

Shape and space: Transformation – Suggestions for learning at home

Why learning about transformation is important

Transformation involves actions on shapes, such as reflections, rotations, translations or enlargements.

Knowledge of transformation supports children to understand their own movement and the movement of shapes and objects around them. Often, children encounter these movements daily. For example, they see their reflection in the mirror. They observe rotations when a shape or line is turned around a point, for example, the blades of a wind turbine, the wheels of a car or bike. They engage in translations when they move themselves or an object a certain distance from their original position – for examples, our bodies translate from one position to another by simply walking in a straight line. When children ‘zoom in’ on a photograph, or look in a magnifying glass, they see an enlarged versions of people or objects.

Transformation enhances children’s understanding of shapes, and develops their ability to use logic to solve problems such as jigsaws and tangram puzzles. Examples of transformations can be seen in art, architecture, and engineering in the home, school, local area and worldwide. Children can also engage with transformations through activities such as jigsaw puzzles, dance and sports, and creating artwork and 3-D structures.



IDEAS TO SUPPORT LEARNING

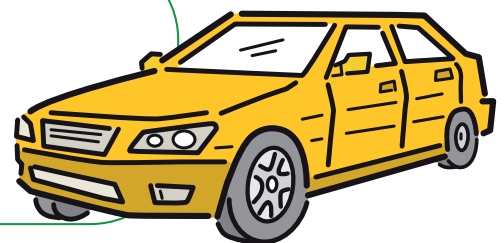
- Make tangram puzzles or jigsaws with your child and discuss the movement of the shapes, e.g., *try rotating that puzzle piece, flip over the red piece, etc.*
- Make connections between learning in transformations and everyday life, e.g., *observe tessellation (covering a surface with one or more shapes with no gaps) in floor tiles and brick walls, explore the rotation of objects/ furniture, etc. in the home.*
- Search online for examples of architecture from around the world and draw attention to rotational symmetry (where a shape looks the same when rotated less than one full turn), e.g., *the Louvre, the Taj Mahal.*
- Look for examples of reflections (where shapes have flipped as a mirror image, but otherwise have not changed), symmetry (where a line could be drawn down the middle of a shape and both sides of the line would be identical) and tessellation in the environment when out and about, e.g., *in leaves, flowers, the wheels of cars or bikes, designs of buildings.*
- In shopping centres or other buildings, discuss practical applications of translations (where items move a certain distance from their original position without turning), e.g., *elevators and escalators, conveyor belts.*
- Visit museums and art galleries (online or in person) with your child and discuss examples of transformations in the exhibitions, e.g., *can you find examples of symmetry or tessellation in the art works?*
- Play playground/outdoor games that can incorporate transformational movement, e.g., *Ring-a-Rosie, Simon Says (move two steps to the right, rotate your body clockwise), etc.*



BOOKS

- *One More Try*, Naomi and James Jones, 4+ years
- *The Perfect Fit*, Naomi and James Jones, 4+ years
- *Ship Shapes*, Stella Blackstone, 4+ years
- *Zoom*, Istvan Banyai, 6+ years
- *Let's Fly a Kite*, Stuart J. Murphy, 6+ years

*Your local library provides a wide range of free books and resources which support in developing children's mathematical learning



GAMES / ACTIVITIES

- Tangram and pentomino puzzles – search online for virtual or printable templates
- Complete jigsaw puzzles, or make your own using photographs or drawings
- Sliding tile puzzles
- Tetris games
- Board games that incorporate translation of pieces, e.g., *chess, draughts, Snakes and Ladders*
- Graphic design activities – create birthday invitations, bedroom door signs, digital artwork, etc. by inputting and moving/sliding/rotating/enlarging text and images
- Dance activities – create your own choreography incorporating symmetry, rotation, etc., or learn popular choreographed dances, e.g., *the Cha Cha Slide, the Hokey Pokey, the Chicken Dance*
- Interactive games – online shape games, Minecraft, lego puzzles

LEARNING ONLINE

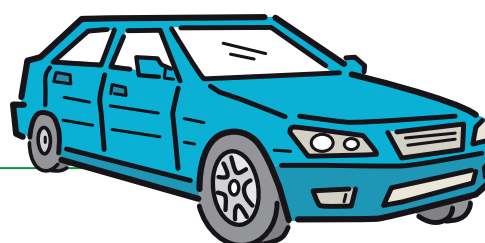
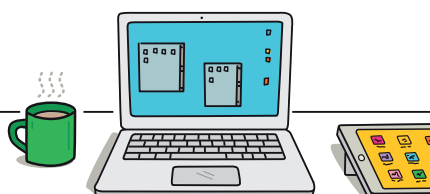
- Help My Kid Learn www.helpmykidlearn.ie
- Scoilnet www.scoilnet.ie/primary/theme-pages/mathematics/
- Maths Week Ireland Parents' Zone www.mathsweek.ie
- Maths Eyes <https://haveyougotmathseyes.com/>

Useful terms to search online: transformation, shape and space, learning, primary, maths, shape movement, flip, turn, slide, orientation, position, reflection, rotation, translation, enlargement, symmetry, tessellation, games, activities



ARTS AND CRAFTS

- Tessellation or mosaic artwork, e.g., *print or draw squares, triangles, hexagons, etc. and create a picture with no gaps, recreate Roman mosaics, etc.*
- Use tangrams to create animals, shapes, objects, etc.
- Symmetry art – complete the second half of a symmetrical picture, or create a full symmetrical picture, e.g., *a butterfly with symmetrical patterns on wings*
- Create tessellating/symmetrical designs on paper, plain t-shirts, etc.
- Paper folding/origami activities
- Create 3-D structures with rotational symmetry, e.g., *windmills*
- Take inspiration from nature and create transformational artwork using/based on this, e.g., *complete prints of leaves, create a painting of a symmetrical flower*



YOUR OWN IDEAS

