



# Maths

## Progression Statements



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## 1. Background:

These progression statements have been developed across the Trust through dialogue between Heads, Maths Leads and Teaching Staff. We have used the following as key source materials:

- National Curriculum Maths Programmes of Study 2014
- NCETM Progression Maps (with Reasoning)
- Third Space Learning - The Ultimate Maths Vocabulary List 2018
- NCETM Calculation Guidance 2015
- White Rose National Curriculum Progression Y1-6 2019
- Power Maths Strand Yearly Overview 2019
- NCETM Maths Vocabulary List for Teachers KS1-3 2015
- NCETM Spine Overview Pilot Materials Y1-6 2018
- Early Years Progression Charts NCETM 2019
- Understanding Early Years Mathematics: The Connective Model Haylock and Cockburn (1989)
- Concrete, Pictorial and Abstract Approaches – Jerome Bruner 1960 & Cockcroft Report 1982
- How People Learn: Brain, Mind, Experience and School (Bransford et al 2000), published by the National Academy of Sciences and the National Research Council

## 2. Purpose:

The progression statements are intended to be used to provide a robust framework upon which to build the Maths curriculum. They provide an assurance of:

- i. **Sequential progressive learning of skills and knowledge** within Maths. They support the step by step visiting and revisiting of strands within Maths to deepen understanding over time.
- ii. **Mathematical conceptual approaches.** Maths has a distinctive pedagogical approach through the development of the connective model, enabling children's understanding through the use of specific language, concrete manipulatives, mathematical symbols/representations and contexts. Therefore the approach that has been taken is to develop key areas or big ideas within Maths (substantive concepts) and group key vocabulary around them which are often themselves secondary concepts. These are attached in a separate document – Mathematical Concepts, Ideas and Vocabulary.
- iii. **A secure framework** from which schools and teachers can plan and create a sequential and connected curriculum mediated to the needs of their children and their context. There are particular links to Computing, Geography, Design Technology, Science and Art.
- iv. **A basis for assessment and moderation** within and between schools.

Learning is not always a linear progression. These statements are therefore a tool for teachers to adapt to the different needs of their cohorts, classes and individual children.

### 3. Maths Concepts:

#### a) The Big Conceptual Picture

Mathematics is a creative and highly inter-connected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.

.Our disadvantaged children can face particular challenges due to their circumstances and therefore it is particularly important that they have opportunities to be learn mathematical vocabulary and be empowered through practical application and representations to discover and formulate their own thinking.

*One of the strongest research summaries supporting the importance of conceptual understanding can be found in How People Learn: Brain, Mind, Experience and School (Bransford et al 2000), published by the National Academy of Sciences and the National Research Council:*

*Experts' knowledge is **connected and organized around important concepts** (eg, mathematical fluency). To develop competence in an area of maths, students must: a) have a deep foundation of factual knowledge & recall, b) understand facts and ideas in the **context of a conceptual framework**, and c) organize knowledge in ways that facilitate retrieval and application ... organizing information into a conceptual framework allows for greater transfer; that is, it allows the student to apply what was learned in new situations and to learn related information more quickly*

*Anderson and Krathwohl's book (2001) updated Benjamin Bloom's Taxonomy of Educational Objectives (1956), and further supports the need to teach for deeper conceptual understanding. By separating factual knowledge from conceptual knowledge, we highlight the need for educators to teach for deep understanding of conceptual knowledge, not just for remembering isolated and small bits of factual knowledge (p 42). Students understand when they build connections between the "new" knowledge to be gained and their prior knowledge. More specifically, the incoming knowledge is integrated with existing schemas and cognitive frameworks. Since concepts are the building blocks for these schemas and frameworks, conceptual knowledge provides a basis for understanding*

#### B) Five Big Ideas

Five main 'big ideas' recur within the Primary Maths teaching and which are useful for teachers to keep revisiting explicitly as they enable deeper understanding to develop in their modelling:

Teacher 'Big Ideas'	
<b>Coherence</b>	Lessons are broken down into small, connected steps that gradually unfold the concept, providing access for all children and leading to a generalisation of the concept and the ability to apply the concept to a range of contexts
<b>Structure and Representation</b> (See Connective Model & CPA Models below )	Representations used in lessons expose the mathematical structure being taught, the aim being that students can do the maths without recourse to the representation

**Mathematical Thinking and Reasoning**

If taught ideas are to be understood deeply, they must not merely be passively received but must be worked on by the student: thought about, reasoned with and discussed with others

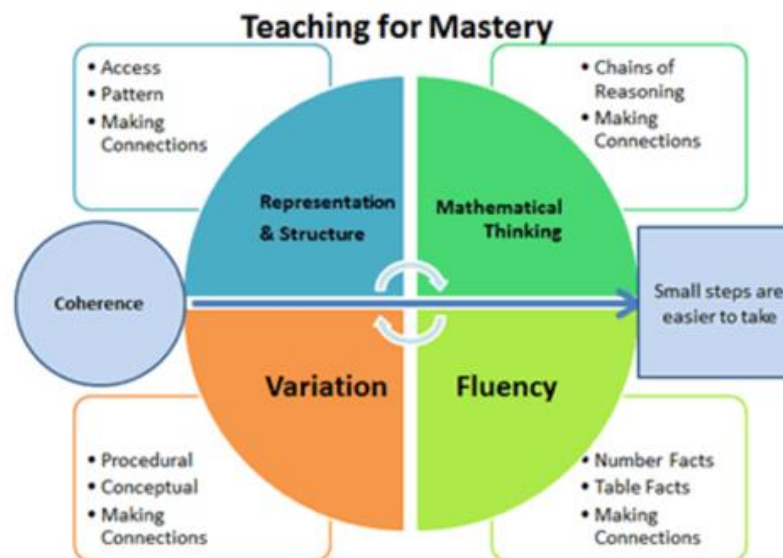
**Fluency**

Quick and efficient recall of facts and procedures and the flexibility to move between different contexts and representations of mathematics

**Variation**

Variation is twofold. It is firstly about how the teacher represents the concept being taught, often in more than one way, to draw attention to critical aspects, and to develop deep and holistic understanding. It is also about the sequencing of the episodes, activities and exercises used within a lesson and follow up practice, paying attention to what is kept the same and what changes, to connect the mathematics and draw attention to mathematical relationships and structure.

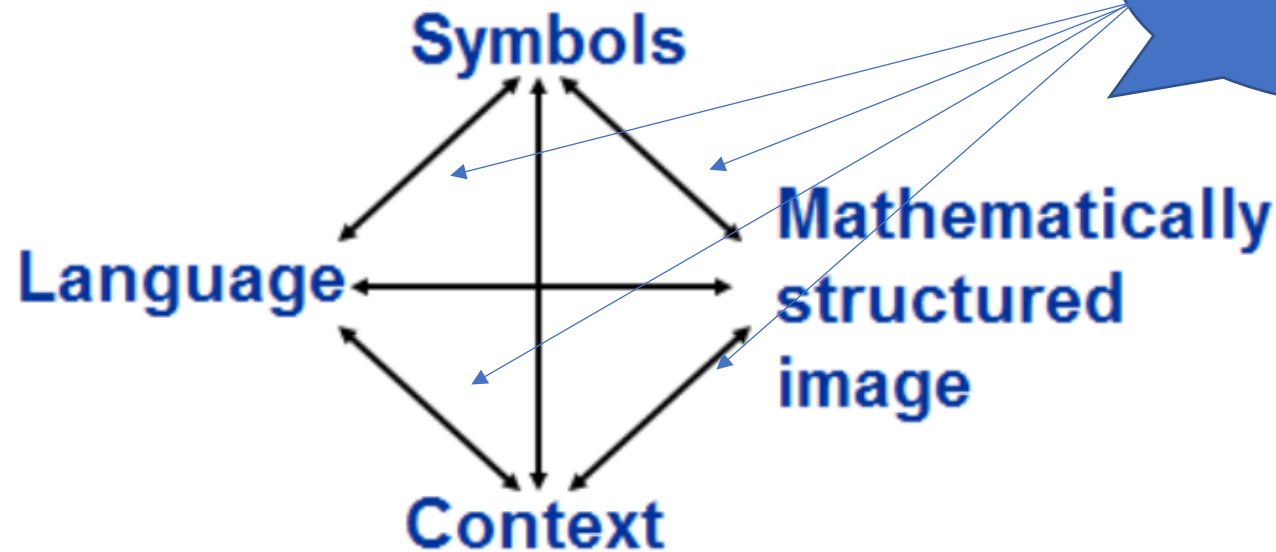
## 4. Pedagogical Approaches



### i. Connective Model

Understanding mathematics involves identifying and understanding connections between mathematical ideas. Haylock and Cockburn (1989) suggested that effective learning in mathematics takes place when the learner makes cognitive connections. Teaching and learning of mathematics, **especially when modelling**, should therefore focus on making such connections. The connective model helps to make explicit the connections between different mathematical representations: symbols, mathematically structured images, language and contexts. The interconnections represented by the lines in this image from Haylock and Cockburn is developed more fully through 'Talk for Learning' between pupils to extend their thinking.





ii. **Concrete, Pictorial, Abstract (CPA)**

Children (and adults!) can find maths difficult because it is abstract. The Concrete Pictorial Abstract (CPA) approach is a system of learning that uses physical and visual aids to build a child's understanding of abstract topics.

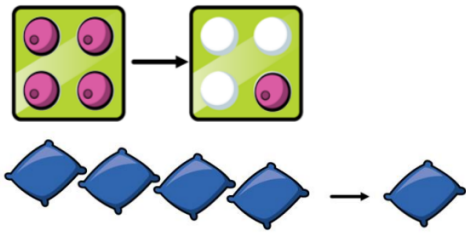
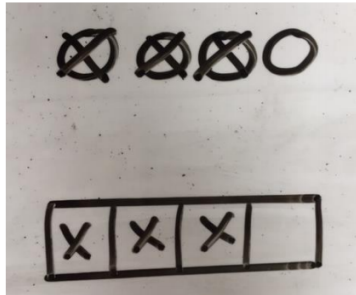
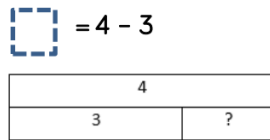
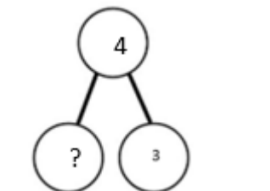
Pupils are introduced to a new mathematical concept through the use of **concrete** resources (e.g. fruit, Dienes blocks etc). When they are comfortable solving problems with physical aids, they are given problems with pictures – usually **pictorial representations** of the concrete objects they were using.

Then they are asked to solve problems where they only have the **abstract** i.e. numbers or other symbols. Building these steps across a lesson can help pupils better understand the relationship between numbers and the real world, and therefore helps secure their understanding of the mathematical concept they are learning.

Eg:

# Calculation policy: Subtraction

Key language: take away, less than, the difference, subtract, minus, fewer, decrease.

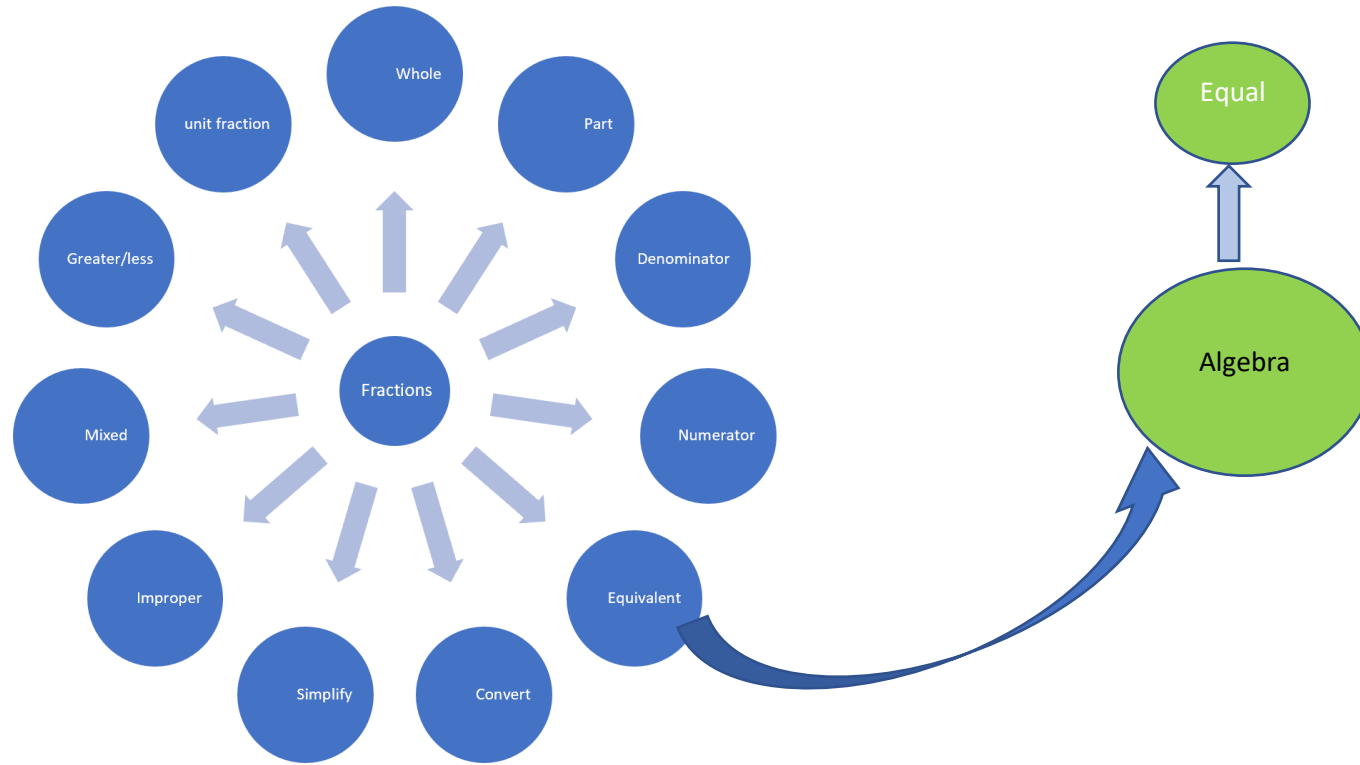
Concrete	Pictorial	Abstract
<p>Physically taking away and removing objects from a whole (ten frames, Numicon, cubes and other items such as beanbags could be used).</p> <p><math>4 - 3 = 1</math></p> 	<p>Children to draw the concrete resources they are using and cross out the correct amount. The bar model can also be used.</p> 	<p><math>4 - 3 =</math></p> <p></p> <p></p>

## 5. Conceptual Development

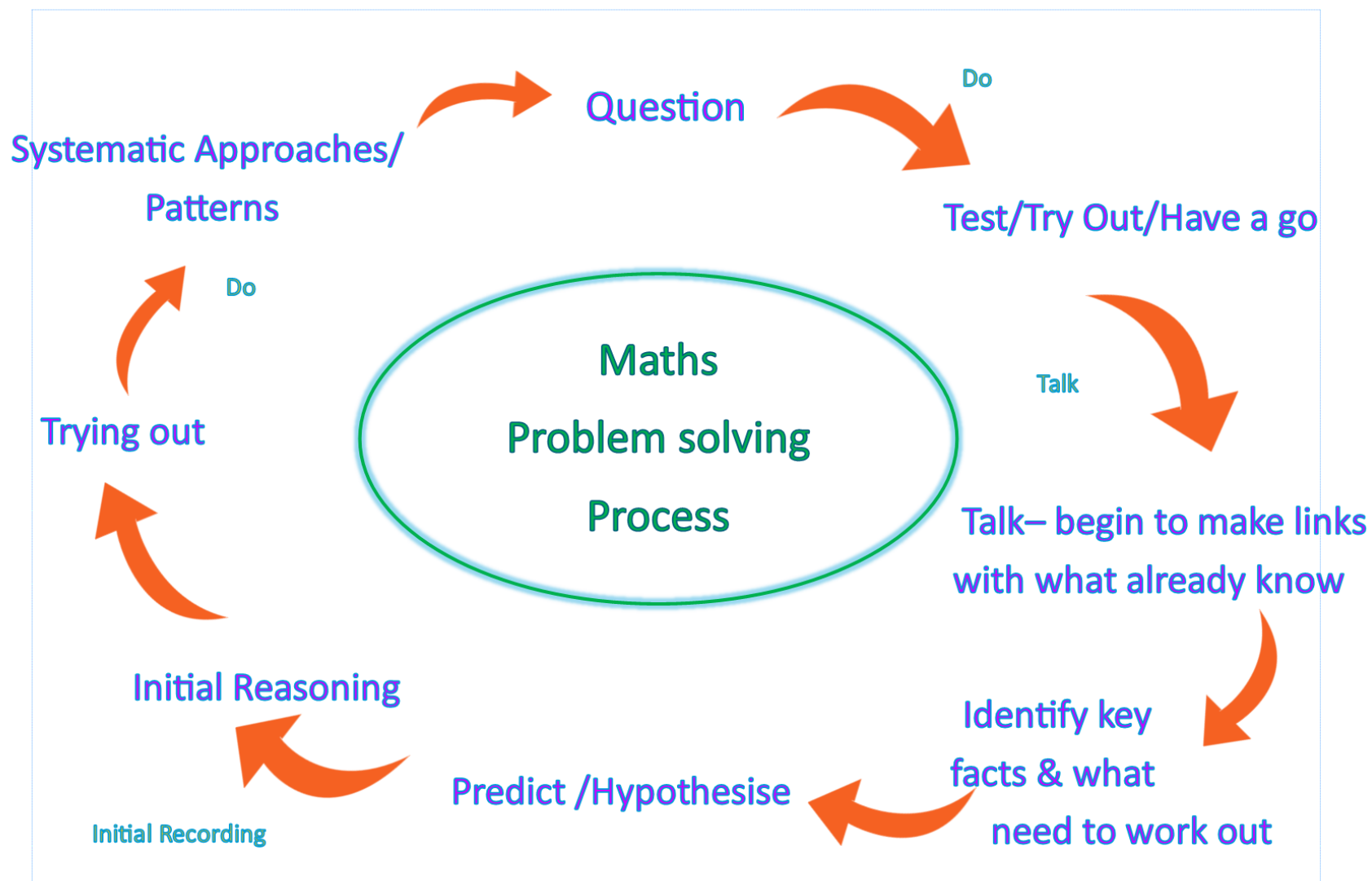
Mathematical strands have primary conceptual areas. They also often having many secondary concepts/vocabulary attached to them (for example fractions will have equivalency, simplification, conversion etc). For this reason, Mathematical Concepts, Ideas and Vocabulary Maps have been produced (see end of document) which show the key understanding that is being developed across the overarching concept. As this schema is built up children can then begin linking different conceptual areas eg angles can be used within shapes, develop translations and coordinates.

*Examples of Concepts, Ideas and Vocabulary Maps and how they might connect to build schemas*

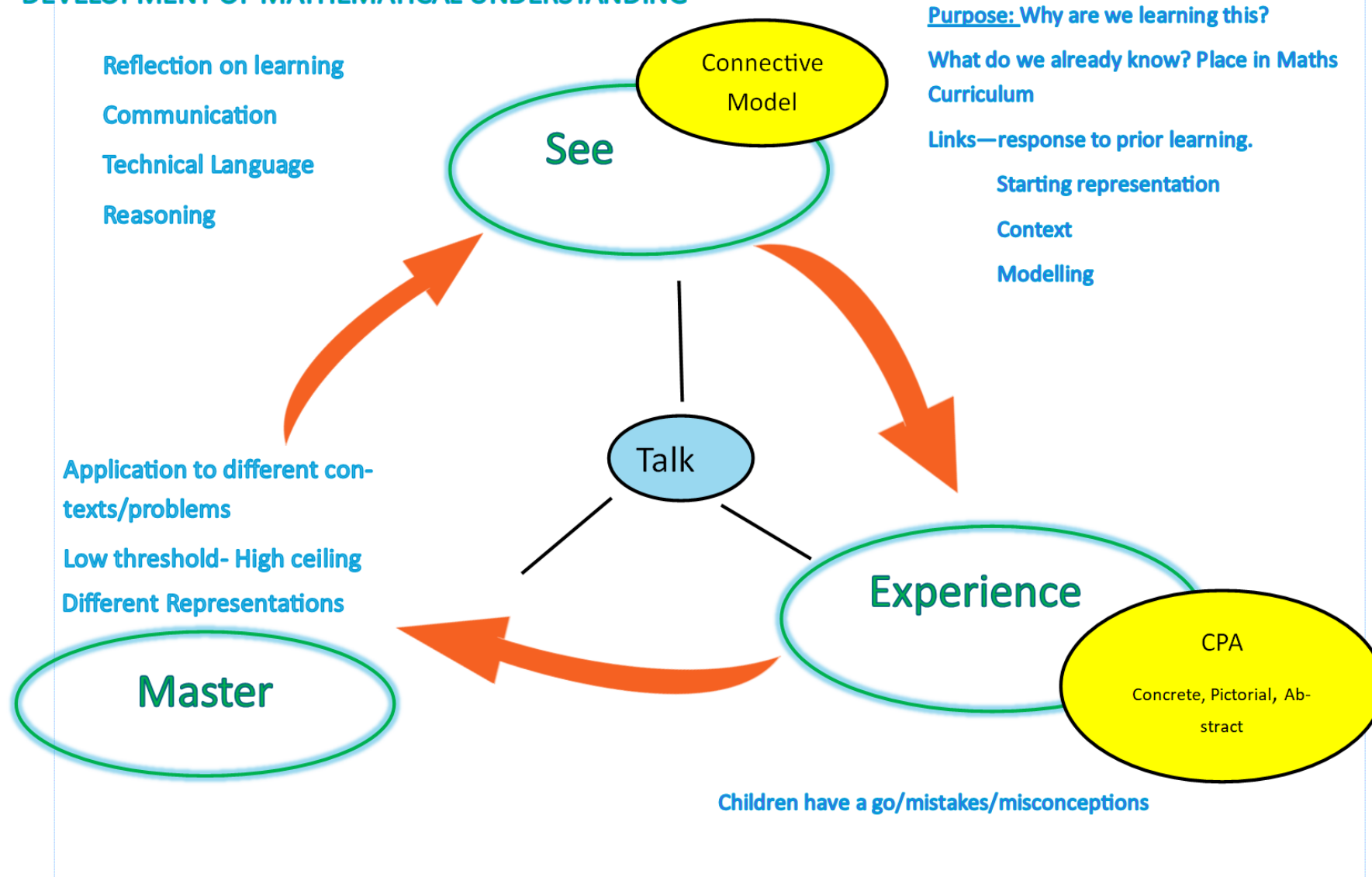




## 6. Mathematical SKILLS development- Working Mathematically –



## DEVELOPMENT OF MATHEMATICAL UNDERSTANDING



## 7. Overarching Mathematical Skills

Skill	Definition
<b>Number sense</b>	To have an understanding of a number through counting initially and then to see the relationships between numbers as they add, subtract, multiply and divide
<b>Spatial sense - "geometry."</b>	The ideas of shape, size, space, position, direction, angle, dimension and movement.
<b>Representation</b>	Making mathematical ideas "real" by using words, pictures, symbols, and objects
<b>Measurement</b>	Finding the length, height, capacity and weight of an object or distance using units like metres, litres, grams. Measurement is also of time (in minutes, days, years)
<b>Estimation</b>	This is the ability to make an approximation about the amount or size of something based of what a child might already know.
<b>Patterns</b>	Patterns, whether numbers, shapes or images, repeat in a logical way. Patterns help children learn to make predictions, to understand what comes next, to make logical connections, and to use reasoning skills.
<b>Problem-solving</b>	The ability to think through a problem, to recognize there is more than one path to the answer. It means using past knowledge, to look at alternatives and use logical thinking skills to find an answer.
<b>Comparison</b>	To recognise similarities and differences between numbers, shapes, scales ...(etc) and processes
<b>Communicate</b>	To explain, with reasoning, an idea or mathematical process clearly using examples / representations.
<b>Self-question</b>	To internalise a checking process as they move through a mathematical process – does this work? what might this do? Why is this so far from my estimate?

## 8. Knowledge Progression

### Primary Progression – Place Value



	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Place Value: Counting	<ul style="list-style-type: none"> <li>count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number</li> <li>Count numbers to 100 in numerals; count in multiples of twos, fives and tens</li> </ul> <p>Autumn 1 Autumn 4 Spring 2 Summer 4</p>	<ul style="list-style-type: none"> <li>count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward</li> </ul> <p>Autumn 1</p>	<ul style="list-style-type: none"> <li>count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number</li> </ul> <p>Autumn 1 Autumn 3</p>	<ul style="list-style-type: none"> <li>count in multiples of 6, 7, 9, 25 and 1000</li> <li>count backwards through zero to include negative numbers</li> </ul> <p>Autumn 1 Autumn 4</p>	<ul style="list-style-type: none"> <li>count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000</li> <li>count forwards and backwards with positive and negative whole numbers, including through zero</li> </ul> <p>Autumn 1</p>	
Place Value: Represent	<ul style="list-style-type: none"> <li>identify and represent numbers using objects and pictorial representations</li> <li>read and write numbers to 100 in numerals</li> <li>read and write numbers from 1 to 20 in numerals and words.</li> </ul> <p>Autumn 1 Autumn 4 Spring 2 Summer 4</p>	<ul style="list-style-type: none"> <li>read and write numbers to at least 100 in numerals and in words</li> <li>identify, represent and estimate numbers using different representations, including the number line</li> </ul> <p>Autumn 1</p>	<ul style="list-style-type: none"> <li>identify, represent and estimate numbers using different representations</li> <li>read and write numbers up to 1000 in numerals and in words</li> </ul> <p>Autumn 1</p>	<ul style="list-style-type: none"> <li>identify, represent and estimate numbers using different representations</li> <li>read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value</li> </ul> <p>Autumn 1</p>	<ul style="list-style-type: none"> <li>read, write, (order and compare) numbers to at least 1 000 000 and determine the value of each digit</li> <li>read Roman numerals to 1000 (M) and recognise years written in Roman numerals.</li> </ul> <p>Autumn 1</p>	<ul style="list-style-type: none"> <li>read, write, (order and compare) numbers up to 10 000 000 and determine the value of each digit</li> </ul> <p>Autumn 1</p>

## Primary Progression – Place Value

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Place Value : Use PV and Compare	<ul style="list-style-type: none"> <li>given a number, identify one more and one less</li> </ul> <p>Autumn 1 Autumn 4 Spring 2 Summer 4</p>	<ul style="list-style-type: none"> <li>recognise the place value of each digit in a two-digit number (tens, ones)</li> <li>compare and order numbers from 0 up to 100; use <math>&lt;</math>, <math>&gt;</math> and <math>=</math> signs</li> </ul> <p>Autumn 1</p>	<ul style="list-style-type: none"> <li>recognise the place value of each digit in a three-digit number (hundreds, tens, ones)</li> <li>compare and order numbers up to 1000</li> </ul> <p>Autumn 1</p>	<ul style="list-style-type: none"> <li>find 1000 more or less than a given number</li> <li>recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)</li> <li>order and compare numbers beyond 1000</li> </ul> <p>Autumn 1</p>	<ul style="list-style-type: none"> <li>(read, write) order and compare numbers to at least 1 000 000 and determine the value of each digit</li> </ul> <p>Autumn 1</p>	<ul style="list-style-type: none"> <li>(read, write), order and compare numbers up to 10 000 000 and determine the value of each digit</li> </ul> <p>Autumn 1</p>
Place Value: Problems & Rounding		<ul style="list-style-type: none"> <li>use place value and number facts to solve problems.</li> </ul> <p>Autumn 1</p>	<ul style="list-style-type: none"> <li>solve number problems and practical problems involving these ideas</li> </ul> <p>Autumn 1</p>	<ul style="list-style-type: none"> <li>round any number to the nearest 10, 100 or 1000</li> <li>solve number and practical problems that involve all of the above and with increasingly large positive numbers</li> </ul> <p>Autumn 1</p>	<ul style="list-style-type: none"> <li>interpret negative numbers in context</li> <li>round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000</li> <li>solve number problems and practical problems that involve all of the above</li> </ul> <p>Autumn 1</p>	<ul style="list-style-type: none"> <li>round any whole number to a required degree of accuracy</li> <li>use negative numbers in context, and calculate intervals across zero</li> <li>solve number and practical problems that involve all of the above</li> </ul> <p>Autumn 1</p>



## Primary Progression – Addition & Subtraction



	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Addition &amp; Subtraction: Recall, Represent, Use</b>	<ul style="list-style-type: none"> <li>read, write and interpret mathematical statements involving addition (+), subtraction (−) and equals (=) signs</li> <li>represent and use number bonds and related subtraction facts within 20</li> </ul> <p>Autumn 2 Spring 1</p>	<ul style="list-style-type: none"> <li>recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100</li> <li>show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot</li> <li>recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems</li> </ul> <p>Autumn 2</p>	<ul style="list-style-type: none"> <li>estimate the answer to a calculation and use inverse operations to check answers</li> </ul> <p>Autumn 2</p>	<ul style="list-style-type: none"> <li>estimate and use inverse operations to check answers to a calculation</li> </ul> <p>Autumn 2</p>	<ul style="list-style-type: none"> <li>use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy</li> </ul> <p>Autumn 2</p>	

## Primary Progression – Addition & Subtraction



	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Addition &amp; Subtraction: Calculations</b>	<ul style="list-style-type: none"> <li>add and subtract one-digit and two-digit numbers to 20, including zero</li> </ul> <p>Autumn 2 Spring 1</p>	<ul style="list-style-type: none"> <li>add and subtract numbers using concrete objects, pictorial representations, and mentally, including:               <ul style="list-style-type: none"> <li>a two-digit number and ones</li> <li>a two-digit number and tens</li> <li>two two-digit numbers</li> <li>adding three one-digit numbers</li> </ul> </li> </ul> <p>Autumn 2</p>	<ul style="list-style-type: none"> <li>add and subtract numbers mentally, including:               <ul style="list-style-type: none"> <li>a three-digit number and ones</li> <li>a three-digit number and tens</li> <li>a three-digit number and hundreds</li> </ul> </li> <li>add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction</li> </ul> <p>Autumn 2</p>	<ul style="list-style-type: none"> <li>add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate</li> </ul> <p>Autumn 2</p>	<ul style="list-style-type: none"> <li>add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)</li> <li>add and subtract numbers mentally with increasingly large numbers</li> </ul> <p>Autumn 2</p>	<ul style="list-style-type: none"> <li>perform mental calculations, including with mixed operations and large numbers</li> <li>use their knowledge of the order of operations to carry out calculations involving the four operations</li> </ul> <p>Autumn 2</p>

## Primary Progression – Addition & Subtraction



	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Addition &amp; Subtraction: Solve Problems</b>	<ul style="list-style-type: none"> <li>solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as <math>7 = \square - 9</math></li> </ul>	<ul style="list-style-type: none"> <li>solve problems with addition and subtraction:               <ul style="list-style-type: none"> <li>using concrete objects and pictorial representations, including those involving numbers, quantities and measures</li> <li>applying their increasing knowledge of mental and written methods</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction</li> </ul>	<ul style="list-style-type: none"> <li>solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why</li> </ul>	<ul style="list-style-type: none"> <li>solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why</li> <li>solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign</li> </ul>	<ul style="list-style-type: none"> <li>solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why</li> </ul>
	Autumn 2 Spring 1	Autumn 2	Autumn 2	Autumn 2	Autumn 2	Autumn 2

## Primary Progression – Multiplication & Division

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Multiplication &amp; Division: Recall, Represent, Use</b>		<ul style="list-style-type: none"> <li>recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers</li> <li>show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot</li> </ul> <p>Autumn 4 Spring 1</p>	<ul style="list-style-type: none"> <li>recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables</li> </ul> <p>Autumn 3</p>	<ul style="list-style-type: none"> <li>recall multiplication and division facts for multiplication tables up to <math>12 \times 12</math></li> <li>use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers</li> <li>recognise and use factor pairs and commutativity in mental calculations</li> </ul> <p>Autumn 4 Spring 1</p>	<ul style="list-style-type: none"> <li>identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers</li> <li>know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers</li> <li>establish whether a number up to 100 is prime and recall prime numbers up to 19</li> <li>recognise and use square numbers and cube numbers, and the notation for squared (<math>^2</math>) and cubed (<math>^3</math>)</li> </ul> <p>Autumn 4</p>	<ul style="list-style-type: none"> <li>identify common factors, common multiples and prime numbers</li> <li>use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.</li> </ul> <p>Autumn 2</p>

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Multiplication &amp; Division: Calculations</b>		<ul style="list-style-type: none"> <li>calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (<math>\times</math>), division (<math>\div</math>) and equals (<math>=</math>) signs</li> </ul>	<ul style="list-style-type: none"> <li>write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods</li> </ul>	<ul style="list-style-type: none"> <li>multiply two-digit and three-digit numbers by a one-digit number using formal written layout</li> </ul>	<ul style="list-style-type: none"> <li>multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers</li> <li>multiply and divide numbers mentally drawing upon known facts</li> <li>divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context</li> <li>multiply and divide whole numbers and those involving decimals by 10, 100 and 1000</li> </ul>	<ul style="list-style-type: none"> <li>multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication</li> <li>divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context</li> <li>divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context</li> <li>perform mental calculations, including with mixed operations and large numbers</li> </ul>
		Autumn 4 Spring 1	Autumn 3 Spring 1	Spring 1	Autumn 4 Spring 1 Summer 1	Autumn 2



	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Multiplication & Division: Solve Problems	<ul style="list-style-type: none"> <li>solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher</li> </ul> <p>Summer 1</p>	<ul style="list-style-type: none"> <li>solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts</li> </ul> <p>Autumn 4 Spring 1</p>	<ul style="list-style-type: none"> <li>solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which <math>n</math> objects are connected to <math>m</math> objects</li> </ul> <p>Spring 1</p>	<ul style="list-style-type: none"> <li>solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as <math>n</math> objects are connected to <math>m</math> objects</li> </ul> <p>Spring 1</p>	<ul style="list-style-type: none"> <li>solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes</li> <li>solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates</li> </ul> <p>Autumn 4 Spring 1</p>	<ul style="list-style-type: none"> <li>solve problems involving addition, subtraction, multiplication and division</li> </ul> <p>Autumn 2</p>
Multiplication & Division: Combined Operations					<ul style="list-style-type: none"> <li>solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign</li> </ul> <p>Spring 1</p>	<ul style="list-style-type: none"> <li>use their knowledge of the order of operations to carry out calculations involving the four operations</li> </ul> <p>Autumn 2</p>



## Primary Progression – Fractions, Decimals, Percentages

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Fractions: Recognise and Write	<ul style="list-style-type: none"> <li>recognise, find and name a half as one of two equal parts of an object, shape or quantity</li> <li>recognise, find and name a quarter as one of four equal parts of an object, shape or quantity</li> </ul> <p>Summer 2</p>	<ul style="list-style-type: none"> <li>recognise, find, name and write fractions <math>\frac{1}{3}</math>, <math>\frac{1}{4}</math>, <math>\frac{2}{4}</math> and <math>\frac{3}{4}</math> of a length, shape, set of objects or quantity</li> </ul> <p>Spring 4</p>	<ul style="list-style-type: none"> <li>count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10</li> <li>recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators</li> <li>recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators</li> </ul> <p>Spring 5</p>	<ul style="list-style-type: none"> <li>count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.</li> </ul> <p>Spring 3</p>	<ul style="list-style-type: none"> <li>identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths</li> <li>recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements <math>&gt; 1</math> as a mixed number [for example: <math>\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}</math>]</li> </ul> <p>Spring 2</p>	
Fractions: Compare		<ul style="list-style-type: none"> <li>Recognise the equivalence of <math>\frac{2}{4}</math> and <math>\frac{1}{2}</math></li> </ul> <p>Spring 4</p>	<ul style="list-style-type: none"> <li>recognise and show, using diagrams, equivalent fractions with small denominators</li> <li>compare and order unit fractions, and fractions with the same denominators</li> </ul> <p>Summer 1</p>	<ul style="list-style-type: none"> <li>recognise and show, using diagrams, families of common equivalent fractions</li> </ul> <p>Spring 3</p>	<ul style="list-style-type: none"> <li>compare and order fractions whose denominators are all multiples of the same number</li> </ul> <p>Spring 2</p>	<ul style="list-style-type: none"> <li>use common factors to simplify fractions; use common multiples to express fractions in the same denomination</li> <li>compare and order fractions, including fractions <math>&gt; 1</math></li> </ul> <p>Autumn 3</p>

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Fractions: Calculations		<ul style="list-style-type: none"> <li>write simple fractions for example, <math>\frac{1}{2}</math> of 6 = 3</li> </ul> <p>Spring 4</p>	<ul style="list-style-type: none"> <li>add and subtract fractions with the same denominator within one whole (for example, <math>\frac{5}{7} + \frac{1}{7} = \frac{6}{7}</math>)</li> </ul> <p>Summer 1</p>	<ul style="list-style-type: none"> <li>add and subtract fractions with the same denominator</li> </ul> <p>Spring 3</p>	<ul style="list-style-type: none"> <li>add and subtract fractions with the same denominator and denominators that are multiples of the same number</li> <li>multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams</li> </ul> <p>Spring 3</p>	<ul style="list-style-type: none"> <li>add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions</li> <li>multiply simple pairs of proper fractions, writing the answer in its simplest form (for example, <math>\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}</math>)</li> <li>divide proper fractions by whole numbers (for example, <math>\frac{1}{3} \div 2 = \frac{1}{6}</math>)</li> </ul> <p>Autumn 3</p>
Fractions: Solve Problems			<ul style="list-style-type: none"> <li>solve problems that involve all of the above</li> </ul> <p>Spring 5 Summer 1</p>	<ul style="list-style-type: none"> <li>solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number</li> </ul> <p>Spring 3</p>		

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Decimals: Recognise and Write				<ul style="list-style-type: none"> <li>recognise and write decimal equivalents of any number of tenths or hundredths</li> <li>recognise and write decimal equivalents to <math>\frac{1}{4}</math>, <math>\frac{1}{2}</math>, <math>\frac{3}{4}</math></li> </ul> <p>Spring 4 Summer 1</p>	<ul style="list-style-type: none"> <li>read and write decimal numbers as fractions (for example, <math>0.71 = \frac{71}{100}</math>)</li> <li>recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents</li> </ul> <p>Spring 3</p>	<ul style="list-style-type: none"> <li>identify the value of each digit in numbers given to three decimal places</li> </ul> <p>Spring 1</p>
Decimals: Compare				<ul style="list-style-type: none"> <li>round decimals with one decimal place to the nearest whole number</li> <li>compare numbers with the same number of decimal places up to two decimal places</li> </ul> <p>Summer 1</p>	<ul style="list-style-type: none"> <li>round decimals with two decimal places to the nearest whole number and to one decimal place</li> <li>read, write, order and compare numbers with up to three decimal places</li> </ul> <p>Spring 3</p>	

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Decimals: Calculations & Problems				<ul style="list-style-type: none"> <li>find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths</li> </ul> <p>Spring 4</p>	<ul style="list-style-type: none"> <li>solve problems involving number up to three decimal places</li> </ul> <p>Summer 1</p>	<ul style="list-style-type: none"> <li>multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places</li> <li>multiply one-digit numbers with up to two decimal places by whole numbers</li> <li>use written division methods in cases where the answer has up to two decimal places</li> <li>solve problems which require answers to be rounded to specified degrees of accuracy</li> </ul> <p>Spring 1</p>

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Fractions, Decimals and Percentages				<ul style="list-style-type: none"> <li>solve simple measure and money problems involving fractions and decimals to two decimal places</li> </ul> <p>Spring 3 Spring 4 Summer 1</p>	<ul style="list-style-type: none"> <li>recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal</li> <li>solve problems which require knowing percentage and decimal equivalents of <math>\frac{1}{2}</math>, <math>\frac{1}{4}</math>, <math>\frac{1}{5}</math>, <math>\frac{2}{5}</math>, <math>\frac{4}{5}</math> and those fractions with a denominator of a multiple of 10 or 25</li> </ul> <p>Spring 3</p>	<ul style="list-style-type: none"> <li>associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, <math>\frac{3}{8}</math>]</li> <li>recall and use equivalences between simple fractions, decimals and percentages, including in different contexts</li> </ul> <p>Spring 1 Spring 2</p>

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Ratio and Proportion						<ul style="list-style-type: none"> <li>• solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts</li> <li>• solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison</li> <li>• solve problems involving similar shapes where the scale factor is known or can be found</li> <li>• solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.</li> </ul> <p>Spring 6</p>

## Primary Progression – Algebra

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Algebra	<ul style="list-style-type: none"> <li>solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as <math>7 = \square - 9</math></li> </ul>	<ul style="list-style-type: none"> <li>recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems</li> </ul>	<ul style="list-style-type: none"> <li>solve problems, including missing number problems</li> </ul>			<ul style="list-style-type: none"> <li>use simple formulae</li> <li>generate and describe linear number sequences</li> <li>express missing number problems algebraically</li> <li>find pairs of numbers that satisfy an equation with two unknowns</li> <li>enumerate possibilities of combinations of two variables.</li> </ul> <p>Spring 3</p>

Note – although algebraic notation is not introduced until Y6, algebraic thinking starts much earlier as exemplified by the ‘missing number’ objectives from Y1/2/3



# Primary Progression – Measurement



	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Measurement: Using Measures	<ul style="list-style-type: none"> <li>compare, describe and solve practical problems for:               <ul style="list-style-type: none"> <li>lengths and heights [for example, long/short, longer/shorter, tall/short, double/half]</li> <li>mass/weight [for example, heavy/light, heavier than, lighter than]</li> <li>capacity and volume [for example, full/empty, more than, less than, half, half full, quarter]</li> <li>time [for example, quicker, slower, earlier, later]</li> </ul> </li> <li>measure and begin to record the following:               <ul style="list-style-type: none"> <li>lengths and heights</li> <li>mass/weight</li> <li>capacity and volume</li> <li>time (hours, minutes, seconds)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels</li> <li>compare and order lengths, mass, volume/capacity and record the results using &gt;, &lt; and =</li> </ul>	<ul style="list-style-type: none"> <li>measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)</li> </ul>	<ul style="list-style-type: none"> <li>Convert between different units of measure [for example, kilometre to metre; hour to minute]</li> <li>estimate, compare and calculate different measures</li> </ul>	<ul style="list-style-type: none"> <li>convert between different units of metric measure (for example, kilometre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)</li> <li>understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints</li> <li>use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling</li> </ul>	<ul style="list-style-type: none"> <li>solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate</li> <li>use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places</li> <li>convert between miles and kilometres</li> </ul>
	Spring 3 Spring 4 Summer 6	Spring 5 Summer 4	Spring 4 Summer 4	Autumn 3 Spring 2 Summer 3	Summer 1 Summer 4 Summer 5	Spring 4

## Primary Progression – Measurement

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Measurement Money	<ul style="list-style-type: none"> <li>recognise and know the value of different denominations of coins and notes</li> </ul> <p>Summer 5</p>	<ul style="list-style-type: none"> <li>recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value</li> <li>find different combinations of coins that equal the same amounts of money</li> <li>solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change</li> </ul> <p>Autumn 3</p>	<ul style="list-style-type: none"> <li>add and subtract amounts of money to give change, using both £ and p in practical contexts</li> </ul> <p>Spring 2</p>	<ul style="list-style-type: none"> <li>estimate, compare and calculate different measures, including money in pounds and pence</li> </ul> <p>Summer 2</p>	<ul style="list-style-type: none"> <li>use all four operations to solve problems involving measure (for example, money)</li> </ul> <p>Summer 1</p>	

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Measurement: Time	<ul style="list-style-type: none"> <li>sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]</li> <li>recognise and use language relating to dates, including days of the week, weeks, months and years</li> <li>tell the time to the hour and half past the hour and draw the hands on a clock face to show these times</li> </ul>	<ul style="list-style-type: none"> <li>compare and sequence intervals of time</li> <li>tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times</li> <li>know the number of minutes in an hour and the number of hours in a day</li> </ul>	<ul style="list-style-type: none"> <li>tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks</li> <li>estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight</li> <li>know the number of seconds in a minute and the number of days in each month, year and leap year</li> <li>compare durations of events [for example to calculate the time taken by particular events or tasks]</li> </ul>	<ul style="list-style-type: none"> <li>read, write and convert time between analogue and digital 12- and 24-hour clocks</li> <li>solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days</li> </ul>	<ul style="list-style-type: none"> <li>solve problems involving converting between units of time</li> </ul>	<ul style="list-style-type: none"> <li>use, read, write and convert between standard units, converting measurements of time from a smaller unit of measure to a larger unit, and vice versa</li> </ul>
	Summer 6	Summer 3	Summer 2	Summer 3	Summer 4	Year 5 Summer 4

## Primary Progression – Measurement

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Measurement: Perimeter, Area, Volume			<ul style="list-style-type: none"> <li>measure the perimeter of simple 2-D shapes</li> </ul> <p>Spring 4</p>	<ul style="list-style-type: none"> <li>measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres</li> <li>find the area of rectilinear shapes by counting squares</li> </ul> <p>Autumn 3 Spring 2</p>	<ul style="list-style-type: none"> <li>measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres</li> <li>calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm<sup>2</sup>) and square metres (m<sup>2</sup>) and estimate the area of irregular shapes</li> <li>estimate volume (for example, using 1 cm<sup>3</sup> blocks to build cuboids (including cubes)) and capacity (for example, using water)</li> </ul> <p>Autumn 5 Summer 5</p>	<ul style="list-style-type: none"> <li>recognise that shapes with the same areas can have different perimeters and vice versa</li> <li>recognise when it is possible to use formulae for area and volume of shapes</li> <li>calculate the area of parallelograms and triangles</li> <li>calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm<sup>3</sup>) and cubic metres (m<sup>3</sup>), and extending to other units (for example, mm<sup>3</sup> and km<sup>3</sup>)</li> </ul> <p>Spring 5</p>

## Primary Progression – Geometry

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Geometry: 2-D Shapes	<ul style="list-style-type: none"> <li>recognise and name common 2-D shapes [for example, rectangles (including squares), circles and triangles]</li> </ul> <p>Autumn 3</p>	<ul style="list-style-type: none"> <li>identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line</li> <li>identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]</li> <li>compare and sort common 2-D shapes and everyday objects</li> </ul> <p>Spring 3</p>	<ul style="list-style-type: none"> <li>draw 2-D shapes</li> </ul> <p>Summer 3</p>	<ul style="list-style-type: none"> <li>compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes</li> <li>identify lines of symmetry in 2-D shapes presented in different orientations</li> </ul> <p>Summer 5</p>	<ul style="list-style-type: none"> <li>distinguish between regular and irregular polygons based on reasoning about equal sides and angles.</li> <li>use the properties of rectangles to deduce related facts and find missing lengths and angles</li> </ul> <p>Summer 2</p>	<ul style="list-style-type: none"> <li>draw 2-D shapes using given dimensions and angles</li> <li>compare and classify geometric shapes based on their properties and sizes</li> <li>illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius</li> </ul> <p>Summer 1</p>
Geometry: 3-D Shapes	<ul style="list-style-type: none"> <li>recognise and name common 3-D shapes [for example, cuboids (including cubes), pyramids and spheres]</li> </ul> <p>Autumn 3</p>	<ul style="list-style-type: none"> <li>recognise and name common 3-D shapes [for example, cuboids (including cubes), pyramids and spheres].</li> <li>compare and sort common 3-D shapes and everyday objects</li> </ul> <p>Spring 3</p>	<ul style="list-style-type: none"> <li>make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them</li> </ul> <p>Summer 3</p>		<ul style="list-style-type: none"> <li>identify 3-D shapes, including cubes and other cuboids, from 2-D representations</li> </ul> <p>Summer 2</p>	<ul style="list-style-type: none"> <li>recognise, describe and build simple 3-D shapes, including making nets</li> </ul> <p>Summer 1</p>



## Primary Progression – Geometry

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Geometry: Angles & Lines			<ul style="list-style-type: none"> <li>recognise angles as a property of shape or a description of a turn</li> <li>identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle</li> <li>identify horizontal and vertical lines and pairs of perpendicular and parallel lines</li> </ul>	<ul style="list-style-type: none"> <li>identify acute and obtuse angles and compare and order angles up to two right angles by size</li> <li>identify lines of symmetry in 2-D shapes presented in different orientations</li> <li>complete a simple symmetric figure with respect to a specific line of symmetry</li> </ul>	<ul style="list-style-type: none"> <li>know angles are measured in degrees; estimate and compare acute, obtuse and reflex angles</li> <li>draw given angles, and measure them in degrees</li> <li>identify:               <ul style="list-style-type: none"> <li>angles at a point and one whole turn (total <math>360^\circ</math>)</li> <li>angles at a point on a straight line and <math>\frac{1}{2}</math> a turn (total <math>180^\circ</math>)</li> <li>other multiples of <math>90^\circ</math></li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>find unknown angles in any triangles, quadrilaterals, and regular polygons</li> <li>recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles</li> </ul>
			Summer 3	Summer 5	Summer 2	Summer 1



## Primary Progression – Geometry



	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Geometry: Position &amp; Direction</b>	<ul style="list-style-type: none"> <li>describe position, direction and movement, including whole, half, quarter and three-quarter turns</li> </ul> <p>Summer 3</p>	<ul style="list-style-type: none"> <li>order and arrange combinations of mathematical objects in patterns and sequences</li> <li>use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise)</li> </ul> <p>Spring 3 Summer 1</p>		<ul style="list-style-type: none"> <li>describe positions on a 2-D grid as coordinates in the first quadrant</li> <li>describe movements between positions as translations of a given unit to the left/right and up/down</li> <li>plot specified points and draw sides to complete a given polygon</li> </ul> <p>Summer 6</p>	<ul style="list-style-type: none"> <li>identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed</li> </ul> <p>Summer 3</p>	<ul style="list-style-type: none"> <li>describe positions on the full coordinate grid (all four quadrants)</li> <li>draw and translate simple shapes on the coordinate plane, and reflect them in the axes</li> </ul> <p>Autumn 4</p>

# Primary Progression – Statistics



	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Statistics: Present and Interpret		<ul style="list-style-type: none"> <li>interpret and construct simple pictograms, tally charts, block diagrams and simple tables</li> </ul> <p>Spring 2</p>	<ul style="list-style-type: none"> <li>interpret and present data using bar charts, pictograms and tables</li> </ul> <p>Spring 3</p>	<ul style="list-style-type: none"> <li>interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs</li> </ul> <p>Summer 4</p>	<ul style="list-style-type: none"> <li>complete, read and interpret information in tables, including timetables</li> </ul> <p>Autumn 3</p>	<ul style="list-style-type: none"> <li>interpret and construct pie charts and line graphs and use these to solve problems</li> </ul> <p>Summer 3</p>
Statistics: Solve Problems		<ul style="list-style-type: none"> <li>ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity</li> <li>ask and answer questions about totalling and comparing categorical data</li> </ul> <p>Spring 2</p>	<ul style="list-style-type: none"> <li>solve one-step and two-step questions [for example, 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables</li> </ul> <p>Spring 3</p>	<ul style="list-style-type: none"> <li>solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs</li> </ul> <p>Summer 4</p>	<ul style="list-style-type: none"> <li>solve comparison, sum and difference problems using information presented in a line graph</li> </ul> <p>Autumn 3</p>	<ul style="list-style-type: none"> <li>calculate and interpret the mean as an average</li> </ul> <p>Summer 3</p>

## NUMBER AND PLACE VALUE VOCABULARY

EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
One more One less Place Order Number Count Numbers up to twenty Number line Pictorial Answer Equals Read Write	<b>Same as EYFS, plus:</b> Forwards Backwards Numerals Words Multiples Equal to More than Less than Fewer Most Least Identify Represent Digit Calculate Odd Even Pattern Numbers up to one hundred	<b>Same as EYFS &amp; Year 1, plus:</b> One Tens Tens Two-digit Estimate Place Value Solve Problems Greater than > Less than < Nearest ten Number facts Partition Count in steps Zero Compare Determine Value	<b>Same as EYFS &amp; KS1, plus:</b> Hundred s Three-digit ten more one hundred more ten less one hundred less Roman numeral Numbers up to one thousand	<b>Same as previous year groups, plus:</b> Thousands Four-digit Negative number One thousand more One thousand less Decimal Decimal place Rounding Place holder Nearest ten Nearest hundred Nearest thousand One place Whole number Integer Tenths Hundredths	<b>Same as previous year groups, plus:</b> Ten thousands Hundred thousands Millions Context Steps of powers Decimal equivalents Two decimal places Thousandths Numbers up to one million	<b>Same as previous year groups, plus:</b> Intervals across zero Three decimal places Hundredths Thousandths Ten thousandths Numbers up to ten million

ADDITION AND SUBTRACTION VOCABULARY						
EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
<b>Add</b> <b>Subtract</b>  <b>Addition</b> <b>Subtraction</b> <b>Adding</b> <b>Subtracting</b> <b>Number</b>  <b>Number line</b> <b>Single digit</b> <b>Count on</b> <b>Count back</b> <b>Answer</b> <b>Doubling</b> <b>Halving</b> <b>Sharing</b> <b>Numbers to twenty</b> <b>Check</b>	<b>Same as EYFS, plus:</b> <b>One step problem</b> <b>Concrete object</b> <b>Pictorial</b>  <b>representation</b> <b>Missing number</b> <b>Problem</b> <b>Read</b> <b>Write</b>  <b>Interpret</b> <b>Equals =</b> <b>Signs</b> <b>One-digit</b> <b>Two-digit</b> <b>Ones</b> <b>Mental</b> <b>Mentally</b>	<b>Same as EYFS &amp; Year 1, plus:</b> <b>Columnar addition</b> <b>Columnar Subtraction</b> <b>Tens</b> <b>Order</b> <b>Inverse</b> <b>Relationship</b> <b>Calculation</b>  <b>Solve problems</b> <b>Missing number problems</b> <b>Quantities</b> <b>Measures</b> <b>Formal Written method</b> <b>Mental method</b> <b>Method</b>  <b>Operation</b> <b>Apply</b> <b>Whole number</b>	<b>Same as EYFS &amp; KS1, plus:</b> <b>Three-digit number</b> <b>Hundreds</b>  <b>Estimate</b> <b>Number facts</b>	<b>Same as previous</b> <b>year groups, plus:</b> <b>Two step problems</b> <b>Context</b>  <b>Four-digit</b>	<b>Same as previous</b> <b>year groups, plus:</b> <b>Increasingly large numbers</b>  <b>More than 4 digits</b> <b>Rounding</b> <b>Determine</b> <b>Context</b> <b>Multi-step problems</b>	<b>Same as previous</b> <b>year groups, plus:</b> <b>Estimation</b> <b>Mixed operations</b>

MULTIPLICATION AND DIVISION VOCABULARY						
EYF S	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
	<b>Multiples</b> <b>Twos</b> <b>Fives</b> <b>Tens</b> <b>Number</b> <b>Multiply</b> <b>Divide</b> <b>Multiplication</b> <b>Division</b> <b>One step problem</b> <b>Answer</b>  <b>Concrete object</b> <b>Pictorial representation</b> <b>Arrays</b> <b>Count</b> <b>Equals</b> <b>Write</b>	<b>Same as EYFS &amp; Year 1, plus:</b> <b>Multiplication facts</b> <b>Division facts</b> <b>Multiplication tables</b> <b>Odd numbers</b> <b>Even numbers</b> <b>Share</b> <b>Equally</b> <b>Repeated division</b> <b>Calculate</b>	<b>Same as EYFS &amp; KS1, plus:</b> <b>Missing number problem</b> <b>Estimate</b> <b>Inverse</b> <b>Formal written method</b> <b>Mathematical statement</b> <b>Recall</b> <b>Integer</b> <b>Two- digit</b>  <b>One- digit</b>	<b>Same as previous year groups, plus:</b> <b>Derived facts</b> <b>Factors</b> <b>Factor pairs</b> <b>Scaling problems</b> <b>Three-digit</b>	<b>Same as previous year groups, plus:</b> <b>Decimals</b> <b>Four-digit</b> <b>Long multiplication</b> <b>Short division</b> <b>Remainders</b> <b>Context</b> <b>Common factors</b> <b>Common multiples</b> <b>Prime numbers</b> <b>Prime factors</b> <b>Composite numbers</b> <b>Square number</b> <b>Cube number</b> <b>Notation</b> <b>Squares</b> <b>Cubes</b>	<b>Same as previous year groups, plus:</b> <b>Scale factor</b> <b>Long division</b> <b>Whole number remainders</b> <b>Fractions</b> <b>Rounding</b> <b>Mixed operations</b>

## FRACTIONS (INCLUDING DECIMALS AND PERCENTAGES) VOCABULARY

EYF S	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
	Fraction Half Equal parts One whole Object Shape Quantity Quarter	<b>Same as EYFS &amp; Year 1, plus:</b>  Simple fractions  Equivalent equivalence  Count	<b>Same as EYFS &amp; KS1, plus:</b>  Tenths  Unit fractions Non- unit fractions Numerator Denominator  Compare Order Add Subtract  Solve problems	<b>Same as previous year groups, plus:</b> Hundredths  Decimal Decimal place One decimal place Two decimal places Round decimals  Whole number  Common equivalent fractions Decimal equivalents Dividing  Ones  Tenths  Hundredths  Simple measure  Money problems	<b>Same as previous year groups, plus:</b> Thousandt hs Multiples Three decimal places Per cent Number of parts per hundred Percentages Decimal fraction Mixed numbers Improper fraction Proper fraction Convert Mathematic al statements Multiply Percentage and decimal equivalents	<b>Same as previous year groups, plus:</b> Common factors  Common multiples  Decimal fraction equivalents  Simplest form



## MEASUREMENT VOCABULARY

EY FS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Measure Measurement Size Weight Capacity Compare Solve Problems Object Time	Same as EYFS, plus: Length Height Long Short Longer Shorter Tall Double Half Mass Heavy Light Heavier than Lighter than Volume Full Empty More than Less than Half Half full Quarter Quicker Slower Earlier Later Sequence events Chronological order Before	Same as EYFS & Year 1, plus: Greater than > Less than < Equals = Intervals Standard units Estimate Direction Temperature Unit Scale s Ruler s Thermometers Measuring vessels Metres Centimetres Kilograms Grams Degrees Celsius Litres Millilitres Symbols Money Pounds (£) Pence (p) Different combinations Change Five past	Same as EYFS & KS1, plus: Duration Time taken Nearest minute Record Seconds a.m. p.m. noon midnight t kilometre e add subtract millimetres s perimeter simple 2-D shapes analogue clock roman numerals 12- hour 24-hour Leap year	Same as previous year groups, plus: Estimate Rectilinear figure Area Rectilinear shapes Convert	Same as previous year groups, plus: Square centimetres (cm <sup>2</sup> ) Square metres (m <sup>2</sup> ) Irregular shapes Volume (cm <sup>3</sup> ) Cubes Cuboids Square numbers Cube numbers Metric measure Metric units Imperial units Inches Pound s Pints	Same as previous year groups, plus: Decimal notation Cubic centimetres (cm <sup>3</sup> ) Cubic metres (m <sup>3</sup> ) Cubic millimetre (mm <sup>3</sup> ) Cubic kilometre (Km <sup>3</sup> ) Decimal places formulae Miles

	<b>After</b> <b>Next</b> <b>First</b> <b>Toda</b> <b>y</b> <b>Yesterda</b> <b>y</b> <b>Tomorro</b> <b>w</b> <b>Morning</b> <b>Afternoo</b> <b>n</b> <b>Evening</b> <b>Record</b> <b>Hours</b> <b>Minutes</b> <b>Hour</b> <b>Half past</b> <b>O clock</b> <b>Hands</b> <b>Clock</b> <b>face</b> <b>Seconds</b> <b>Coins</b> <b>Notes</b> <b>Dates</b> <b>Days</b> <b>Weeks</b> <b>Months</b> <b>Years</b>	<b>Ten past</b> <b>Quarter past</b> <b>Twenty past</b> <b>Twenty-five</b> <b>past Half past</b> <b>Twenty-five to</b> <b>Twenty to</b> <b>Quarter to</b> <b>Ten to</b> <b>Five to</b>				
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## GEOMETRY: PROPERTIES OF SHAPES VOCABULARY

EYF S	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Shape Square Rectangle Circle Triangle Sides Straight side Curved side	<b>Same as EYFS, plus:</b> 2-D Shapes 3-D Shapes Two-Dimensional Three-Dimensional Cuboid Cube Pyramid Cone Cylinder Sphere	<b>Same as EYFS &amp; Year 1, plus:</b> Properties Compare Common Line symmetry Vertical line Edges Faces Vertices Pentagon Hexagon Heptagon Octagon Nonagon Decagon	<b>Same as EYFS &amp; KS1, plus:</b> Angle Turn Right angles Quarter of a turn Half-turn Three quarters of a turn Complete turn Horizontal lines Vertical lines Perpendicular lines Parallel lines	<b>Same as previous year groups, plus:</b> Lines of symmetry Symmetric figure Classify Geometric shapes Quadrilaterals Acute angle Obtuse angle	<b>Same as previous year groups, plus:</b> Angles Measure Degrees Missing lengths Missing angles Regular polygons Irregular polygons Degrees Estimate compare Reflex angle Point Straight line Multiples	<b>Same as previous year groups, plus:</b> Radius Diameter Circumference Nets

		<b>Kite</b> <b>Rhombus</b> <b>Polygon</b> <b>Square-based pyramid</b> <b>Triangular pyramid</b> <b>Triangular prism</b> <b>Rectangular prism</b> <b>Pentagonal prism</b> <b>Hexagonal prism</b> <b>Octagonal prism</b> <b>Octahedron</b> <b>Dodecahedron</b> <b>Tetrahedron</b> <b>Rectangular pyramid</b> <b>Pentagonal pyramid</b> <b>Hexagonal pyramid</b> <b>Octagonal pyramid</b>				
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GEOMETRY: POSITION AND DIRECTION VOCABULARY						
EYF S	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
<b>Position</b> <b>Distance</b> <b>Direction</b> <b>Move</b> <b>Movement</b> <b>Patterns</b>	<b>Same as EYFS, plus:</b> <b>Half turn</b> <b>Quarter turn</b>  <b>Three-quarter turn</b> <b>Left</b> <b>Right</b> <b>Up</b> <b>Down</b>	<b>Same as EYFS &amp; Year 1, plus:</b> <b>Rotation</b>  <b>Right angle</b> <b>Clockwise</b> <b>Anti-clockwise</b> <b>Order</b> <b>Arrange</b> <b>Sequence</b>	<b>Same as EYFS &amp; KS1, plus:</b>	<b>Same as previous year groups, plus:</b> <b>Co-ordinates</b>  <b>Quadrant</b> <b>Grid</b> <b>Translate</b> <b>Translation</b> <b>Axis</b> <b>X- axis</b> <b>Y-axis</b> <b>Spaces</b> <b>Unit</b> <b>Plot</b> <b>Point</b> <b>Polygon</b>	<b>Same as previous year groups, plus:</b> <b>Reflection</b>	<b>Same as previous year groups, plus:</b> <b>Four quadrants</b>

STATISTICS VOCABULARY						
EYF S	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
		Interpret Construct Pictogram Tally chart Block diagrams Horizontal Vertical x- axis y-axis key title chart title Simple tables Ask Answer Questions Counting Objects Category Sort Quantity Total Compare Data	<b>Same as KS1, plus:</b> Present Presented Graph Statistics Bar charts Tables Solve One- step questions Two- step questions Information	<b>Same as previous year groups, plus:</b> Time graphs Comparison Problems	<b>Same as previous year groups, plus:</b> Timetables Line graph	<b>Same as previous year groups, plus:</b> Pie chart Calculate Mean Average



ALGEBRA VOCABULARY						
EYF S	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
	<b>Same as EYFS, plus:</b>  <b>Solve</b> <b>One-step problem</b> <b>Missing number</b> <b>Check</b> <b>Calculate</b> <b>problem</b> <b>Sequence</b> <b>Chronological</b>	<b>Same as EYFS &amp; Year 1, plus:</b>  <b>Inverse</b> <b>Relationship</b> <b>Compare</b> <b>Order</b> <b>Arrange</b> <b>Pattern</b>	<b>Same as EYFS &amp; KS1, plus:</b>	<b>Same as previous year groups, plus:</b>  <b>Perimeter</b> <b>Algebra</b> <b>Algebraically</b>	<b>Same as previous year groups, plus:</b>  <b>Properties</b> <b>Rectangles</b> <b>Deduce</b> <b>Related facts</b> <b>Missing lengths</b> <b>Missing angles</b>	<b>Same as previous year groups, plus:</b>  <b>Missing number</b> <b>Problem</b> <b>Pairs</b> <b>Number sentence</b> <b>Variables</b> <b>Combination</b> <b>Possibility</b> <b>Enumerate</b> <b>Equation</b> <b>Formulae</b> <b>Generate</b> <b>Linear number sequence</b>

## 9. MATHEMATICAL CONCEPTS, IDEAS AND VOCABULARY – examples of useful concept maps





Use the template below to take the key concept and attached vocabulary for the year group to create your own 'concept map' for the area of Maths you are teaching:

