Title: 2D Representations and Surface Area

Key Knowledge/Prior Learning KS2/3 and Retrieval and Suggested Starters
- Symmetry   - Area of 2D shapes   - Area and circumference of circles   - Faces, edges, vertices

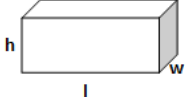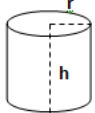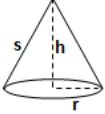| **KS3 National Curriculum – what students will be practicing and key questions** |
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| Draw plans and elevations Draw isometric drawings Calculate the surface area of cubes and cuboids Calculate the surface area of triangular prisms Calculate the surface area of compound prisms Calculate the surface area of cylinders |

Specific Ambitious Knowledge
- Draw 3D shape from its plan and elevation   - Missing lengths when given surface area   - Surface area of spheres and cones

Key Vocabulary/Literacy Opportunities
- Face, edges, vertices   - Front elevation   - Plan elevation   - Isometric   - Surface area   - Length, width, height   - Radius, diameter, circumference

Key Formulae/Knowledge

Figure	Formula	Variables
Cube	$6 \times a^2$	a = length of edge
Rectangular prism	$2(l \times w + w \times h + h \times l)$	l = length w = width h = height
Cylinder	$2 \times \pi \times r^2 + 2 \times \pi \times r \times h$ $= 2 \times \pi \times r \times (r + h)$	r = radius of circular face h = height
Cone	$\pi \times r \times s + \pi \times r^2$ $= \pi \times r \times (s + r)$	r = radius of circular base h = height from tip to base s = slant height $(\mathrm{sqrt}(r^2 + s^2))$
Sphere	$4 \times \pi \times r^2$	r = radius

Maths in Context (Historical, Real Life and Student Thinking Points)

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Projects/Enrichment/Investigations

- Cuboids problem   https://nrich.maths.org/cuboids/note
- Colourful cube   https://nrich.maths.org/11178/note