you notice about the co-ordinates?