

Shape and Space

Shape

Talk about shapes in the environment *eg. leaves, containers, windows.*

Use everyday language to describe features of familiar 3-D and 2-D shapes, including the cube, cuboid, sphere, cylinder, cone, circle, triangle, square, rectangle.

Sort 3-D/2-D shapes for one criterion. Talk about their sorting.

Make and describe models, patterns and pictures using a variety of materials, *eg construction kits, everyday materials, plasticine, attribute blocks.*

Use a variety of sorting diagrams to sort and group:

- 3-D shapes, *eg roll, stack, slide;*
- 2-D shapes, *eg three sides, four corners;*
- 2-D and 3-D shapes.

Give reasons for sorting.

Recognise and use the mathematical names for 2-D shapes – square, rectangle, triangle, circle.

Recognise and use the mathematical names for 3-D shapes – cube, cuboid, sphere, cylinder, cone.

Recognise and describe, with prompting, 2-D shapes, *eg the number of sides, whether the sides are straight or curved.*

Recognise and describe, with prompting, 3-D shapes, *eg the shape of faces, the number of edges, faces and corners.*

Explore symmetry in shapes through a range of activities, *eg paper cutting, inkblots, geoboards.*

Explore and recognise one line of symmetry in a variety of 2-D shapes, designs and pictures.

Recognise drawings of 3-D shapes.

Fit shapes together to make new shapes, *eg tangrams.*

Explore tessellation through practical activities.

Explore other 2-D and 3-D shapes, *eg hexagon, pentagon, semi-circle, pyramid, prism:*

- sort and name;
- recognise and describe.

Make, explore and discuss regular and irregular 2-D shapes using a variety of materials, *eg geoboards, construction sets, a programmable device:*

- 3 and 4 sided shapes;
- 5 and 6 sided shapes.

Explore the relationship between 2-D and 3-D shapes, *eg by opening out a variety of 3-D shapes (boxes), building 3-D shapes from construction materials.*

Draw lines of symmetry on a variety of 2-D shapes.

Investigate 2-D shapes that have right angles using materials, *eg geoboards.*

Record these shapes on squared or dotted paper.

Discuss and describe these shapes in terms of sides, angles and symmetry.

Investigate pentominoes to explore:

- symmetry;
- tessellation;
- nets;
- perimeters.

Use pentominoes to build open boxes.

Explore nets of 3-D shapes, *eg by opening out a variety of cubes, cuboids, prisms and pyramids.*

Discuss and visualise 3-D shapes from drawn nets.

Discuss and describe cubes, cuboids, other prisms and pyramids in terms of edges, faces and vertices.

Through discussion and practical activities, investigate the properties of right-angled, equilateral, isosceles and scalene triangles.

Reflect a 2-D shape in a line.

Through discussion and practical activities, investigate the properties of quadrilaterals including square, rectangle, rhombus, kite, parallelogram and trapezium.

Draw 2-D shapes, including pentagons and hexagons according to given specifications:

- regular;
- irregular;
- symmetrical.

Use drawing software and a programmable language such as LOGO to construct 2-D shapes. Investigate "repeat" procedures to draw regular shapes.

Space

Explore body space through different types of movement *eg curling and stretching, falling forwards/backwards, turning over.*

Explore movement through space *eg in the corridor, classroom, playground.*

Follow instructions for movement along a line, *eg forwards, backwards, sideways.*

Recognise simple directional symbols in the environment.

Use everyday language to describe position, direction and movement, *eg under, beside, left, backwards, full turn.*

Talk about things that turn. Recognise turning movements, *eg left, right, half turn, full turn.*

Follow and give instructions for moving along a straight line and round right-angled corners, *eg to pass through a simple maze.*

Use a computer-controlled device, *eg Roamer or Pixie*, to explore movement.

Sort shapes into those with:

- square corners;
- not square corners.

Explore and make right angles practically.

Use a right angled tester to identify right angles in the environment, *eg in shapes and in the clockface.*

Investigate quarter turns, half turns and whole turns to establish relationships with right angles, *eg using Roamer or Pixie.*

Explore angle as a measure of turn. Use the language "clockwise", "anticlockwise", "right" and "left" to describe turns.

Explore angles greater/less than a right angle.

Use simple grid references in practical situations:

- identifying a square
- identifying a point.

Through practical activities, appreciate the need for a standard unit to measure angle.

Understand that:

- one right angle is 90°;
- two right angles total 180° and make a straight angle;
- a full turn is four right angles, total 360°.

Develop an appreciation of the terms:

- acute angle;
- obtuse angle;
- reflex angle.

Explore co-ordinates in the first quadrant:

- identify position from given co-ordinates;
- plot position;
- specify co-ordinates of a given point;
- draw 2-D shapes defined in terms of co-ordinates.

Draw and compare pictures/shapes using co-ordinates in the first quadrant.

Discuss the properties of horizontal, vertical, parallel and perpendicular lines and recognise simple examples of these.

Recognise and use in practical situations, the four compass directions N, S, E, W. Appreciate "North" in relation to the classroom.

Through discussion and practical activities develop an understanding of the eight points of the compass and explore angles of 45°.

Follow and give turning instructions related to the eight points of the compass.

Describe clockwise and anticlockwise turns in terms of:

- number of right angles and "half right angles";
- fractions of a whole turn;
- in degrees (related to right angles and half right angles).

Use a programmable device, *eg Roamer, Pixie, Pip*, to explore position, movement and direction. Discuss work, using appropriate language.

Explore position, movement and direction through the use of ICT software.

Explore and use a 360° protractor/angle measurer to compare angles.

Measure and draw angles in degrees up to 360°.

Explore angle relationships, associated with parallel lines, using practical apparatus.

Investigate the use of a programmable language such as LOGO to generate mathematical shapes and designs.