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| **H Unit 7: Area and volume** | **Road Map** |
| In this unit you will learn about number. The aims are as follows:**LG1**: Knowledge**LG2**: Application**LG3**: Skills | Assessment Grades |  |  |
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| **Themes** | **Learning Goals/Outcomes/Content** |  |  |  |
| 7a Perimeter, area and circles | Recall and use the formulae for the area of a triangle, rectangle, trapezium and parallelogram using a variety of metric measures; |  |  |  |
| Calculate the area of compound shapes made from triangles, rectangles, trapezia and parallelograms using a variety of metric measures; |  |  |  |
| Find the perimeter of a rectangle, trapezium and parallelogram using a variety of metric measures;  |  |  |  |
| Calculate the perimeter of compound shapes made from triangles and rectangles;  |  |  |  |
| Estimate area and perimeter by rounding measurements to 1 significant figure to check reasonableness of answers.  |  |  |  |
| Recall the definition of a circle and name and draw parts of a circle;  |  |  |  |
| Recall and use formulae for the circumference of a circle and the area enclosed by a circle (using circumference = 2*πr* = *πd* and area of a circle = *πr*2) using a variety of metric measures; |  |  |  |
| Use *π* ≈ 3.142 or use the *π* button on a calculator;  |  |  |  |
| Calculate perimeters and areas of composite shapes made from circles and parts of circles (including semicircles, quarter-circles, combinations of these and also incorporating other polygons);  |  |  |  |
| Calculate arc lengths, angles and areas of sectors of circles;  |  |  |  |
| Find radius or diameter, given area or circumference of circles in a variety of metric measures; |  |  |  |
| Give answers in terms of *π*;  |  |  |  |
| Form equations involving more complex shapes and solve these equations. |  |  |  |
| 7b 3d forms and volume, cylinders, cones and spheres | Find the surface area of prisms using the formulae for triangles and rectangles, and other (simple) shapes with and without a diagram;  |  |  |  |
| Draw sketches of 3D solids; |  |  |  |
| Identify planes of symmetry of 3D solids, and sketch planes of symmetry;  |  |  |  |
| Recall and use the formula for the volume of a cuboid or prism made from composite 3D solids using a variety of metric measures;  |  |  |  |
| Convert between metric volume measures;  |  |  |  |
| Convert between metric measures of volume and capacity, e.g. 1 ml = 1 cm3; |  |  |  |
| Use volume to solve problems; |  |  |  |
| Estimating surface area, perimeter and volume by rounding measurements to 1 significant figure to check reasonableness of answers.  |  |  |  |
| Use *π* ≈ 3.142 or use the *π* button on a calculator;  |  |  |  |
| Find the volume and surface area of a cylinder;  |  |  |  |
| Recall and use the formula for volume of pyramid;  |  |  |  |
| Find the surface area of a pyramid; |  |  |  |
| Use the formulae for volume and surface area of spheres and cones;  |  |  |  |
| Solve problems involving more complex shapes and solids, including segments of circles and frustums of cones;  |  |  |  |
| Find the surface area and volumes of compound solids constructed from cubes, cuboids, cones, pyramids, spheres, hemispheres, cylinders;  |  |  |  |
| Give answers in terms of *π*;  |  |  |  |
| Form equations involving more complex shapes and solve these equations. |  |  |  |
| 7c Accuracy and bounds | Calculate the upper and lowers bounds of numbers given to varying degrees of accuracy;  |  |  |  |
| Calculate the upper and lower bounds of an expression involving the four operations; |  |  |  |
| Find the upper and lower bounds in real-life situations using measurements given to appropriate degrees of accuracy;  |  |  |  |
| Find the upper and lower bounds of calculations involving perimeters, areas and volumes of 2D and 3D shapes;  |  |  |  |
| Calculate the upper and lower bounds of calculations, particularly when working with measurements;  |  |  |  |
| Use inequality notation to specify an error interval. |  |  |  |

**Links:**

LG1: You will learn processes that will enable you to find areas and volumes of a range of 2d and 3d shapes, and to work with different units of measure.

LG2: You will apply the processes that you learn, to select and use appropriate methods for the shape given, and will be able to deal with mixed units.

LG3: You will use your problem-solving skills and mastery of area and volume to solve complex problems including those that link money and percentages with area or volume.