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| **Key Topics and Learning Sequence**  |
| **= First Steps** |  **= Moving On** |  **= Stretch** |  **= Challenge** |
| 1. **Recap of 2D shapes**
2. Learn the **names** of 2D shapes

 1. Know the **properties** that define 2D shapes
2. Understand what **perimeter** is and how to calculate it
3. Understand what **area** is and how to calculate it
4. Memorise the area **formulae** for 2D shapes
 | 1. **Properties of 3D shapes**
2. Learn the **names** of 3D shapes

 1. Identify **edges, vertices** and **faces,** and explore **Euler’s Formula**
2. Draw **nets, plans and elevations** of 3D shapes, and 3D shapes from their nets
3. Use **isometric paper** to draw 3D shapes
4. Problem solve using the properties of 3D shapes
 | 1. **Surface Area**
2. Find the surface area by **counting squares** on faces
3. **Use a net** to find the surface area of a 3D shape
4. Find the surface area of a **cube or cuboid**
5. Find the surface area of any **prism**
6. Find surface areas of shapes such as **spheres, cones, pyramids**
7. Apply your understanding of surface area to problem solve
 | **4. Volume**1. **Count cubes** to find a volume
2. Use the **correct units** for volume
3. Find the **volume** of a **cube or cuboid**
4. Find the volume of a **prism**
5. Use a volume to find a **missing length**
6. Find the volume of **compound shapes**
7. Find the volume of more complex shapes such as **spheres, cones, frustums and pyramids**

  | **5. Volume in context.**1. Solve problems that involve **fractions, decimals, and percentages**
2. Solve problems that involve **standard form**
3. Carry out **algebraic manipulation** in problems with surface area and volume
4. Apply concepts from **ratio, similarity, Pythagoras** to problems involving surface area and volume
5. Understand what **density** is and solve density problems.
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| **How does this unit fit into your mathematical learning journey?** | **Further Exploration, Enrichment and Cultural Capital** |
| You first learn about **area and perimeter** in **Year 8** and take this further in **Year 9** with **circles and also in work on Similarity and Pythagoras in year 9**. In this unit, we take these ideas and apply them in 3-dimensions and learn about what volume means and how to find volumes in different contexts as well as exploring surface areas of 3D shapes . | **Reading:**The Elements of Euclid**Enrichment:**  Research Euler and his contribution to maths.**Cultural Capital:**  Visit the Science Museum or experience the IMAX cinema in 3D. |

**LPS Mathematics: Year 10 Unit 5 – From 2D to 3D**

 **Enquiry Question:** “**What is the link between edges, faces and vertices in a 3D shape?”**

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**Date: Initial Thoughts:**

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**Date: New Thoughts:**

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**Date: Final Thoughts:**

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