CENTRES FOR EXCELLENCE IN MATHS

FE centre resource

Pearson

Lesson plan

Area and perimeter of rectilinear shapes and compound shapes

1. Lesson objectives

- Explore the area and perimeter of squares, rectangles, triangles and compound shapes
- Understand the concepts of area and perimeter and use them in a range of problem-solving situations

2. GCSE curriculum

Geometry and measures
G14 use standard units of measure and related concepts (length, area, volume/capacity, mass, time, money, etc.)
G16 know and apply formulae to calculate area of triangles, parallelograms, trapezia; volume of cuboids and other right prisms (including cylinders)
G17 know the formulae: circumference of a circle = $2\pi r = \pi d$, area of a circle = πr^2; calculate: perimeters of 2D shapes, including circles; areas of circles and composite shapes; surface area and volume of spheres, pyramids, cones and composite solids

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 highlight how changes in length versus changes in width affect the area of a rectangle	10	Introduce the concept of area of rectangles. Ask learners to work in pairs to consider two statements relating to how changes to the dimensions of three fields affect the areas. Gather responses from the learners.	Slides 2–3 'Three gardens' handout
Discuss 1	To explore area and perimeter (including factors and square numbers)	10	Ask learners to work independently to draw various rectangles on a dot grid and note their observations about the dimensions of the rectangles. Teacher to get feedback from students and use various squares to elicit and demonstrate important concepts relating to squares, area, and perimeter. Ask learners to consider a set of statements and decide which statement is incorrect. Address misconceptions in the incorrect statements.	Slides 4–8 Dot grid paper
Discuss 2	To demonstrate how the formula for the area of a triangle is derived and highlight common misconceptions	15	Use the visuals on the slides to show a rectangle split into two triangles. Guide learners to derive the formula for the area of a triangle. Ask learners to consider a set of statements and work out what mistakes were made, and which is the correct answer. Address misconceptions in the incorrect statements.	Slide 9–11

Activity	Purpose of this activity	Time (min)	Guidance	Materials
Explore 1	To solve problems involving the area of compound shapes	10	Ask learners to work in pairs to work out the area of two compound shapes. Once learners have completed the task, ask some pairs to share the different methods to find the areas of each of the shapes.	Slides 12–16 ‘Area of compound shapes’ handout Calculators
Explore 2	To solve multi-step problems involving area of compound shapes	25	Ask learners to work in pairs to work out which venue has the greatest area and will make the most income for a music event.	Slides 17–22 ‘Crowd capacity’ handout
Practice question	Learners check and consolidate their understanding by answering exam questions	15	Ask learners to answer exam questions and after a few minutes discuss their thinking.	Slides 23–25 ‘Practice questions’ handout
Review	To summarise learning and review the concept of areas and perimeters of various shapes	5	Recap the learning points of the lessons.	Slide 26