CENTRES FOR EXCELLENCE IN MATHS

FE centre resource

Pearson

# Lesson plan

# 3D shapes and volume

# Level 1

## 1. Lesson objectives

- To identify properties of common 3D shapes
- Through exploration, calculate volume and surface area of common 3D shapes
- Use knowledge of volume and surface area for problem solving questions

## 2. Functional skills Level 1 curriculum

**Common measures, shape and space**
**20** convert between units of length, weight, capacity, money and time in the same system
**23** calculate the volumes of cubes and cuboids

## 3. Lesson plan

This is an overview of the lesson. More notes can be found in the notes in the lesson slides.

| Activity | Purpose of this activity | Time (min) | Guidance | Materials |
|---|---|---|---|---|
| Introduction | To assess prior knowledge and recap the properties of 3D shapes, including their cross-sections and areas of these | 20 | Introduce the lesson through a poster activity.<br>Share the worksheet with learners and distribute 3D shapes (or 3D models) to pairs.<br>Learners complete the poster for their shape and then feedback key points to the class. While peers give their feedback, learners are to record properties of all shapes down on both sides of the worksheet. | Slides 2–5<br><br>Starter task worksheet (3D solid shapes or models) |
| Introduce | To introduce the context | 2 | The context of an ice-cream factory is introduced along with the aim of reducing the costs in the factory, starting off by looking at different container sizes. | Slide 6 |
| Discuss | To work out the volume of a container and discuss the difference between volume and capacity | 8 | Slide shows misconception about volume/capacity and their units.<br>Learners are to work out volume/capacity and discuss 2 statements.<br>This is followed by a Key Ideas slide. | Slides 7–9 |
| Explore 1 and feedback | Learners to explore sizes of different cuboid containers with constant capacity | 15 | Tutor is to introduce the explorative task and give out the explore worksheet which gives the learners a starting point.<br>The company are changing their packaging to 1 litre/1000 ml containers of ice-cream. What dimensions can they come up with? Lead a discussion about using factors to determine shape dimensions. Learners try to sketch as many different cuboid containers as possible. | Slides 10–11<br><br>Explore worksheet |

| Activity | Purpose of this activity | Time (min) | Guidance | Materials |
|---|---|---|---|---|
| Discuss | To discuss capacity of containers not completely full | 5 | Shops that the factory supplies are complaining about containers not being full. Discussion about working out capacity of a ‘not’ full container. | Slides 12–13 |
| Explore 2 | To work out the volume of ice-cream in containers that are not full (fraction of an amount) | 20 | Task in which learners work out the volume of ice-cream in different sized ice-cream containers which are fractionally full. Which tub holds the most ice-cream and which holds the least? | Slide 14<br><br>Explore 2 handout<br><br>Explore 2 answers |
| Exam practice | To consolidate lesson objectives | 15 | Slide 15 provides some FS exam tips which follow through to the questions that follow.<br>Ask learners to complete some of the exam questions which vary in difficulty.<br>Answers are provided in the PowerPoint animations. | Slides 15–18<br><br>Exam question handout |
| Review | To recap key learning points and revisit learning objectives | 5 | Tutor to draw from the learners the key learning points and misconceptions. Review learning objectives. | Slide 19 |