Shape, Space & Measures

Using and applying shape, space and measures

1. Pupils should be taught to:

Problem solving

a) try different approaches and find ways of overcoming difficulties when solving shape and space problems
b) select and use appropriate mathematical equipment when solving problems involving measures or measurement
c) select and use appropriate equipment and materials when solving shape and space problems

Communicating

d) use the correct language and vocabulary for shape, space and measures

a) describe properties of shapes that they can see or visualise using the related vocabulary
b) observe, handle and describe common 2-D and 3-D shapes; name and describe the mathematical features of common 2-D and 3-D shapes, including triangles of various kinds, rectangles including squares, circles, cubes, cuboids, then hexagons, pentagons, cylinders, pyramids, cones and spheres
c) create 2-D shapes and 3-D shapes
d) recognise reflective symmetry in familiar 2-D shapes and patterns.

Understanding properties of position and movement

3. Pupils should be taught to:
   a) observe, visualise and describe positions, directions and movements using common words
   b) recognise movements in a straight line (translations) and rotations, and combine them in simple ways [for example, give instructions to get to the headteacher's office or for rotating a programmable toy]
   c) recognise right angles.

Understanding measures

4. Pupils should be taught to:
   a) estimate the size of objects and order them by direct comparison using appropriate language; put familiar events in chronological order; compare and measure objects using uniform non-standard units [for example, a straw, wooden cubes], then with a standard unit of length (cm, m), weight (kg), capacity (l) [for example, 'longer or shorter than a metre rule', 'three-and-a-bit litre jugs']; compare the durations of events using a standard unit of time
   b) understand angle as a measure of turn using whole turns, half-turns and quarter-turns

c) estimate, measure and weigh objects; choose and use simple measuring instruments, reading and interpreting numbers, and scales to the nearest labelled division.

Breadth of Study

1. During the key stage, pupils should be taught the *Knowledge, skills and understanding* through:
   a) practical activity, exploration and discussion
   b) using mathematical ideas in practical activities, then recording these using objects, pictures, diagrams, words, numbers and symbols
   c) using mental images of numbers and their relationships to support the development of mental calculation strategies
   d) estimating, drawing and measuring in a range of practical contexts
   e) drawing inferences from data in practical activities
   f) exploring and using a variety of resources and materials, including ICT
   g) activities that encourage them to make connections between number work and other aspects of their work in mathematics.

Level Descriptions

Using & Applying Mathematics

Teachers should expect attainment at a given level in this attainment target to be demonstrated through activities in which the mathematics from the other attainment targets is at, or very close to, the same level.

Level 1
Pupils use mathematics as an integral part of classroom activities. They represent their work with objects or pictures and discuss it. They recognise and use a simple pattern or relationship.

Level 2
Pupils select the mathematics they use in some classroom activities. They discuss their work using mathematical language and are beginning to represent it using symbols and simple diagrams. They explain why an answer is correct.

Level 3
Pupils try different approaches and find ways of overcoming difficulties that arise when they are solving problems. They are beginning to organise their work and check results. Pupils discuss their mathematical work and are beginning to explain their thinking. They use and interpret mathematical symbols and diagrams. Pupils show that they understand a general statement by finding particular examples that match it.