Purpose of study –Mathematics is a creative and highly interconnected 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.

Aims

The national curriculum for mathematics aims to ensure that all pupils:

- **become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately**
- **reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language**
- **can solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions**

Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. The programmes of study are, by necessity, organised into apparently distinct domains, but pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They should also apply their mathematical knowledge to science and other subjects.

The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.

	Intent We want our children to become **confident and articulate communicators** by enriching their mathematical vocabulary. We aim to enrich our pupils learning with a deep and confident understanding in fluency and reasoning. We aspire for our children to appreciate the power of mathematics and build a **life-long passion for maths** by exploring their curiosity through **memorable learning experiences**. As the children progress we aim to build confidence, **widen their horizons** and attain a positive growth mind set. Through our enterprise scheme we will provide children with an opportunity to develop their **global identity** through working with the local community. We want them to know that mathematics is essential to succeed in life and necessary for financial responsibilities and most forms of employment. **NUMBER AND PLACE VALUE**

Area of Study	N	Rec	1	2	3	4	5	6
COUNTING	**Say the numbers in order to 10 and maybe backwards from 10 to 0**	**Say the numbers to 20 and perhaps beyond and backwards to 0**	**Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number**			**Count backwards through zero to include negative numbers**	**Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero**	**Use negative numbers in context, and calculate intervals across zero**

	Say one number for each item when counting to 5 (one –to -one) perhaps by pointing or touching	**Say one number for each item when counting to 10 (one-to- one) perhaps by pointing or touching.**	**Count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens**	**Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward**	**Count from 0 in multiples of 4, 8, 50 and 100;**	**Count in multiples of 6, 7, 9, 25 and 1000**	**Count forwards or backwards in steps of powers of 10 for any given number up to 1000 000**	
	Recognise some numerals	**Put numerals in order to 10**	**Given a number, identify one more and one less**		**Find 10 or 100 more or less than a given number**	**Find 1000 more or less than a given number**		
REASONING			**Spot the mistake:** 5,6,8,9 What is wrong with this sequence of numbers?	**Spot the mistake:** 45,40,35,25 What is wrong with this sequence of numbers? True or False?	**Spot the mistake:** 50,100,115,200 What is wrong with this sequence of numbers? True or False?	**Spot the mistake:** 950, 975,1000,1250 What is wrong with this sequence of numbers? True or False?	**Spot the mistake:** 177000,187000, 197000, 217000 What is wrong with this sequence of numbers?	**Spot the mistake:** -80,-40,10,50 What is wrong with this sequence of numbers? True or False?

			True or False? I start at 2 and count in twos. I will say 9 What comes next? 10+1 = 11 11+1= 12 12+1 = 13 ……..	I start at 3 and count in threes. I will say 13? What comes next? 41+5=46 46+5=51 51+5=56 ……	38 is a multiple of 8? What comes next? 936-10= 926 926 -10 = 916 916- 10= 906 …….	324 is a multiple of 9? What comes next? 6706+ 1000= 7706 7706 + 1000 = 8706 8706 + 1000 = 9706 ……	True or False? When I count in 10's I will say the number 10100? What comes next? 646000-10000= 636000 636000 – 10000 = 626000 626000- 10000 = 616000	When I count backwards in 50s from 10 I will say -200 True or False? The temperature is -3. It gets 2 degrees warmer. The new temperature is 5?
COMPARING NUMBERS		**Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or**	**Use the language of: equal to, more than, less than (fewer), most, least**	**Compare and order numbers from 0 up to 100; use <, > and = signs**	**Compare and order numbers up to 1000**	**Order and compare numbers beyond 1000** ***Compare numbers with the same number of decimal places up to***	**Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit**	**Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit**

		the same as the other quantity.				***two decimal places***		
REASONING			**Do, then explain** Look at the objects (in a collection). Are there more of one type than another? How can you find out?	**Do, then explain** 37 13 73 33 3 If you wrote these numbers in order starting with the smallest, which number would be third? Explain how you ordered the numbers.	**Do, then explain** 835 535 538 388 508 If you wrote these numbers in order starting with the smallest, which number would be third? Explain how you ordered the numbers.	**Do, then explain** 5035 5053 5350 5530 5503 If you wrote these numbers in order starting with the largest, which number would be third? Explain how you ordered the numbers.	**Do, then explain** 747014 774014 747017 774077 744444 If you wrote these numbers in order starting with the smallest, which number would be third? Explain how you ordered the numbers.	**Do, then explain** Find out the populations in five countries. Order the populations starting with the largest. Explain how you ordered the countries and their populations.
IDENTIFYING, REPRESENTING,			**Identify and represent numbers**	**Identify, represent and estimate numbers**	**Identify, represent and estimate numbers using**	**Identify, represent and estimate numbers**		

ESTIMATING NUMBERS			**using objects and pictorial representations including the number line**	**using different representations, including the number line**	**different representations**	**using different representations**		
READING AND WRITING NUMBERS (INC ROMAN NUMERALS)			**Read and write numbers from 1 to 20 in numerals and words.**	**Read and write numbers to at least 100 in numerals and in words**	**Read and write numbers up to 1000 in numerals and in words**	**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.**	**Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit (appears also in Comparing Numbers)**	**Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit (appears also in Understanding Place Value)**
					Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks		**Read Roman numerals to 1 000 (M) and recognise years written in Roman numerals.**	

					(copied from Measurement)			
UNDERSTANDI-NG PLACE VALUE				**Recognise the place value of each digit in a two-digit number (tens, ones)**	**Recognise the place value of each digit in a three-digit number (hundreds, tens, ones)**	**Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)**	**Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit (appears also in Reading and Writing Numbers)**	**Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit (appears also in Reading and Writing Numbers)**
						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 units, tenths and hundredths	***Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents*** **(copied from Fractions)**	***Identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places***

						(copied from Fractions)		**(copied from Fractions)**
REASONING				**Do, then explain** Show the value of the digit 2 in these numbers? 32 27 92 Explain how you know.	**Do, then explain** Show the value of the digit 3 in these numbers? 341 503 937 Explain how you know.	**Do, then explain** Show the value of the digit 4 in these numbers? 3041 4321 5497 Explain how you know.	**Do, then explain** Show the value of the digit 5 in these numbers? 350114 567432 985376 Explain how you know.	**Do, then explain** Show the value of the digit 6 in these numbers? 6787555 95467754 Explain how you know.
				Make up an example Create numbers where the ones digit is one less than the tens digit. What is the largest/smallest number?	**Make up an example** Create numbers where the digit sum is three. Eg 120, 300, 210 What is the largest/ smallest number?	**Make up an example** Create four digit numbers where the digit sum is four and the tens digit is one. Eg 1210, 2110, 3010 What is the largest/	**Make up an example Give further examples** Create six digit numbers where the digit sum is five and the thousands digit is two. Eg 3002000 2102000 What is the largest/	**Make up an example** Create seven digit numbers where the digit sum is six and the tens of thousands digit is two. Eg 4020000 What is the largest/ smallest number?

						smallest number?	smallest number?	
ROUNDING						**Round any number to the nearest 10, 100 or 1 000**	**Round any number up to 1 000 000 to the nearest 10, 100, 1 000, 10 000 and 100 000**	**Round any whole number to a required degree of accuracy**
						Round decimals with one decimal place to the nearest whole number **(copied from Fractions)**	***Round decimals with two decimal places to the nearest whole number and to one decimal place*** **(copied from Fractions)**	***Solve problems which require answers to be rounded to specified degrees of accuracy*** **(copied from Fractions)**
REASONING						**Possible answers** A number rounded to the nearest ten is 540. What is the smallest possible	**Possible answers** A number rounded to the nearest thousand is 76000 What is the largest possible	**Possible answers** Two numbers each with two decimal places round to 23.1 to one decimal place. The total of the

						number it could be? **What do you notice?** Round 296 to the nearest 10. Round it to the nearest 100. What do you notice? Can you suggest other numbers like this?	number it could be? **What do you notice?** Round 343997 to the nearest 1000. Round it to the nearest 10000. What do you notice? Can you suggest other numbers like this?	numbers is 46.2. What could the numbers be? **What do you notice?** Give an example of a six digit number which rounds to the same number when rounded to the nearest 10000 and 100000
PROBLEM SOLVING				**Use place value and number facts to solve problems**	**Solve number problems and practical problems involving these ideas.**	**Solve number and practical problems that involve all of the above and with increasingly large positive numbers**	**Solve number and practical problems that involve all of the above**	**Solve number and practical problems that involve all of the above**

	Key Vocabulary							
Areas	EYFS		Y1	Y2	Y3	Y4	Y5	Y6
		zero number one, two, three … to twenty and beyond teens numbers, eleven, twelve … twenty none how many …? count, count (up) to, count on (from, to), count back (from, to) count in ones, twos, fives, tens is the	Numeral Numbers Number from 1 to 100 Forwards Backwards Equal or equivalent More/ most Less/ least Many Multiple of Greater than Fewer (than)/ smaller than Twos (2s) Fives (5s) Tens (10s) Ordinal numbers	Hundred (one hundred etc) Threes (3s) Exchange Digit Greater than Less than Consecutive	Fours (4s) Eights (8s) Fifties (50s) Estimate Approximately or approximate	Thousand Partition Partitioning Rounding Sixes (6s) Sevens (7s) Nines (9s) Twenty-fives (25s) Positive (number) Negative (number) Roman Numeral	Ten thousand (10,000) One million (1,000,000) Integer	Ten million (10,000,000)

		same as more, less odd, even few pattern pair ones, tens digit the same number as, as many as more, larger, bigger, greater fewer, smaller, less fewest, smallest, least most, biggest, largest, greatest one more, ten more one less, ten less						

		compare order, size first, second, third… twentieth last, last but one before, after next between						