

Learning Plan 4		Subject/Pwnc: Mathemateg	Year/Blwyddyn: 9		
<p><u>The Four Purposes in Maths and Numeracy:</u></p> <p>Ambitious, capable learners who: set themselves high standards; seek and enjoy challenge; are increasingly knowledgeable and skilful; are questioning; enjoy solving problems; can communicate effectively; can explain the ideas and concepts; can use number effectively; understand how to interpret data and apply mathematical concepts</p> <p>Enterprising, creative contributors who: connect and apply their knowledge and skills to create ideas; think creatively to reframe and solve problems; identify and grasp opportunities; take measured risks</p> <p>Ethical, informed citizens</p> <p>Healthy, confident individuals who: face and overcome challenge; have the skills and knowledge to manage everyday life</p> <p>Knowledge focus/what matters:</p> <p>Multiplicative and proportional relationships:: <i>The number system is used to represent and compare relationships between numbers and quantities.</i></p> <p>Area and volume: <i>Geometry focuses on relationships involving shape, space and position, and measurement focuses on quantifying phenomena in the physical world.</i></p>					
Learning objective/key question	What will I know and be able to do? I can...	How will I develop my skills? (Success Criteria)		Homework/Gwaith cartref to support progress	
Week 1: Assessment and Feedback	Assessment: understand and use mathematical equipment, constructions, loci, 2D representations of 3D shapes, accuracy and bounds.	<p>Understanding: I can explain how bounds describe possible values. I can explain why measurements are approximate. I can explain why construction/measurement methods work/don't work. I can explain how different representations (nets, isometric drawings, plans and elevations) do/do not show the structure of a 3D shape.</p> <p>Communicating: I can use effective representations (number lines, inequalities, tables) to show ranges of values. I can produce accurate, well-structured constructions using appropriate tools and notation. I can use precise geometric vocabulary and clear diagrams to describe 3D shapes. I can use symbols and notation for bounds clearly and correctly.</p> <p>Fluency: I can apply shape knowledge confidently in new contexts. I can interpret and construct 3D representations accurately and efficiently. I can calculate upper and lower bounds accurately and apply them in different contexts. I can carry out constructions and loci accurately and efficiently.</p> <p>Reasoning: I can use logical reasoning to analyse how errors affect results in unfamiliar problems. I can justify how I know a diagram represents a particular 3D shape. I can explain my thinking clearly when comparing or analysing different representations. I can explain why a value lies within a particular range and justify the bounds I have calculated.</p> <p>Problem-solving: I can use 3D reasoning to solve unfamiliar problems, such as interpreting diagrams or visualising shapes. I can use loci and constructions to model and solve abstract problems. I can use loci and constructions to model and solve problems in real-world contexts. I can apply bounds to real-world situations, such as measurement, error, and estimation problems.</p>		Wk 1-2	<p>Mathswatch homework</p> <p>Set:</p> <p>Due:</p>

<p>Weeks 2-4:</p> <p>How can we calculate and compare the size of shapes, in 2D or 3D?</p>	<ul style="list-style-type: none"> Estimate of the area of an irregular shape drawn on a square grid Calculate the perimeter and area of: squares; rectangles; triangles; parallelogram; trapezium; circle; semicircles; composite shapes Calculate the length of a circular arc Calculate the area of a sector and a segment. Convert between units of area and volume. Work out the surface area, cross-sectional area, volume and capacity of a: cube; cuboid; prism; composite solid 	<p>Understanding: I can compare different methods for finding area, perimeter, volume, and surface area, explaining when one method is more efficient. I can create or choose representations (nets, diagrams, grids, or 3D models) to show how area and volume ideas connect to real-world situations.</p> <p>Communicating and skills: I use correct mathematical symbols and notation for area, perimeter, volume, arc length, and sectors. I can draw clear diagrams, label dimensions accurately, and write formal explanations or short proofs to communicate methods clearly for different audiences.</p> <p>Fluency: I can accurately recall and apply formulas for areas of 2D shapes, arc lengths, sectors, volumes of prisms, and composite solids. I can complete multi-step calculations efficiently, convert between units confidently, and select the most suitable technique for the shape or solid involved.</p> <p>Logical Reasoning: I can justify my calculations by explaining the formulas used and why they apply to a particular shape. I use diagrams or examples to support reasoning, and I can identify incorrect assumptions (for example, misidentifying dimensions) and suggest counterexamples or corrected approaches.</p> <p>Problem Solving: I can choose appropriate tools and methods to tackle unfamiliar area or volume challenges, including composite shapes or real-world contexts. I can plan multi-step solutions, adapt strategies when needed, and monitor my progress as I work through non-routine measurement problems.</p>	<p>Wk 3-4</p>	<p>Mathswatch homework</p> <p>Set:</p> <p>Due:</p>
<p>Week 5:</p> <p>Understand and use multiplicative relationships</p> <p>(continues after Easter)</p>	<ul style="list-style-type: none"> Recall and use equivalences between fractions, decimals and percentages, and simplify fractions. Express one number as a fraction or percentage of another. Find a fraction or percentage of a quantity. Solve problems with repeated proportional changes. Calculate using ratios in a variety of situations. Solve numerical problems involving direct and inverse proportion. Calculate the original quantity given the result of a proportional change. 	<p>Understanding: I understand how fractions, decimals, percentages, ratio, and proportion are connected. I can explain why different proportional methods work and when to use each one. I can interpret repeated percentage change and proportional relationships in real situations.</p> <p>Communicating & Skills: I use correct notation for fractions, ratios, and percentages. I can set out proportional calculations clearly, label steps, and choose language that explains methods effectively. I can communicate solutions using structured working, diagrams, ratio tables, or bar models.</p> <p>Fluency: I can recall key equivalences (fractions–decimals–percentages), simplify fractions, and convert between forms accurately. I can calculate fractions or percentages of quantities, express one value as a fraction or percentage of another, and use ratios and proportional change methods efficiently.</p> <p>Logical Reasoning: I can justify proportional methods—for example, why scaling a ratio works or why a percentage increase leads to a specific result. I can identify incorrect assumptions such as mixing additive and multiplicative reasoning and use examples or counterexamples to check validity.</p> <p>Problem Solving: I can apply proportional reasoning flexibly in unfamiliar contexts, including reverse percentage problems, repeated percentage change, ratio-based tasks, and direct or inverse proportion scenarios. I can plan multi-step approaches, choose suitable representations, and adjust strategies when needed.</p>	<p>Wk 5</p>	<p>Mathswatch homework</p> <p>Set:</p> <p>Due:</p>
<p>SYL in week 4 or 5 using the above success criteria. S.C. to also be shared by class teacher.</p>				