

# Symmetry, Reflection and Coordinates

Mathematics

Year 5

Lesson 1 of 5

Learning Objective		Resources	
To translate polygons on a coordinate grid.		Slides Worksheets 1A/1B/1C French elastic (optional)	Translation Flash Cards Blank Coordinate Grid
Teaching Input			
<ul style="list-style-type: none"> <li>The first slide shows a square. Can you describe where it is? Go on to explain that one way we can describe the position of things is by using a coordinate grid.</li> <li>Show the slide with the coordinate grid (1st quadrant only). Do you know the names of each part of a coordinate grid? The following slide reveals the answers.</li> <li>Can you describe the position of this square on the coordinate grid? Again, the following slide reveals the answer.</li> <li>Show how 2-D polygons on a grid are described according to the location of their vertices on a coordinate grid. Challenge children to identify the coordinates of the shapes shown.</li> <li>Show the slide with a blue square on a plain background. If I move this square into the grey box, can you describe the movement? The following slide explains how translations can be described by counting squares or using an algebraic term, e.g. <math>x+12</math>. Children are then challenged to describe the translation of a pink rectangle using coordinates.</li> <li>When we 'slide' a shape without rotating it, reflecting it or changing its size, the movement is called a translation. Which of these movements (or transformations) are translations? Which are not? The next three slides show movements for children to discuss.</li> <li>Explain that today we will be describing and translating polygons on a coordinate grid.</li> </ul>			
Main Activity			
<p><u>Lower ability:</u></p> <p>Worksheet 1A shows some grids where shapes have been transformed. Children must decide which of them are translations, then go on to describe given translations either by describing the number of squares moved or using algebraic terms.</p>	<p><u>Middle ability:</u></p> <p>Worksheet 1B shows some grids where shapes have been transformed. Children must decide which of them are translations, then go on to draw translations of shapes on a grid according to the descriptions given.</p>	<p><u>Higher ability:</u></p> <p>Worksheet 1C shows some grids where shapes have been transformed. Children must decide which of them are translations, then go on to draw translations of shapes on a grid according to the algebraic terms given.</p>	
Fancy something different...?			
<ul style="list-style-type: none"> <li>Giant translations! You will need a large space such as a hall or playground, ideally with some kind of court/pitch markings. Challenge groups of children to make the outline of giant polygons by holding hands or using French elastic. Explain that the area in which they are standing is like a giant coordinate grid. Decide which two sides of the hall/playground will be the X/Y axes, making sure all children understand. Challenge them to translate their shapes according to the translations described on the Translations Flash Cards (the red cards are trickier; the translations are described in algebraic terms). They should use 'steps' as the coordinate grid scale, e.g. "four steps right, two steps up".</li> </ul>			
Plenary		Assessment Questions	
<p>Show the first Plenary slide. Which of these algebraic terms describes the translation shown? The second Plenary slide reveals the answer.</p>		<ul style="list-style-type: none"> <li>Can children name the features of coordinate grids?</li> <li>Do children understand what a translation is?</li> <li>Can children translate polygons in the first quadrant of a coordinate grid?</li> </ul>	