Spring 1. Maths.

Monday: Week 2. Mrs Brown's Group.

Problem solving using the four quadrants.

You do…

Title:	Method

Before you put the date and the title answer these questions:

4 – 9 =

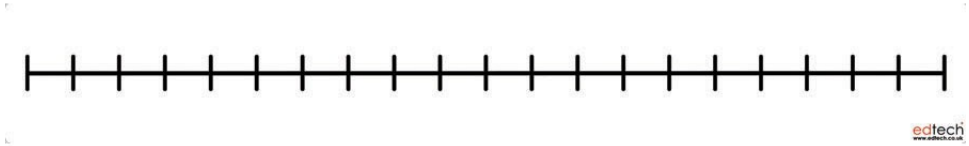
8 – 9 =

7 – 12 =

2 – 7 =

5 – 13 =

3 – 6 =



Co-ordinates:

Plotting Co-ordinates in the X and Y axis,
Reflections (mirror image) in the X and Y axis,
translating (sliding) shapes in the X and Y axis.

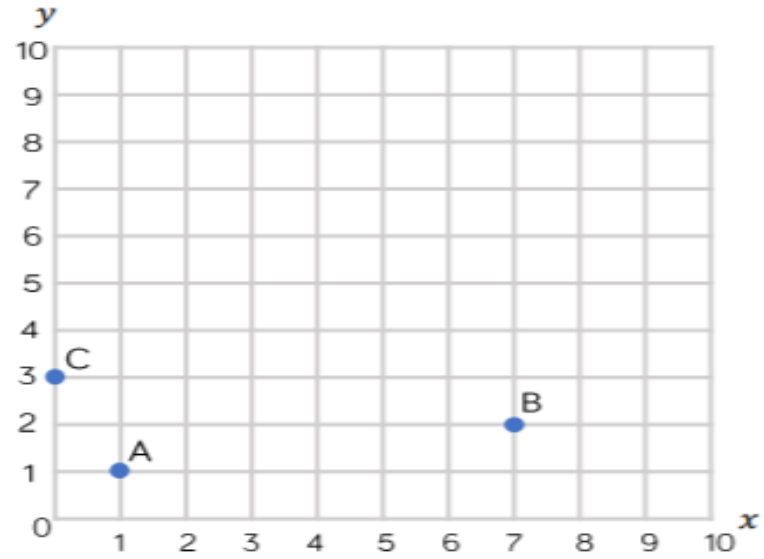
You do…

Read the question in the box.
Is Mo correct?
If not why not?

Mo has written the coordinates of points A, B and C.

A (1, 1) **B** (2, 7) **C** (3, 0)

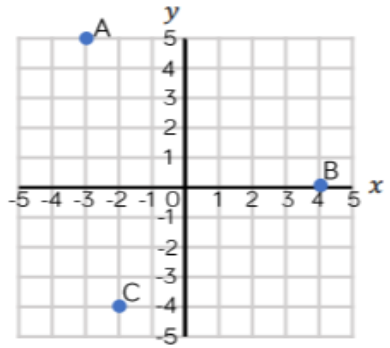
Mark Mo's work and correct his mistakes.



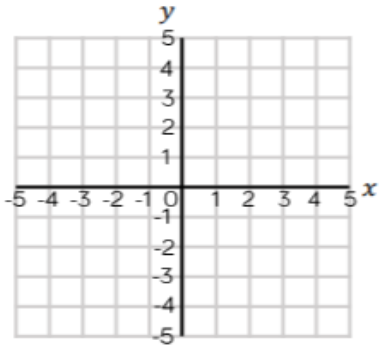
Explain why Mo could not make the same mistake for point A as he made for points B and C.

We do:
What tips and tricks have we already learned for questions like this:

Dora plotted three coordinates.
Write down the coordinates of points A, B and C.

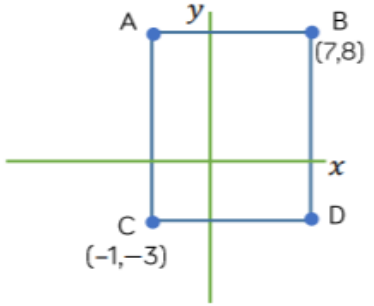


Draw a shape using the coordinates (-2, 2), (-4, 2), (-2, -3) and (-4, -2).
What is the name of shape?



Work out the missing coordinates of the rectangle.

What is the length of side AB?



Read these questions.

What have you learnt so far that will help us to answer these questions?

Now answer the questions in your book.

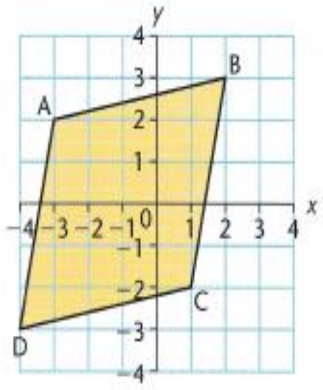
You do:
What tips and tricks have we already learned for questions like this:

TARGET To draw shapes on the full co-ordinate grid.

Examples

Join the following points in the order given to form a rhombus.

1. A (−3, 2)
2. B (2, 3)
3. C (1, −2)
4. D (−4, −3)
5. A (−3, 2)



Use the skills you have just learnt to answer the questions here.
Make sure you have your ruler and a sharp pencil to draw the small grids.
Remember to label the X and Y axis.

B

Draw a grid like the one above. Plot the points for each shape and join them up in the order given. Use a different colour for each shape.

1. (−4, 4), (0, 3), (1, −1), (−3, 0), (−4, 4)
2. (4, −2), (−2, −4), (−3, −1), (3, 1), (4, −2)

Draw a new grid and form the shapes.

3. A (−4, 1), B (0, 3), C (2, −1), D (−2, −3), A (−4, 1)
4. E (−1, 4), F (4, 2), G (3, −2), H (−2, 0), E (−1, 4)
5. Label each shape.
6. Write down the mid-point of each line.
   a) AB
   b) BC
   c) CD
   d) AD
7. Write down the point where the diagonals intersect in:
   a) shape ABCD
   b) shape EFGH

C

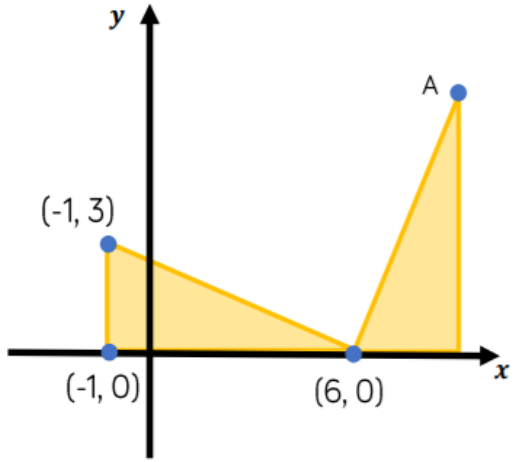
1. Draw a grid with both x and y axes labelled from −6 to 6.
   Plot the following points:
   L (−4, −1)
   M (2, 1)
   R (0, −2)
2. LM is the longest line in an isosceles triangle KLM.
   Give the co-ordinates of both possible positions of K.
3. LMN is an isosceles triangle.
   Give both possible positions for N if:
   a) LM = MN
   b) LM = LN
4. L, M and R are three vertices of a parallelogram LMRQ.
   Give the co-ordinates of all three possible positions for Q.

We do…

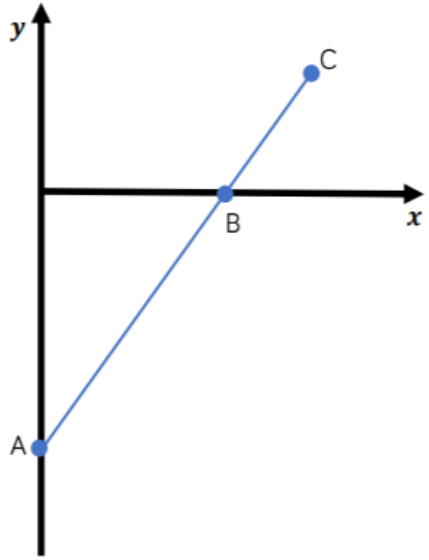
The diagram shows two identical triangles.

The coordinates of three points are shown.

Find the coordinates of point A.



A is the point (0, – 10)
B is the point (8, 0)
The distance from A to B is two thirds of the distance from A to C.
Find the coordinates of C.



How would you answer these two questions?

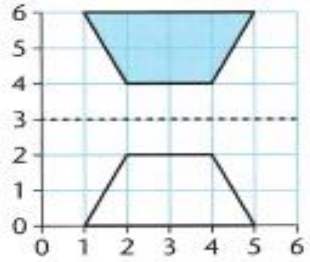
Reflecting shapes on a grid.

We do…

To begin with you need to remember:
it is like putting a mirror on the line and seeing the shape in the mirror.

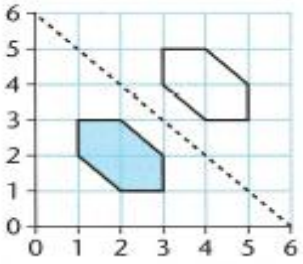
Example

1 The blue trapezium is reflected in a mirror line (0, 3) to (6, 3).



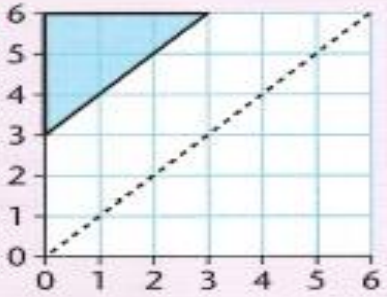
2 Reflect the blue hexagon in the mirror line. Give the co-ordinates of the reflection.

Answer (3, 4) (3, 5) (4, 5) (5, 4) (5, 3) (4, 3)

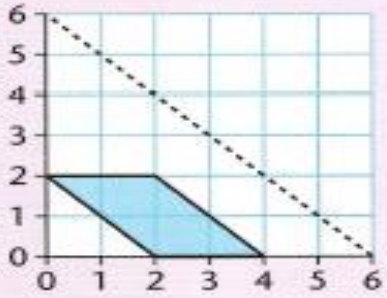


Copy the grid, the shape and the mirror line. Sketch the reflection.

1



2



Plot these co-ordinates on a 6 × 6 grid and join them up in the order given to form a shape. Draw the mirror line and sketch the reflection.

3 (0, 0) (2, 2) (5, 2) (4, 0) (0, 0)
Mirror line (0, 3) to (6, 3)

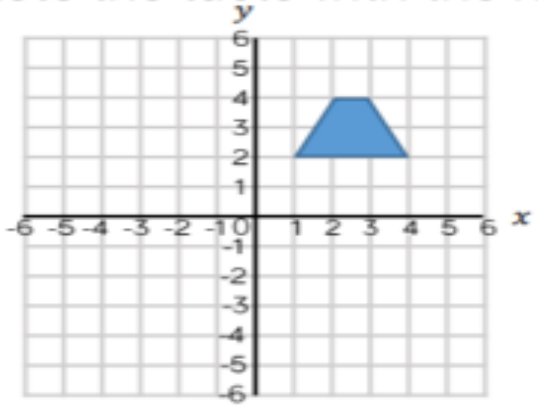
4 (4, 3) (4, 6) (6, 6) (6, 5) (4, 3)
Mirror line (3, 0) to (3, 6)

You do:
What tips and tricks have we already learned for questions like this:

Reflecting shapes on a grid.

Now let us look at reflecting a shape in the X or the Y axis.
This is why you needed to remember which axis is which!
It is important to remember that the shape doesn't change at all.
It is reflected in a line - the axis. Either the X (horizontal) or the Y axis (vertical)

Reflect the trapezium in the x-axis and then the y —axis.
Complete the table with the new coordinates of the shape.

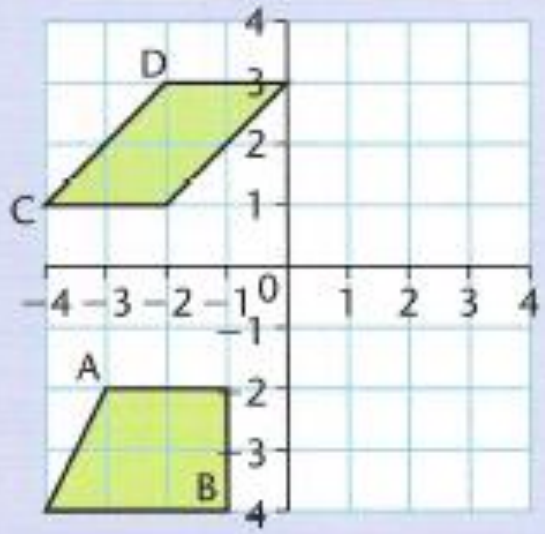


	Reflected in the x-axis	Reflected in the y-axis
(1, 2)		
(4, 2)		
(2, 4)		
(3, 4)		

To begin with you need to remember:
it is like putting a mirror on the line and seeing the shape in the mirror.

Reflecting shapes on a grid.

You do…



1 Copy the above grid and the trapezium. Sketch the reflection:

a) in the *x* axis

b) in the *y* axis

c) in a mirror line (−4, 4) to (4, −4)

2 Copy the above grid and the parallelogram. Sketch the reflection:

a) in the *x* axis

b) in the *y* axis

c) in a mirror line (−4, −4) to (4, 4)

3 For each of the points A–D in the above shapes give the co-ordinates of its position:

a) in the original shape

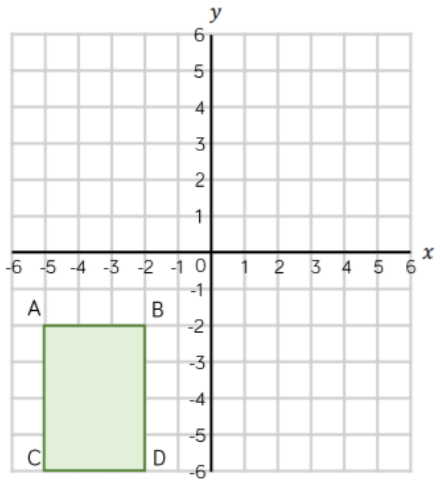
b) in each reflection.

- **Now complete the questions above in your books.**
  Remember to use a sharp pencil and ruler to draw your grid.

Reflecting shapes in the X or Y axis.

You do…

Rectangle ABCD is the result of a rectangle being reflected in either the x- or the y-axis.
Where could the original rectangle have been? Draw the possible original rectangles on the coordinate grid, and label the coordinates of each vertex.



Annie has reflected the shape in the y-axis.
Is her drawing correct?
If not explain why.