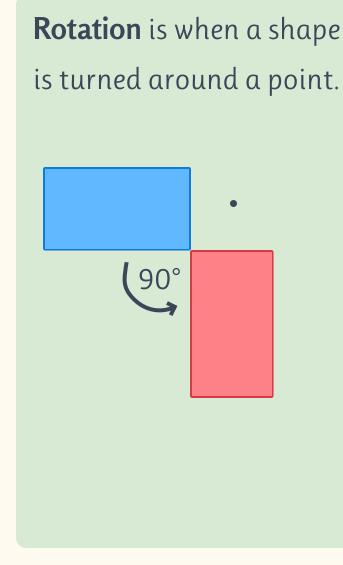


Transformations

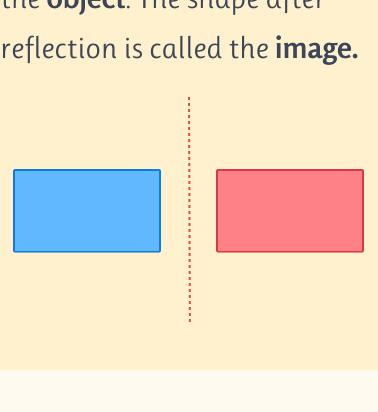


What do you need to know? In maths, a transformation is when a shape moves from one place to another on a grid. You will learn about three types of transformations:



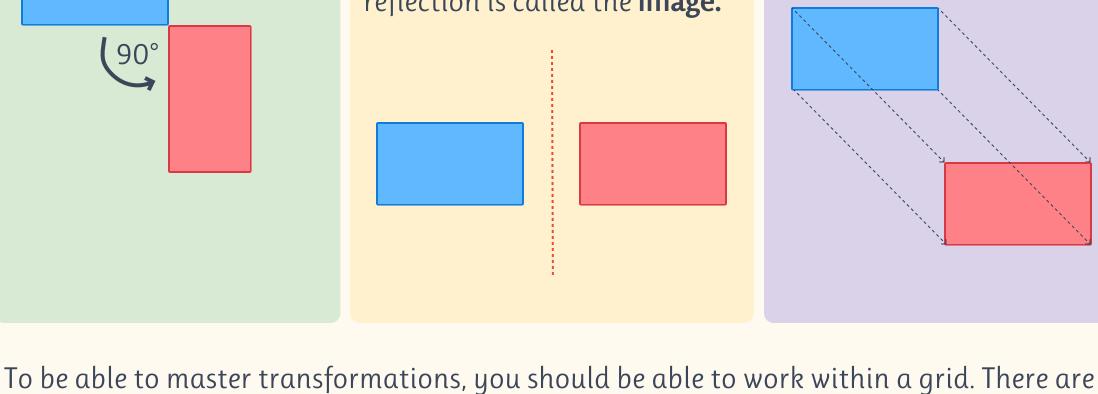
reflected in a mirror line. The shape before reflection is called the **object**. The shape after reflection is called the **image**.

Reflection is when a shape is



shape is moved a certain distance from its original position.

Translation is when a

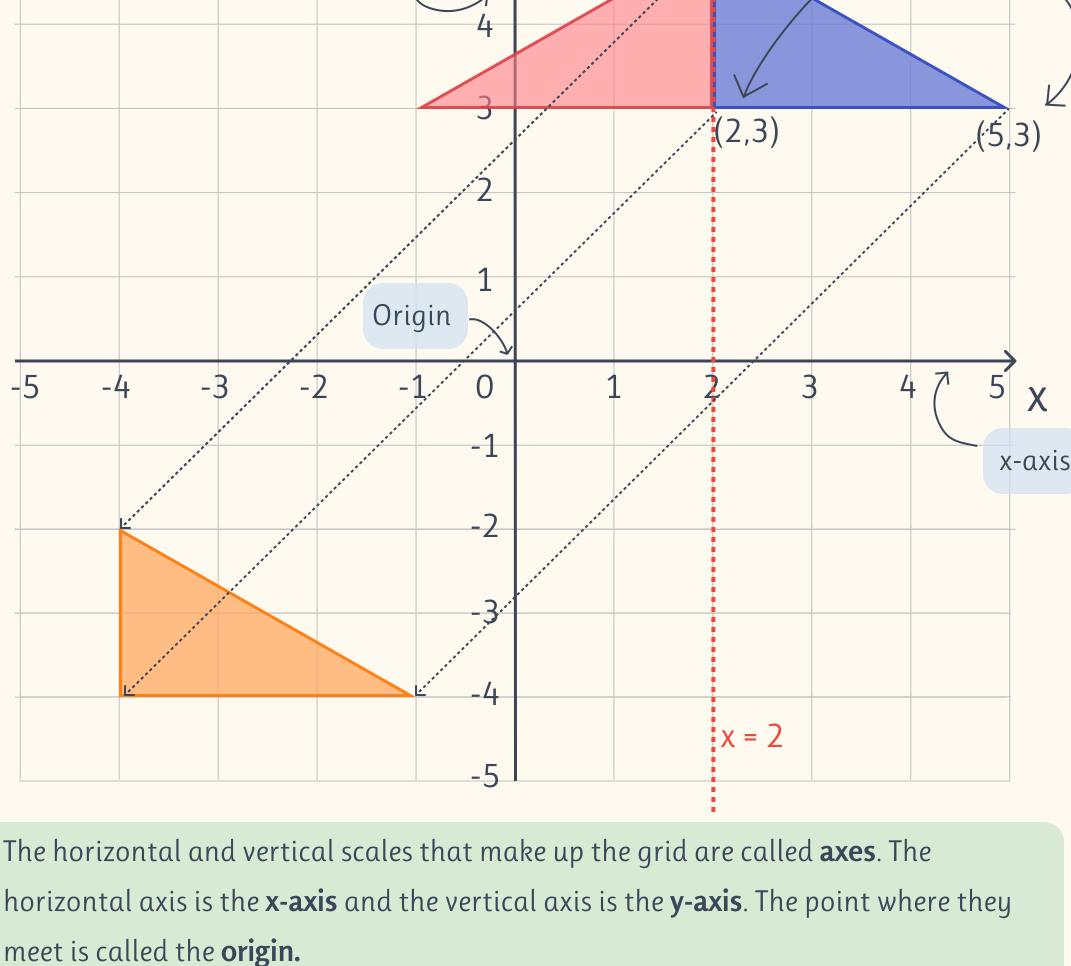


Coordinates

(2,5)

a few important things you should know about grids:

y-axis



use these numbers to find exactly where a shape is on a grid: they are called coordinates. We can use coordinates to help us translate shapes. The purple triangle has been translated 6 units left and 7 units down, it's new position is shown by the orange

Each section of the grid is called a quadrant. Each axis has a negative quadrant,

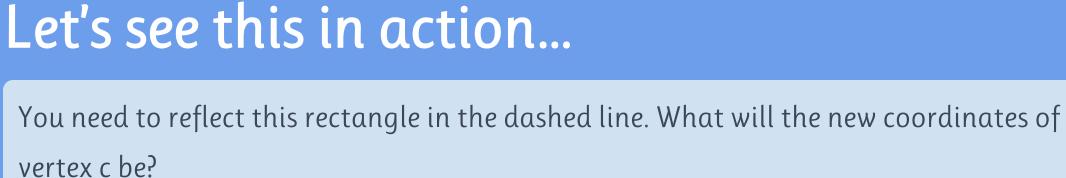
with numbers below 0, and a positive quadrant, with numbers above zero. We can

themselves. Warning! Remember that shapes don't change size or shape when you rotate or translate them.

The only thing that changes is their position on the grid!

The purple triangle has also been reflected in the dotted line, which runs along x=2,

the image is shown by the red triangle. Sometimes, a shape is reflected in the axes



10

9

8

7

6

5

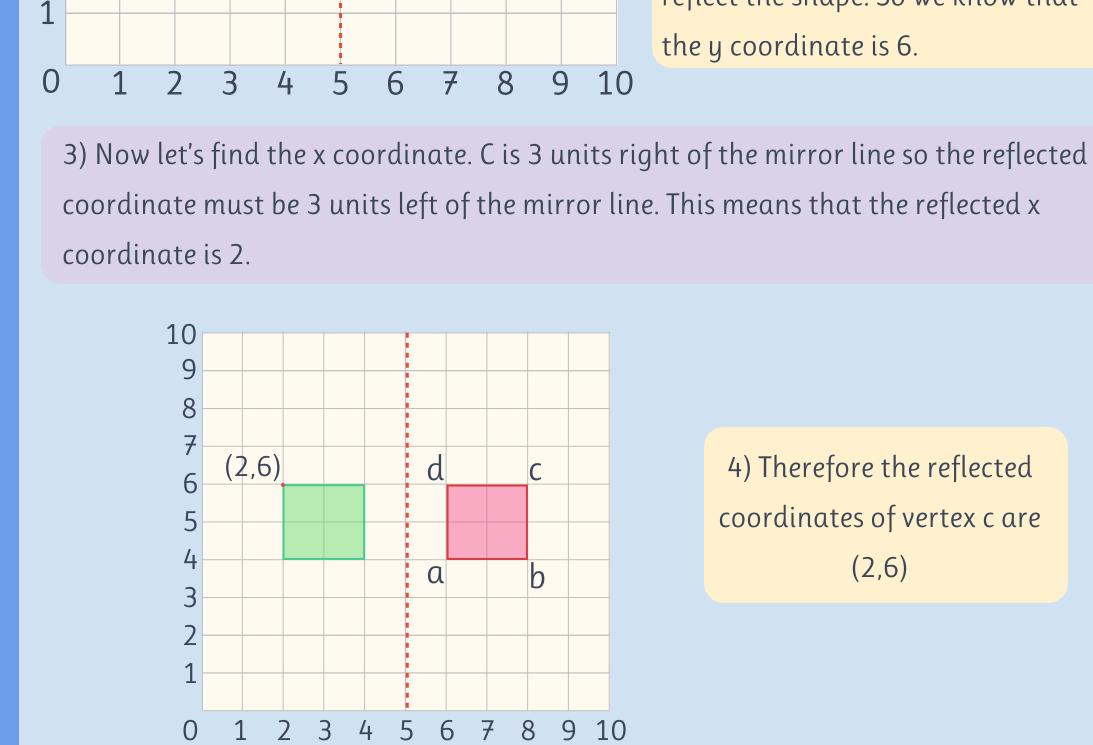
4

2

triangle.

We can see that c lines up with 8 on the x-axis and 6 on the y-axis. So we d C write the coordinates like this: (8,6)

b



Let's look at a different example:

a

4) Therefore the reflected

coordinates of vertex c are

(2,6)

1) First, let's find out what the

coordinates of c in the object are.

2) Now, let's look at the mirror line.

It's vertical which means that the y

coordinate doesn't change when we

reflect the shape. So we know that

the y coordinate is 6.



You've been given a set of instructions to find the secret word. Let's see if we can work it out!

- 2 1 -2 -1 0 -2 -3 -4 -5 1-Start at the origin and translate 5 down and 3 left 2- Then, translate 6 up and 4 right. 3-Next, translate 2 up and 1 right 4- Finally, translate 7 down and 7 left.
- 1) First, we need to start at the origin. This is where the axes cross. 2) Then we translate 5 units down and 3 units left, to (-3,-5). The first letter is C.
- 3) From there, we translate 6 units up and 4 units right to (1,1). Our second letter is A.
- 4) Next, we translate 2 units up and 1 unit right to (2,3). This gives us a K.
- 5) Finally, we translate 7 units down and 7 left to (-5,-4). Our final letter is E.
- 6) The secret word is CAKE! Delicious!



It can be helpful to use a real-life grid to help you understand transformations. You can use a print-out or draw one on squared paper. Move a counter or a paper shape around the grid to help you answer questions. To help you with reflection, you could use a I look good mirror or tracing paper. today!