Coordinates Prior Assessment Questions 3 and 4.

Objective: I use coordinates given and my knowledge of shape to find missing coordinates.

NC SH 6: describe positions on the full coordinate grid (all four quadrants)

Teacher Input Ideas:

Recap with the children questions 3 and 4, discussing any difficulties that the children have. Share with the children a blank 4 quadrant grid. Encourage the children to come and plot points either created by themselves or ones that you have given. Encourage the children to create a shape with you using coordinates given by yourself. Encourage the children to discuss what the shape is and its properties. Explore how the coordinates created the shape. Now only give the children 3 coordinates for a quadrilateral. Tell the children what the quadrilateral is going to be and encourage the children to work out what the 4th coordinate should be. Allow the children time to discuss how they worked this out with a partner. Encourage the use of key vocabulary such as x and y axis, plot, 4 quadrant, vertex, angle, parallel, right angle and other key shape names.

For those children that are ready to work out missing coordinates from an image (such as Q4) present the image from the prior learning assessment. Look at this together and establish that we do not have the grid to help us just the coordinates and an image. Ask the children to suggest ways they could work this out. What do they know about the shape? What properties does it have? How can this help? Can you explain how coordinates have we been given can be used to help?
Work out the answer together. If children require more support look at the first question together in the yellow activity.

Practice Activities

Purple Practice: most suitable for children who made errors in Question 3 of the prior learning assessment.

This task requires the children to apply their knowledge of plotting points accurately onto a 4-quadrant grid and apply knowledge of the properties of shapes to complete each shape and find the missing coordinate. Encourage the children to plot accurately first and then visualise where the last vertex will be using their knowledge of shape. Children should also be encouraged to use the coordinates given to work out where the last coordinate will be, by looking at the difference in the coordinates that create vertices/sides and apply this knowledge to work out the missing coordinate.

Green Practice: most suited for children who made errors in Question 3 of the prior learning assessment and would benefit from challenging clues to workout missing coordinates of shapes on a grid.

The children are presented with a grid and challenging clues that reveal some of the coordinates and the properties of each shape. The children are to find missing coordinates and work out some of the shapes that they have created. The children should be encouraged to use the lines of one of each shape's sides in the grid to help them to create the different shapes.

Yellow Practice: Most suited for children who made errors with Q4 in the prior learning assessment and would benefit from finding missing coordinates from images.

For this activity, the children are presented with 5 images of shapes and some of the coordinates of their vertices. The children should be encouraged to use the coordinates that they have and their knowledge of the properties of shape to work out the missing coordinates. Encourage the children to think about symmetry, equal sides, angles, parallel sides and the difference in coordinates to help work out the missing information.

Mastery: Guess My Shape

This mastery task is a game to play in partners or small teams. The children should think of a shape and draw this onto either the grid provided or their own grid. Children should then provide clues and information to their partners to help them to work out where the shape is on the grid and what the shape is. The partner starts with 10 points. Each time they need a clue, a point is used. Children should be encouraged to use clues such as revealing some of the properties, discussing the size of the angles and revealing different coordinates.

Children to then swap roles. Children can record their points each round to see who wins.

Answers:

Purple:

1) -1, -3
2) 0, -2
3) -8,8
4) 4, 6
5) -6-8

Green:

1) This shape has two pairs of parallel sides. The coordinate for one vertex is -3, 4. The other vertex is the same coordinate for the x axis but 4 squares above. The other vertex is the same coordinate as the y axis but 5 squares to the left.   What is the shape? Rectangle

2) This shape has no right angles and is a quadrilateral. The coordinate for one vertex is 6,0 and the opposite vertex is 8,-8. The missing angle is an obtuse angle. The shape has 2 pairs of parallel sides. What is the missing coordinate? What is the shape? 6, -6, Parallelogram

3) This shape is a triangle. One vertex has the coordinate of 8, 2. The triangle has a right angle. Work out the missing coordinate. 8, 10 or 1, 2
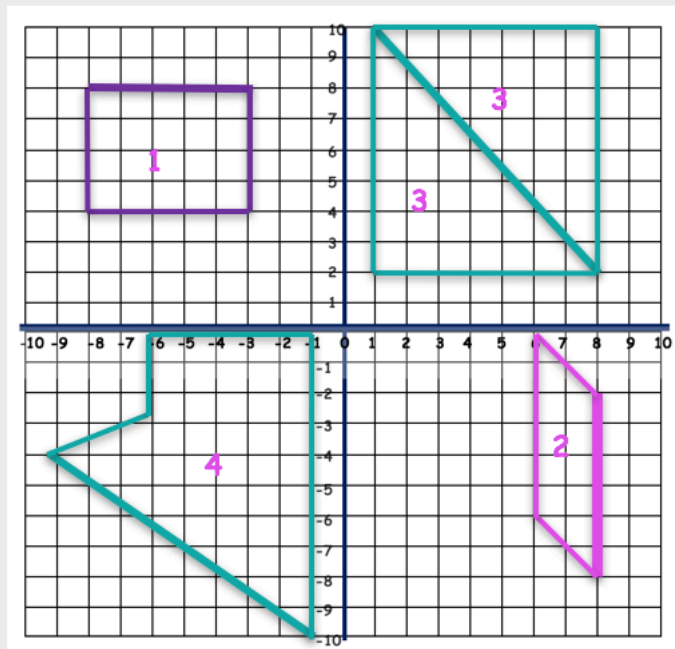
4) This shape is an irregular polygon. One vertex has the coordinate of -6,-3. The adjacent vertex is -9-4. The next vertex is 4 squares up and 3 squares to the right. The last vertex should be placed so that there are 2 right angles in this shape. What is the last coordinate? What is the shape?
-1, 0   Pentagon

Yellow:

a) 4,5   b) -3 -4   c) 10, 4

d) -9, -4   e) 7, 5

Purple Practice

Lo: I can find missing coordinates using my knowledge of shape and the information I have been given.

Look at the coordinates given below for each shape. Plot the coordinates on to the grid and then find the missing coordinate in each shape.
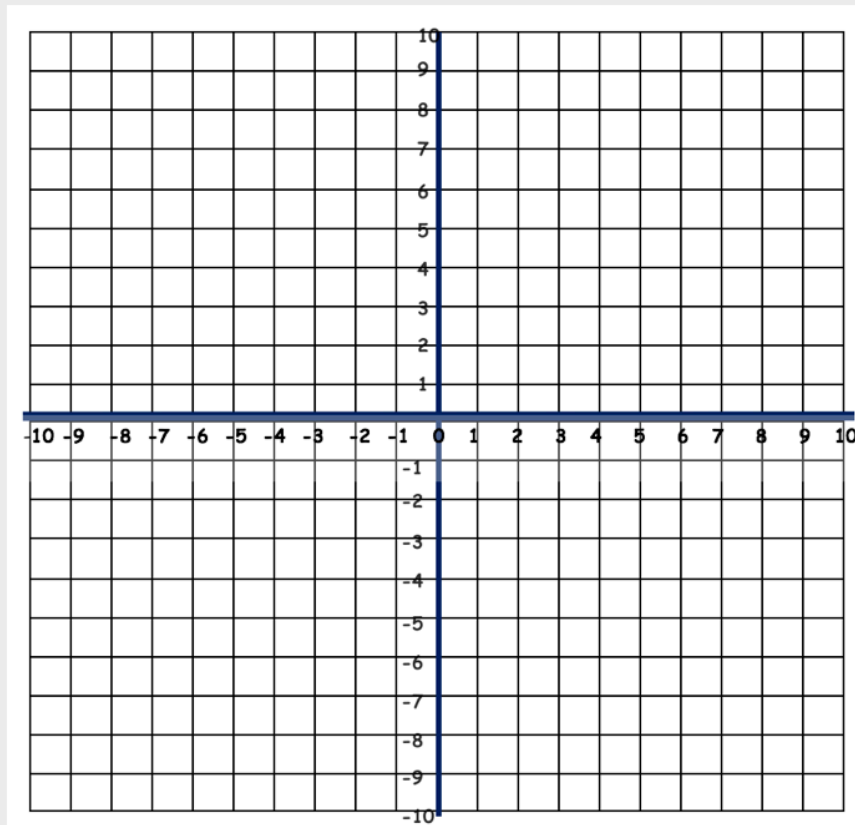
1. Square (-7, -3) (-7, 3) (-1, 3)

2. Rectangle (0 ,0) (7,0) (7, -2)

3. Parallelogram (-2, 8) (-3, 5) (-9, 5)

4. Isosceles triangle (0,6) (2,10)

5. Hexagon (-10, -8) (-9, -6) (-7, -6)

   (-9, -10) (-7, -10)

Using these 2 coordinates as a starting point, draw your own quadrilateral.

(8, - 9) (5 – 7)

On the grid below, 4 shapes have started to be drawn. Look at the clues for each shape to workout which side belongs to which shape. Complete the shapes and work out what they are and any missing coordinates.
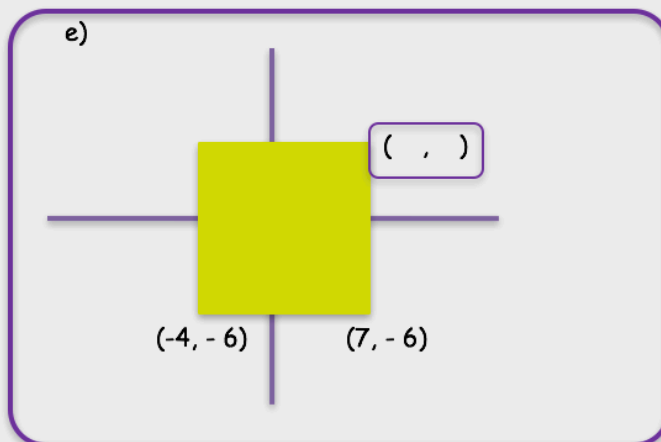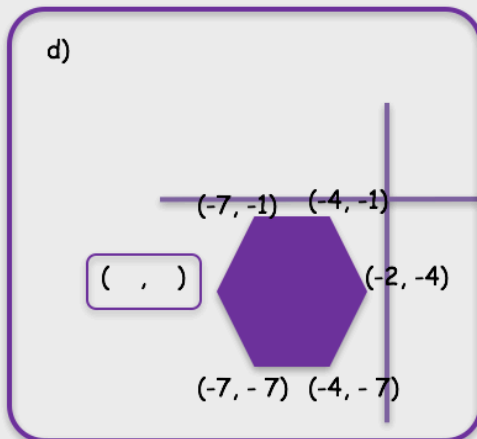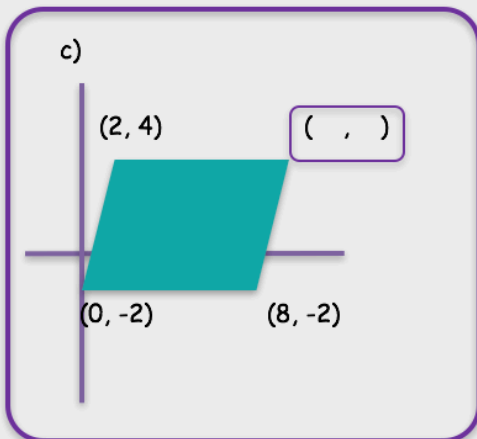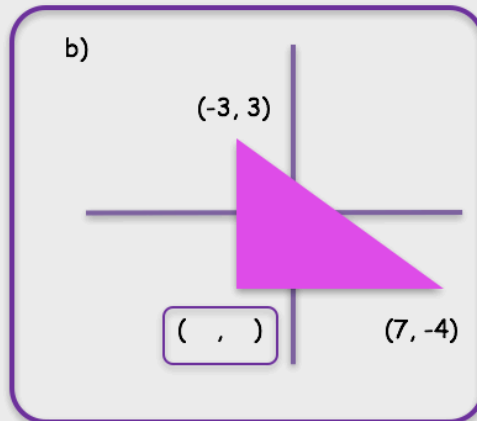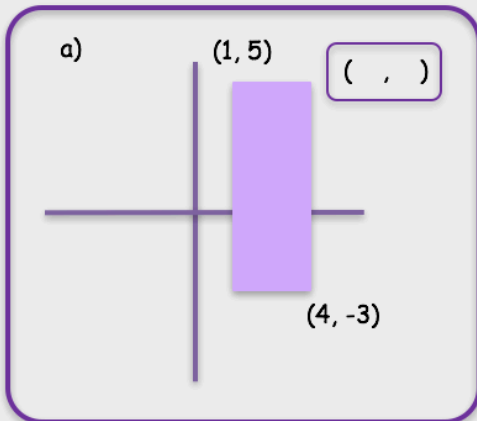
1) This shape has two pairs of parallel sides. The coordinate for one vertex is -3, 4. The other vertex is the same coordinate for the x axis but 4 squares above. The other vertex is the same coordinate as the y axis but 5 squares to the left.   What is the shape?

2) This shape has no right angles and is a quadrilateral. The coordinate for one vertex is 6,0 and the opposite vertex is 8,-8. The missing angle is an obtuse angle. The shape has 2 pairs of parallel sides. What is the missing coordinate? What is the shape?

3) This shape is a triangle. One vertex has the coordinate of 8, 2. The triangle has a right angle. Work out the missing coordinate.
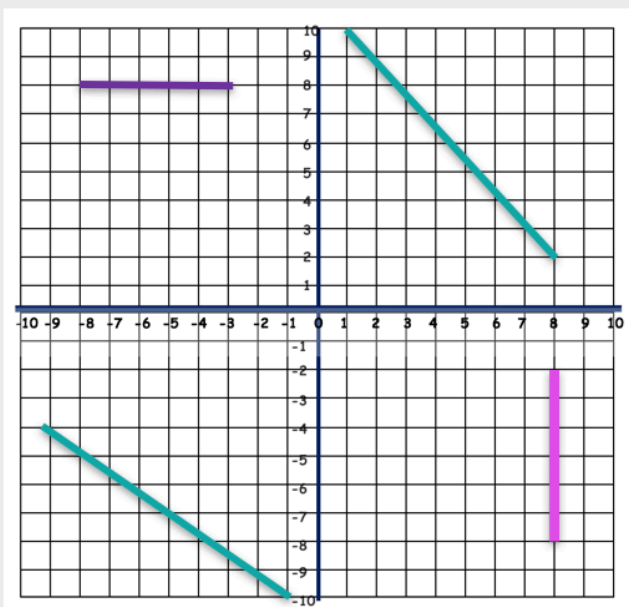
4) This shape is an irregular polygon. One vertex has the coordinate of -6,-3. The adjacent vertex is -9-4. The next vertex is 4 squares up and 3 squares to the right. The last vertex should be placed so that there are 2 right angles in this shape. What is the last coordinate? What is the shape?

Yellow Practice

LO: I can work out missing coordinates from coordinates given.

Use the information provided to work out the missing coordinates in each question.

a)

(1, 5)   (,)

(4, -3)

b)

(-3, 3)

(,)   (7, -4)

c)

(2, 4)   (,)

(0, -2)   (8, -2)

d)

(-7, -1)   (-4, -1)

(,)   (-2, -4)

(-7, - 7)   (-4, - 7)

e)

(,)

(-4, - 6)   (7, - 6)

Share with a partner how you worked out each missing coordinate.

BRICKWORK
Mathematics

Game: Guess My Shape

1) Draw a grid with 10 to -10 on the x and y axis or use the one below.
2) Draw a shape of your choice onto the grid.
3) Your partner needs a grid too and will start the game with ten points.
4) Tell your partner clues, such as the coordinates for the vertices, number of squares for the sides or any properties of the shape (parallel sides or size of angles).
5) Every time your partner needs a clue, they use a point. They need to try and guess the shape that you have drawn on to your grid.
6) Record how many points your partner got and then swap roles.