Zara’s Guide to the Geometry of Pattern

About 15 minutes. Grown-up tip: Encourage your child to find patterns in household items like curtains, rugs, or kitchen tiles.

Look closely at the world around you, from the petals of a daffodil to the tiles on a London Underground floor. To create a repeating pattern, start by drawing a simple 'motif'—a small shape or line. Next, repeat this motif across your page using reflection (flipping it) or rotation (turning it). Example: If you draw a triangle pointing up, rotate it 180 degrees to make a star pattern.

- **Reflect on how a pattern changes when you rotate a square 45 degrees. Does the shape remain a square or become a diamond?**
- **Explain why a pattern that uses tessellation is different from a pattern that has gaps between the shapes.**
- **If you are creating a symmetrical pattern, why must the left side be a mirror image of the right side?**
- **Describe the difference between a pattern that uses rotation and a pattern that uses simple translation (sliding).**
- **Look at a brick wall. Identify the repeating motif and describe how it has been arranged to cover the surface.**

Did you know? Did you know? Patterns are everywhere in nature! Honeybees, like Bea, build their hives in perfect hexagonal shapes. This is because hexagons are the most efficient way to store honey using the least amount of wax. Mathematics and art work together to keep the hive running smoothly!

Key vocabulary: Symmetry · Tessellation · Motif · Rotation · Reflection · Geometric