Cuboids and cubes

National Curriculum attainment target

• Recognise and name common 3-D shapes [for example, cuboids (including cubes), pyramids and spheres]

Lesson objective

• Identify cuboids and cubes

Previous related lessons

Unit 1, Week 3, Lesson 4; Unit 5, Week 3, Lessons 1 and 2

Prerequisites for learning

Pupils need to:

• be able to match 3-D shapes to objects and pictures of objects

• be able to sort 3-D shapes according to whether or not they roll

**Vocabulary**

cuboid, cube, rectangle, square, face

Future related lesson

Unit 5, Week 3, Lesson 4

Success criteria

Pupils can:

• relate cuboids to rectangles and cubes to squares

• say what makes a cuboid

• say what makes a cube a special cuboid

• create different cuboids, including cubes, using an
interactive tool

Getting Started

• Choose an activity from Geometry – Properties of shapes.

**Year 1, Unit 5, Week 3**

Teach

Resources

child-size 3-D shapes – cuboid, cube (per group); examples of cuboids and cubes of varying sizes and dimensions, including one cuboid with two square faces (per class) – if possible use objects, e.g. cardboard boxes, which are fairly plain shapes, rather than specific, highly recognisable objects such as dice

• Display: Slide 1 showing a rectangle.

• Say: **Think back to our work on 2-D shapes. What shape is this?** (a rectangle)

• Hold up a large cuboid (e.g. a cardboard box) with clearly rectangular, rather than square, faces.

• Discuss with children what this 3-D shape is called. Establish that it is a cuboid.

• Ask: **What similarities can you see between the rectangle and the cuboid?**

• Discuss children’s ideas and suggestions. Guide them towards a clear understanding that the faces of the cuboid are rectangular.

The word ‘faces’

may need to be

introduced to children during your discussion.

• Establish that the cuboid is made up of six faces, all of them rectangular.

• Display: Slide 2 showing a square.

• Say: **Think back to our work on 2-D shapes again. What shape is this?** (a square)

• Hold up a large cube (e.g. a cardboard box with only square faces).

• Discuss with children what this 3-D shape is called. Establish that it is a cube.

• Ask: **What similarities can you see between the square and the cube?**

• Discuss children’s ideas and suggestions. Guide them towards a clear understanding that the faces of the cube are square.

• Say: **A cube is a special type of cuboid.**

• Ask: **What makes a cube a special type of cuboid?** (all six faces are squares)

• Clarify the reasons with children. Agree that a cuboid is made up of rectangles, while a cube is made up of squares only. Explain that, since a square is a special type of rectangle, a cube is a special type of cuboid.

• Hold up another large cuboid, this time one that has two square and four rectangular faces.

• Ask**: What is this shape? Think carefully about what you have learned about cuboids and cubes so far.**

• Discuss children’s opinions. Establish that it must be a cuboid, but not a cube, because all of its faces (including the squares) are rectangles, but not all of its faces are squares.

• Emphasise that a cuboid may also be a cube, but only if *all* its faces are squares.

• Pass a range of cubes and cuboids around so that children can hold and handle them. Encourage them to rotate the shapes in different directions and watch how the appearance changes.

• Ask: **What shape do you have?** (a cuboid/a cube) **How do you know?** (it has rectangular faces, but they are not all squares/it has only square faces)

Individualised Learning

**Activity Book 1B** – Page 12: Maisie’s presents

Refer to Activity 3 from the
Learning activities on page 235.

Plenary

Resources

eight large cubes, all the same size (per class); eight small cubes, e.g. interlocking cubes (per pair); digital camera (optional)

• Show a group of large cubes to the children. Establish that there are eight of them.

• Say: **Working with a partner, you’re going to use eight small cubes to create different shapes. We’ll then make them with the large cubes.**

• Give eight small cubes to each pair.

• Ask: **How could you use these eight cubes to make one bigger cube?**

• Give children time to discuss and explore how to do this.

• Invite a pair to the front to use the large cubes to make an even larger cube.

You might like to record the shapes

made by children using the large cubes by photographing them.

• Ask: **How do we know that this is a cube?** (all six faces are squares)

• Say: **Now use your eight small cubes to make a cuboid.**

• Once children have completed the task, invite pairs who have made different cuboids to the front to recreate them using the large cubes.

• Congratulate children on their achievements. Keep a note or record of the different cuboids created.

Overcoming Barriers

• Children may get confused between cuboids and cubes. Emphasise that cubes are a special type of cuboid because all their faces are squares (rather than rectangles or a combination of rectangles and squares). Children who find this idea difficult could keep a cuboid and cube labelled with their shape names next to them while completing their individualised learning activities, as a reminder.