Moving, Turning and Flipping Shapes in Maths

KS3 MATHS Ages 11-14 ⏰ 3 min read

What Are Translations, Rotations and Reflections?

In maths, we often need to move shapes around on a piece of paper or a grid. But there's a special thing about these moves: the shape itself never changes size or gets squished. It's still the exact same shape, just in a different place or direction. There are **three main ways** to move a shape: **translate** it, **rotate** it, or **reflect** it.

Translation: Sliding a Shape

A **translation** means sliding a shape from one place to another without turning it or flipping it. Imagine you draw a smiley face on a piece of paper. If you slide that paper **3 squares to the right and 2 squares up**, that's a translation. The smiley face looks exactly the same—same size, same direction—it's just moved to a new location.

Think of it like moving a toy car across a table. You push it forward, and it ends up in a new spot, but the car itself hasn't changed at all.

Rotation: Turning a Shape

A **rotation** means turning a shape around a fixed point, like spinning it. You might rotate it **90 degrees** (a quarter turn), **180 degrees** (half a turn), or **360 degrees** (a full turn). The most important part is picking the point you're spinning around—this is called the **centre of rotation**. After you rotate, the shape stays the same size, but it's now facing a different direction.

Think of it like spinning a plate on a table. The plate stays the same plate, but it's now twisted around instead of facing the way it was before.

Reflection: Flipping a Shape

A **reflection** means flipping a shape over a line, like looking at its mirror image. If you place a mirror on a dotted line on your paper, the reflected shape appears on the

other side of that line. It looks backwards compared to the original, but it's the same distance from the mirror line. The mirror line is called the **line of reflection**.

Think of it like looking at yourself in a mirror. You see a flipped version of yourself, but you're still you—just facing the opposite way.

Why Does This Matter?

These three transformations help us understand **symmetry**, create patterns, and solve geometry problems. They show that shapes have special properties that stay true even when we move them around. When you're designing video game graphics, tiling a bathroom floor, or creating artwork, you're using translations, rotations, and reflections!