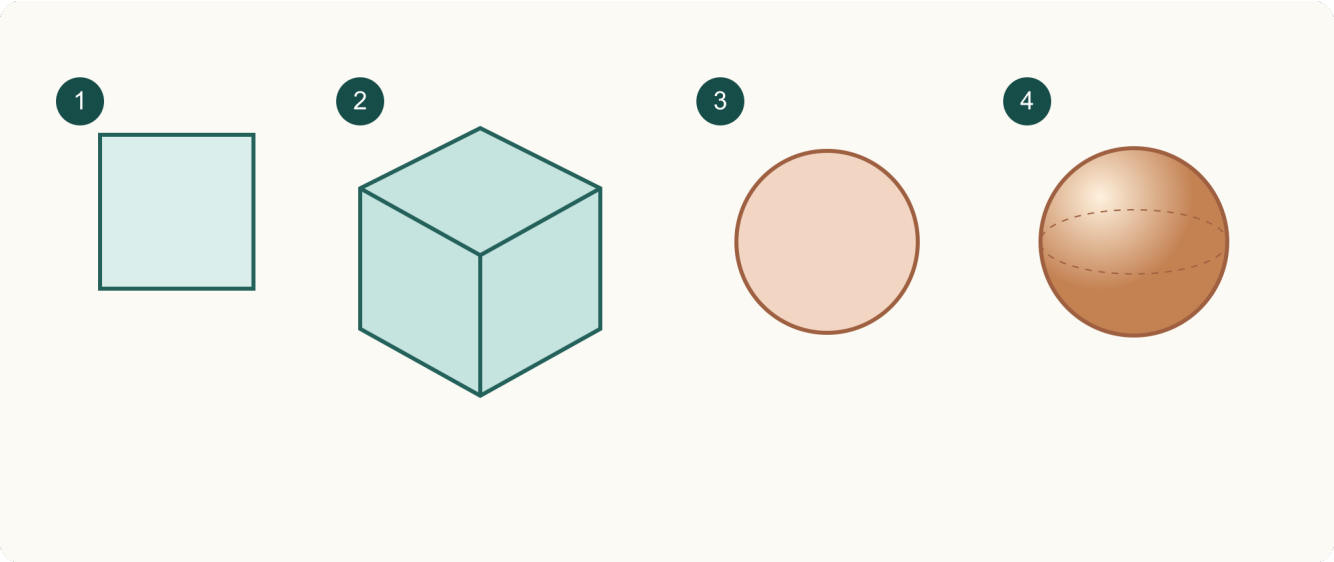
2D and 3D shapes: compare a square, a cube and a sphere

Early primary: identify, compare and describe



Learning diagram: Square · Cube · Circle · Sphere

Materials

Paper and a pencil · A roughly cube-shaped box · A ball

1. Match the square to a face of the cube. Explain why the whole cube is not a square.

2. Turn the box. Name one feature that stays the same.

3. Compare the ball and the box. Find a flat face and a curved surface.

My observations and explanation

Checks and explanations

1. A cube has six faces, including faces hidden from this viewpoint.

2. Turning the cube does not change its type. Color is not a defining feature.

3. The circular outline in a picture represents a view of the ball, not the whole sphere.

A face is not the whole solid

Draw a square on paper and find a roughly cube-shaped box. One face of the box can be represented by a square. The whole box takes up space and can be viewed from several sides. A drawing of the box is still a flat representation of a solid.

Look for defining features

Turn the box and compare its faces. Do not identify a cube only by its color, its size or how many faces are visible in one picture. Real packaging may have rounded corners and flaps; notice how it differs from the ideal solid in the diagram.

Build an explanation

Ask: “What stays the same when I turn it?” Then compare the box with a ball. Use words such as flat face, curved surface, edge and corner when useful. Accurate perspective drawing is not a prerequisite for this activity.

For parents and teachers

Let the learner handle and describe real objects before introducing more vocabulary. This is an observation activity, not a test of drawing skill.

What the model can and cannot show

The diagram shows ideal shapes rather than measured objects. An AI-generated model may have rounding or extra details, so do not use it as the answer key.

Check observations against your textbook and the sources below.

Common Core: Grade 1, Geometry · https://www.thecorestandards.org/Math/Content/1/G/

义务教育数学课程标准（2022年版） · https://www.moe.gov.cn/srcsite/A26/s8001/202204/W020220420582346895190.pdf