Topic: Unit 11 – Constructing, Measuring and Using Geometric Notation		**Duration: 17 lessons**	**Composite:**
Key vocabulary:	**Powerful knowledge components**	**Core knowledge Components**	**Links to previous and future topics**
Geometry Line segment Perpendicular SSS, SAS, ASA Clockwise Anti-clockwise Compass Angle Obtuse Acute Reflex Right angle Quadrilateral Polygon Protractor Pie chart	**I know that:** • a full turn is 360° • the compass points are at successive 45°angles •clockwise is the direction the hands of a clock travel and anticlockwise is the opposite direction **I know how:** • to name polygons •to draw measure and draw straight lines accurately with a ruler • to describe degrees of turn using compass points and the knowledge that a full turn is 360° •to classify angles as acute, obtuse, right angle or reflex, including when describing angles within polygons •to use a protractor •to accurately measure and draw angles up to 360° using a protractor	**I know that:** • perpendicular lines are at right angles to each other •SSS – side, side, side •SAS -side, angle, side •ASA – angle, side, angle **I know how:** • to label shapes and angles according to geometric labelling conventions • Use knowledge of geometry to solve problems and explain reasoning •to draw and label line segments •to draw and label perpendicular lines • to use knowledge of angles to solve problems and explain reasoning •to recognise and describe the properties of types of triangle •to recognise and describe the properties of types of quadrilateral •to recognise and describe the properties of types of polygon •to recognise and describe the properties of types of triangle •to recognise and describe the properties of types of triangle •to construct triangles using SSS, SAS and ASA •to construct more complex polygons •Interpret simple pie chart using proportion and then a protractor •to draw pie charts	Previous: Name 2D shapes Classify angles as acute obtuse and right angle Use a ruler accurately Interpret simple pie charts Start to use a protractor Future: Construct more complex shapes Answer more complex problems involving geometry

Impressive reading	Impressive speaking	Impressive writing	Resilience	Employability via:
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SEND

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- Key vocabulary introduced using precision teaching prior to a new topic. Can be shared via printed documents or Google classroom.
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- Allow more processing time for solving problems both verbal and written where needed. Lesson notes can be shared through Google classroom both before and after lessons.
- Repetition – start each lesson with knowledge recall based questions.
- Praise and reward for effort and engagement.
- Demonstrate and model mathematic problems. Students can take photographs for recording modelling or printed copies given.
- Multi-sensory- kinaesthetic learning created so that pupils can move the maths learning around – dienes, counters, Cuisenaire rods, etc.
- Technology use of interactive white boards to demonstrate methods – Sites such as Mathsframe, Mathswatch (clips: 7, 33, 36, 93, 95, 137) can be used to reinforce skills.
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Topic: Unit 12 – Developing Geometric Reasoning		**Duration: 11 lessons**	**Composite:**
Key vocabulary:	**Powerful knowledge components**	**Core knowledge Components**	**Links to previous and future topics**
Angle Vertically opposite Triangle Polygon Right angle Interior Exterior Alternate Corresponding	**I know that:** • angles at a point sum to 360° •angles on a straight line add to 180° •angles in a triangle sum to 180° •angles in a quadrilateral sum to 360° •a square symbol is used at a right angle **I know how:** • to find a missing angle in a triangle •to find a missing angle on a straight line •to find a missing angle around a point •to provide examples to explain reasoning	**I know that:** • vertically opposite angles are equal **I know how:** • to solve problems involving angles at a point •to solve problem involving angles on a straight line •solve problems involving vertically opposite angles •solve problems involving angles in a triangle •to solve problems involving angles in a quadrilateral •to use triangles to find the interior angles in a polygon •to find the exterior angle of a polygon by subtracting the interior angle from 180° •to use investigation to find the rules for angles in parallel lines •to recognise and use the rules for angles in parallel lines and use the vocabulary associated – alternate angles, corresponding angles, vertically opposite angles •to apply all angles knowledge to mixed and more complex problems and explain reasoning	Previous: Angles in a triangle Angles on a straight line Naming polygons Future: More complex problem involving a combination of shape and parallel line angle rules

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Topic: Unit 13 – Developing Number Sense		Duration: 9 lessons	Composite:
Key vocabulary:	**Powerful knowledge components**	**Core knowledge Components**	**Links to previous and future topics**
Mental Calculation Addition Subtraction Multiplication Division Factors Strategy Integer Decimal	**I know that:** • mental calculations involve being able to calculate without the use of a formal written method **I know how:** • to use mental addition and subtraction strategies for integers e.g. when adding 99, I add 100 and the subtract 1. • to use mental multiplication and division strategies for integers e.g. 9 x 24 …I can multiply by 10 and then take 24 away • to use mental addition and subtraction strategies for decimals e.g. when adding 0.9, I add 1 and the subtract 0.1.	**I know that:** • Some calculations can be done more efficiently by using mental strategies **I know how:** • to develop knowledge of mental addition and subtractions strategies • to develop knowledge of mental multiplication and division strategies •to describe each step of my mental calculation •to use knowledge of mental strategies to solve problems and explain reasoning • to choose the most efficient method to solve a calculation • to use mental addition and subtraction strategies for decimals e.g. when adding 0.9, I add 1 and the subtract 0.1 • to find mistakes in a calculation, describe what has been done incorrectly and correct it • to use factors to simplify calculations (associativity) •to use rounding to estimate answers to calculations •to use known (or given) facts to work out other facts • use given algebraic facts to work out other facts .	Previous: Start to explain mental methods and use known strategies Future: Be confident when choosing the most efficient calculation strategy

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Topic: Unit 14 – Sets and Probability		Duration: 10 lessons	Composite:
Key vocabulary:	**Powerful knowledge components**	**Core knowledge Components**	**Links to previous and future topics**
Venn Diagram Set Intersection Union Compliment Probability Even Impossible likely Unlikely Certain Sample Space	**I know that:** • a Venn diagram contains information about sets of data, both shared and not shared •the sum of all probabilities for all possible outcomes is 1 **I know how:** • to identify and represent sets •Interpret simple Venn diagrams • start to understand and use the vocabulary of sets such as union and intersection •start to understand and use the vocabulary of probability •to use the probability scale	**I know that:** • the Universal set is all of the elements of the set •the intersection of a set is where the circles overlap and the elements in here are shared •the union of sets is where the elements are in either set (all of the data inside the circles) •the compliment of a set are the elements that are NOT in that set **I know how:** • interpret and draw Venn diagrams •to add information to a Venn diagram, based on the information given •to find the elements in the intersection of a Venn Diagram •to find the elements of the union of sets •to find the compliment of a set •to use the language of probability to explain reasoning in simple probability questions •to create Sample Spaces for a single event .	Previous: Simple probabilities Simple Venn Diagrams Future: Sample Space Diagrams for multiple events More complex set notation

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Topic: Unit 15 – Prime Numbers and Proof		Duration: 10 lessons	Composite:
Key vocabulary:	**Powerful knowledge components**	**Core knowledge Components**	**Links to previous and future topics**
Multiple Factor Prime Product Common HCF LCM Conjecture	**I know that:** • multiples are counting in steps of number • a factor is a number that divides exactly into a higher number •prime numbers have exactly two factors •2 is the only even prime number • 1 is not a prime number **I know how:** • to identify prime numbers • to draw a factor tree, finding the product of primes for a number • to find a common factor • to find a common multiple	**I know that:** • lowest common multiple is the first shared multiple for a set of numbers • highest common factor is the largest number that divides exactly into a higher number **I know how:** • to solve problems involving multiples and explain reasoning •use algebraic expressions to solve reasoning problems •to identify factors in numbers and algebraic expressions •recognise square and triangular numbers •to find common factors of a set of numbers, including the Highest Common Factor (HCF) •to find common multiples of a numbers, including Lowest Common Multiple (LCM) •to write a number as a product of its prime factors •Use a Venn Diagram to calculate the HCF and LCM •to test conjectures e.g. *To find the lowest common multiple of two numbers, you multiply them together* • Use examples to disprove conjectures e.g. *The sum of two numbers is always greater than each of the numbers.*	Previous: Times tables Counting in steps Finding factors and multiples Future: More complex examples

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