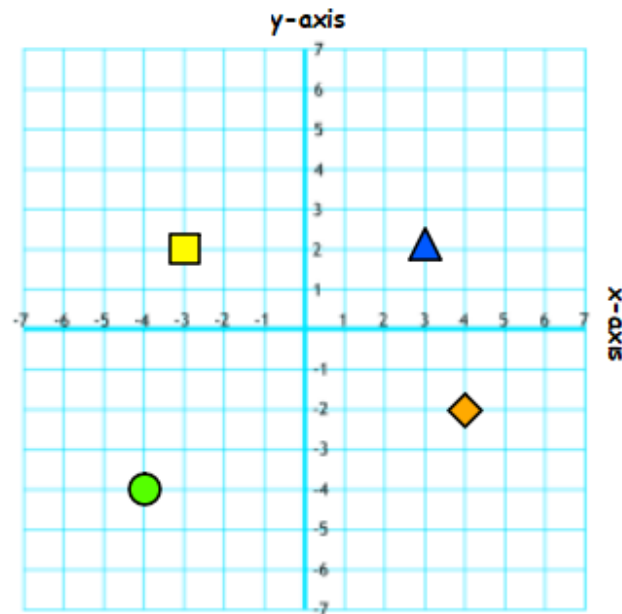


Key Vocabulary

position
direction
quarter turn
half turn
three-quarter turn
whole turn
straight line
rotation
order
arrange
patterns
sequences
co-ordinates
first quadrant
grid
translation
plot
polygon
axis
reflection
four quadrants
co-ordinate plane

Four Quadrants

The grid below has **four quadrants**. Coordinates on a four quadrant grid can be both **positive or negative**. Remember - The x-axis is always written first, followed by the y-axis.



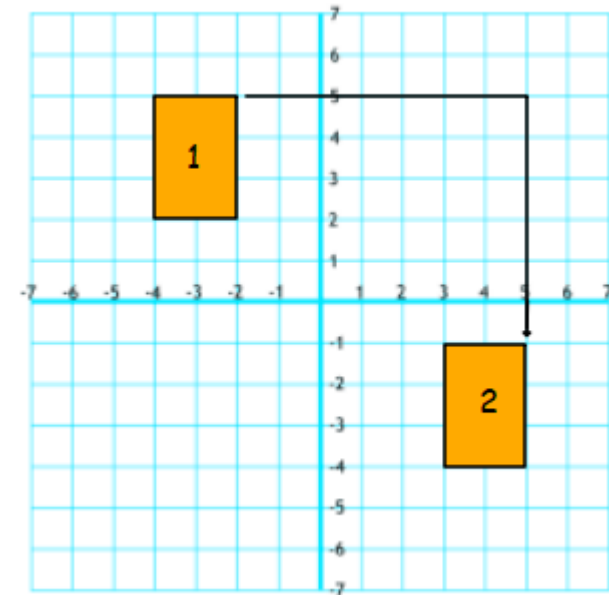
■ $(-3, 2)$ ◆ $(4, -2)$
● $(-4, -4)$ ▲ $(3, 2)$

Translation



Translation is the process of moving an object around a grid. When moving the object, the size does not change and you do not turn or reflect it.

You can translate objects left, right, up or down around a grid.



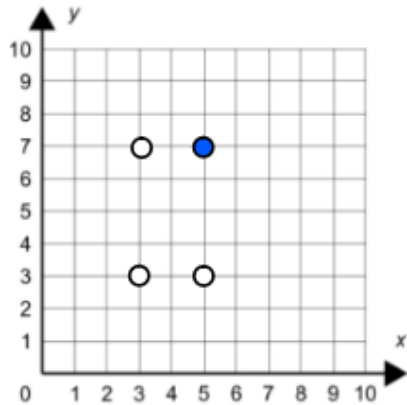
This shape has been translated **7 units right** and **6 units down**.



A good way to remember which axis is which, is the rhyme 'y to the sky'.



Completing Shapes

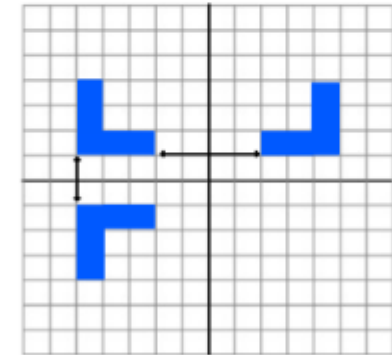
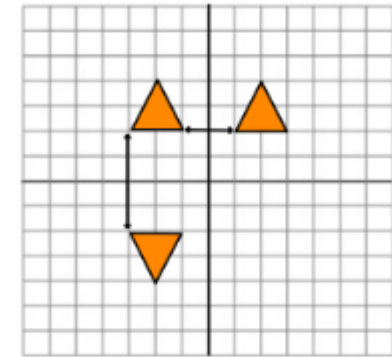


When **completing** this rectangle, we know that rectangles have opposite sides of equal length so putting the ● at (5, 7) will make it complete.



Reflecting Shapes

Reflection is when shapes are reflected in a line that acts as a mirror.

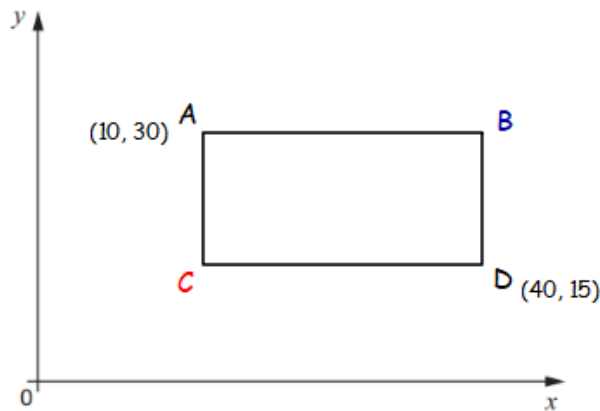


All points on both the original shape and its reflection are equal distance from the line they have been reflected in.

The shapes above are reflected in the x-axis and the y-axis.



Missing Coordinates



We can work out the missing coordinates on this rectangle by using the coordinates of A and D.

B is in the same position on the x-axis as D (40, 15) and the y-axis as A (10, 30).

B is (40, 30)

C is in the same position on the x-axis as A (10, 30) and the y-axis as D (40, 15).

C is (10, 15)