

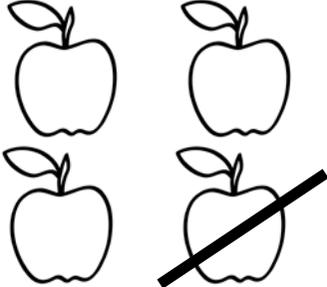
MATHS CALCULATION POLICY

Calculation Policy: Addition

Stages	Method	Objective and vocabulary	Help at home
<p style="text-align: center;">Stage 8</p>	<p>The Short Method using tens and units.</p> <p>Add the numbers together, starting in the furthest right column.</p> $\begin{array}{r} 47 \\ + 85 \\ \hline 132 \\ 11 \end{array}$	<p style="text-align: center;">Carry.</p> <p>To learn to carry between units, tens and hundreds.</p>	
<p style="text-align: center;">Stage 9</p>	<p>The Short Method using hundreds tens and units.</p> <p>Add the numbers together, starting in the furthest right column.</p> $\begin{array}{r} 447 \\ + 285 \\ \hline 732 \\ 11 \end{array}$	<p>Ensure that columns are lined up correctly above each other, particularly when decimals are used.</p>	

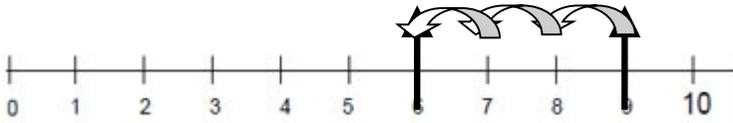
MATHS CALCULATION POLICY

Calculation Policy: Subtraction

Stages	Method	Objectives and vocabulary	Help at home
<p>Stage 1</p>	<p>Encourage children to count a group of objects, and then move some away. Recount total.</p> 	<p>Count, take away, total, more, less.</p> <p>To be able to count sets of objects and check total. To recognise groups with fewer objects. Find the total number of objects in a group, remove some and calculate new total.</p>	<p>Take the chance to count sets of objects at home – how many teddies in your room / spoons on the table etc. Remove a known number of items and recheck total.</p> <p>Remember to encourage your child to count mixed objects (2 bears and 1 doll) to show that this also equals 3.</p>
<p>Stage 2</p>	<p>Record calculations using drawings of objects.</p> <p>$11 - 4 = 7$</p> 	<p>Take away, subtract, less, symbol, represent.</p> <p>Encourage the recording of calculations using drawings, and progressing to symbols to represent objects.</p>	<p>Talk through calculations to aid understanding.</p> <p>Reinforce vocabulary during discussion and allow children to draw pictures of objects at first, progressing to symbols.</p>

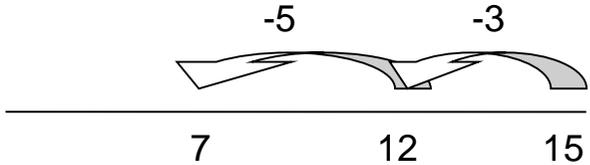
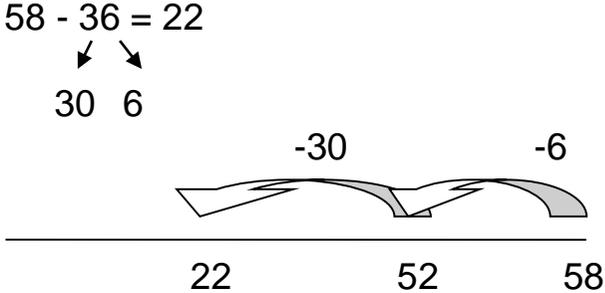
MATHS CALCULATION POLICY

Calculation Policy: Subtraction

Stages	Method	Objectives and vocabulary	Help at home
Stage 3	<p>Count back from a given number using a number line.</p> <p>Counting back, on a number line (with numbers)</p> <p>$9 - 3 = 6$</p> <p>3 less than 9 is 6</p> 	<p>Number line, backwards, forwards, count back, subtract, minus, less than, steps, jumps.</p> <p>Encourage children to count back, using the number line for support.</p> <p>Discuss the number of 'jumps' moved back and relate this to the number being subtracted.</p>	<p>Put a number line up at home. Make one together, with each 10 highlighted in some way.</p> <p>Use the number line to check subtraction calculations.</p>

MATHS CALCULATION POLICY

Calculation Policy: Subtraction

Stages	Method	Objectives and vocabulary	Help at home
<p>Stage 4</p>	<p>Use a number line to record steps in a calculation.</p> <p>This extension of Stage 3 will help children to subtract higher numbers. Steps will often mark a bridge through a multiple of ten.</p> <p>$15 - 8 = 7$ (8 broken down into 5 and 3)</p>  <p>For calculations requiring partitioning:</p> <p>$58 - 36 = 22$</p> 	<p>Number line, count back, scale, steps, jumps, bridge, partition (breaking out numbers into component parts, so 36 becomes 30 and 6), tens, units, difference, inverse.</p> <p>Calculate differences by counting back, breaking down numbers into tens and units where necessary.</p> <p>Ensure that the units are subtracted first. This will match methodology used in subsequent stages.</p> <p>Check calculations by using the inverse calculation or counting on.</p>	<p>Use number lines at home to carry out subtractions.</p> <p>Ensure a wide range of vocabulary is used to describe calculations (subtract, minus etc)</p> <p>Start to use simple number lines, drawn out using a ruler. These do not need to show all the numbers on the number line, but can be used as per the examples on the left to aid calculations.</p>

MATHS CALCULATION POLICY

Calculation Policy: Subtraction

Stages	Method	Objectives and vocabulary	Help at home
<p>Stage 5</p>	<p>Introduce partitioning. Write numbers in groups below each other.</p> <p>Ensure column subtractions are lined up correctly, and that the calculation always starts with the units, or, in the case of decimal calculations, the number in the furthest right hand column.</p> $76 - 34 = 42$ $\begin{array}{r} 70 + 6 \\ - 30 + 4 \\ \hline 40 + 2 \end{array} = 42$	<p>Partition, column, hundreds, decimal.</p> <p>Ensure columns are lined up correctly.</p> <p>Ensure method is fully secure before introducing calculations where borrowing is required.</p> <p>Ensure the number to be subtracted from is placed at the top of the calculation.</p>	<p>Break numbers down by partitioning. 134 would be broken down into 100, 30 and 4.</p> <p>Ensure column subtractions are lined up correctly, and that the calculation always starts with the units, or, in the case of decimal calculations, the number on the furthest right.</p> <p>Avoid numbers that will require borrowing until method is secure e.g 82 – 37</p>

MATHS CALCULATION POLICY

Calculation Policy: Subtraction

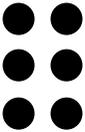
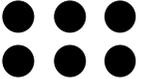
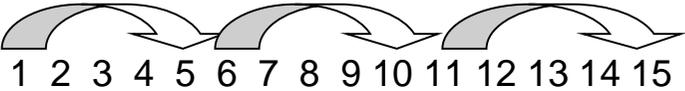
Stages	Method	Objectives and vocabulary	Help at home
Stage 6	<p>Partitioning with borrowing. Move on to include numbers containing zero which will require borrowing across columns.</p> <p>Ensure column subtractions are lined up correctly.</p> $\begin{array}{r} \\ 146 \\ - 54 \\ \hline 92 \end{array}$ $\begin{array}{r} \\ 301 \\ - 62 \\ \hline 239 \end{array}$	<p>Partition, column, hundreds, decimal, borrow across.</p> <p>Ensure columns are lined up correctly.</p>	<p>Ensure column subtractions are lined up correctly, and that the calculation always starts with the units, or, in the case of decimal calculations, the number on the furthest right.</p>

MATHS CALCULATION POLICY

Calculation Policy: Multiplication

Stages	Method	Objectives and vocabulary	Help at home
Stage 1	<p><u>Counting in repeated groups or patterns</u></p> <p>Counting groups of objects by breaking out into sets.</p>	Count Group	<p>Count a set of objects by breaking down into groups of 2, 3, 4 or 5.</p> <p>Emphasis on counting and grouping rather than identifying totals.</p>
Stage 2	<p><u>Grouping</u></p> <p>Demonstrate multiplication by breaking total number down, so:</p> <p>6 can be represented as</p> <p>◆ ◆ ◆ ◆ ◆ ◆</p>	Group Total	

MATHS CALCULATION POLICY

Stages	Method	Objectives and vocabulary	Help at home
<p>Stage 3</p>	<p style="text-align: center;"><u>Arrays</u></p> <p>Set out calculations as arrays, making links to formal notation of calculation. Demonstrate the commutativity of multiplication.</p> <p>$3 \times 2 = 6$ is the same as $2 \times 3 = 6$</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> </div>	<p style="text-align: center;">Array Times Tables</p> <p style="text-align: center;">Learn relationship between a number and its factors.</p> <p>Understand that the order of digits in a multiplication does not affect the total.</p>	<p style="text-align: center;">Arrange items into arrays when counting.</p> <p style="text-align: center;">Arrays to be set out neatly</p> <p style="text-align: center;">Count items and show that different patterns contain the same total.</p> <p style="text-align: center;">Link to times tables.</p>
<p>Stage 4</p>	<p style="text-align: center;"><u>Multiplication as Repeated Addition</u></p> <p>Identify that:</p> <p>$3 \times 5 = 15$ is the equal to $5 + 5 + 5 = 15$</p> <p>or 3 lots of 5 or 5×3</p> <p>Use of number lines to aid understanding:</p> 	<p style="text-align: center;">Lots of Groups of Commutativity</p> <p>Record multiplications and repeated additions in formal notation.</p> <p>Know that: $5 \times 3 = 5 + 5 + 5$</p>	<p style="text-align: center;">Introduce number lines at home.</p> <p style="text-align: center;">Count up to a total by grouping sets of 2, 3, 4 or 5 objects.</p>

MATHS CALCULATION POLICY

Calculation Policy: Multiplication

Stages	Method	Objectives and vocabulary	Help at home
Stage 5	<p style="text-align: center;"><u>Partitioning</u></p> <p>Break down calculations into composite parts.</p> $13 \times 5 = (10 \times 5) + (3 \times 5)$ $10 \times 5 = 50 \quad + \quad 3 \times 5 = 15$ $50 + 15 = 65$	<p>Vocabulary: Partition Brackets BODMAS Tens and Units</p> <p>Learn to calculate problems inside brackets before completing other operations.</p>	<p>Practice breaking down calculations at home using TU x U calculations.</p> <p style="text-align: center;">Ensure that</p>
Stage 6	<p style="text-align: center;"><u>Long Multiplication TU by U</u></p> <p>This method shows the method of recording in a column format.</p> $ \begin{array}{r} \text{T U} \\ 38 \\ \times \underline{7} \\ \hline 56 \quad (7 \times 8) \\ \underline{210} \quad (7 \times 30) \\ \hline \underline{266} \end{array} $	<p>Calculate using numbers in unit columns first, then move onto tens, hundreds etc.</p>	<p>Ensure that children describe calculations using the actual values of the digits, so for this example they should say 'thirty multiplied by seven', not 'three times seven'.</p> <p>Ensure that numbers are set out neatly in columns.</p>

MATHS CALCULATION POLICY

Calculation Policy: Multiplication

Stages	Method	Objectives and vocabulary	Help at home
Stage 7	<p style="text-align: center;"><u>Short Multiplication TU by U</u></p> <p>This method involves 'carrying' numbers into the neighbouring column.</p> $\begin{array}{r} 38 \\ \times 7 \\ \hline 266 \\ 25 \end{array}$	<p>Vocabulary: Carry</p> <p>Objective: Learn to carry numbers.</p> <p>Always start calculations from right hand column.</p>	<p>Point out that $7 \times 8 = 56$, and that we still write down 56, but that the tens are carried, and written, under the tens column.</p> <p>Try basing real world calculations on TU x U. Maybe the number of meals eaten by your family in a week?</p>
Stage 8	<p style="text-align: center;"><u>Long Multiplication TU by TU</u></p> <p><u>A revision of the long multiplication method, applied to TU multiplied by TU</u></p> $\begin{array}{r} \text{ TU} \\ 56 \\ \times 27 \\ \hline 42 \quad (7 \times 6) \\ 350 \quad (7 \times 50) \\ 120 \quad (6 \times 20) \\ 1000 \quad (50 \times 20) \\ \hline 1512 \\ 1 \end{array}$	<p>Extend use to TU by THU</p> <p>Use estimation to predict answers before calculation.</p>	

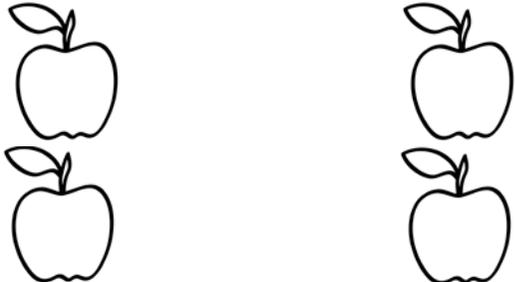
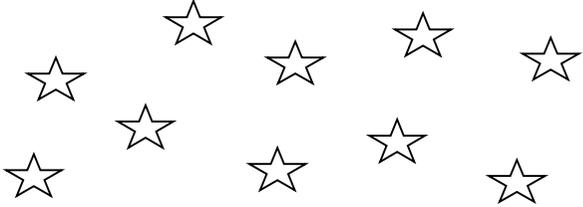
MATHS CALCULATION POLICY

Calculation Policy: Multiplication

Stages	Method	Objectives and vocabulary	Help at home
Stage 9	<p style="text-align: center;"><u>Short Multiplication TU by TU</u></p> $ \begin{array}{r} \text{T U} \\ 56 \\ \times 27 \\ \hline 392 \\ 1120 \\ \hline 1512 \\ 1 \end{array} $	<p>Extend use to TU by THU</p> <p>Use estimation to predict answers before calculation.</p>	

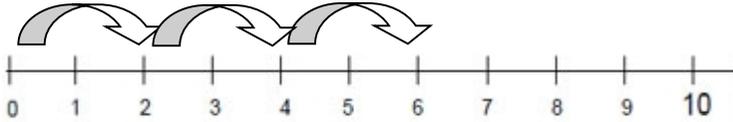
MATHS CALCULATION POLICY

Calculation Policy: Division

Stages	Method	Objectives and vocabulary	Help at home
<p>Stage 1</p>	<p>Sharing – 4 apples are shared between 2 people. How many do they have each?</p> 	<p>Share, Count</p> <p>Use everyday activities to share out physical objects</p>	<p>Distributing cards when playing a game, putting objects onto plates, into cups, hoops etc.</p>
<p>Stage 2</p>	<p>Grouping - Sorting objects into 2s / 3s/ 4s etc.</p> <p>How many pairs of stars are there?</p> 	<p>Share between, Group, Set, Double, Half, Halve, Pair, Count out, Share out</p> <p>Encourage the recording of calculations using drawings, and progressing to symbols to represent objects.</p>	<p>Talk through sharing to aid understanding.</p> <p>Reinforce vocabulary during discussion and allow children to draw pictures of objects at first, progressing to symbols.</p>

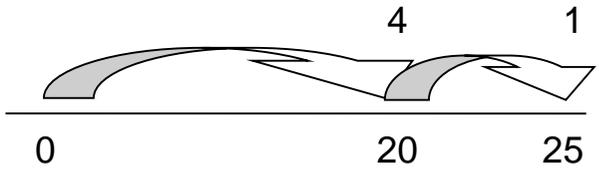
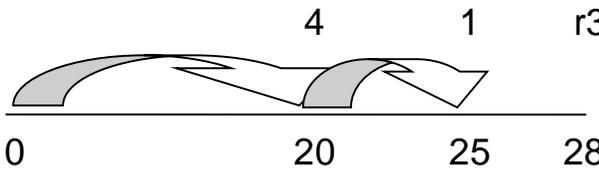
MATHS CALCULATION POLICY

Calculation Policy: Division

Stages	Method	Objectives and vocabulary	Help at home
<p>Stage 3</p>	<p>Find one half, one quarter and three quarters of shapes and sets of objects.</p> <p>$6 \div 2$ can be modelled as:</p> <p>There are 6 sweets. How many people can have 2 each? How many 2s make 6?</p> <p>$6 \div 2$ can be modelled as:</p>  <p><u>Introduce concept of remainders</u> $16 \div 3 = 5 \text{ r}1$ Sharing - 16 shared between 3, how many left over? Grouping – How many 3's make 16, how many left over?</p>	<p>Share equally, Divide, Divided by, Division Put in groups of, Array, Share between, Equal groups of, Estimate.</p> <p>Encourage children to count on using steps for division.</p> <p>Discuss the number of 'jumps' moved forward and relate the division calculation.</p> <p>Use number line models and apparatus to explore concept of remainders. Draw results.</p> <p>Estimate answers before calculation.</p>	<p>Put a number line up at home. Make one together, with each 10 highlighted. Count on in 2, 3, 4, 5s and check to see how many 3s in 12 etc.</p> <p>Use the number line to check Division calculations.</p>

MATHS CALCULATION POLICY

Calculation Policy: Division

Stages	Method	Objectives and vocabulary	Help at home
<p>Stage 4</p>	<p>Use a number line to record steps in a calculation.</p> <p>This extension of Stage 3 will help children to divide higher numbers. Steps will often mark a bridge through a multiple of ten.</p> <p>25 divided by 5 (20 broken down into 20 and 5)</p>  <p>For calculations requiring remainders:</p> <p>28 divided by 5</p> 	<p>Halve, Divide. Divided by Equal groups of steps, Jumps, Partition (breaking out numbers into component parts, so 36 becomes 30 and 6), Inverse, Estimate</p> <p>Calculate differences by breaking down numbers into groups of relevant times table where necessary (use known times tables or have times tables visible when learning concept)</p> <p>Check calculations using the inverse operation.</p> <p>Estimate answers before calculation.</p>	<p>Use number lines at home to carry out Divisions.</p> <p>Ensure a wide range of vocabulary is used to describe calculations.</p> <p>Start to use simple number lines, drawn out using a ruler. These do not need to show all the numbers on the number line, but can be used as per the examples on the left to aid calculations.</p>

MATHS CALCULATION POLICY

Calculation Policy: Division

Stages	Method	Objectives and vocabulary	Help at home
Stage 5	<p>Dividing 2 and 3 digit numbers by 1 digit numbers.</p> <p>$72 \div 5$ will use $50 \div 5 = 10$ and $20 \div 5 = 4$</p> <p>Partition the dividend into multiples of the divisor:</p> <p style="margin-left: 40px;">$72 = 50 + 22$</p> <p style="margin-left: 40px;">$50 \div 5 = 10$</p> <p style="margin-left: 40px;">$22 \div 5 = 4r2 \rightarrow 10 + 4r2 = 14 r 2$</p> <p>OR</p> $\begin{array}{r} 72 \\ - 50 \quad (10 \text{ groups}) \\ \hline 22 \\ - 20 \quad (4 \text{ groups}) \\ \hline 2 \end{array}$ <p>Answer : 14 remainder 2</p>	<p>Share equally, Divide, Divided by, Division, Put in groups of, Halve, Share between, Chunking, Divisor, Partition, Estimation</p> <p>Ensure columns are lined up correctly.</p> <p>Ensure method is fully secure before introducing calculations where remainders are required.</p> <p>Ensure calculation is written and verbalised in the correct order.</p> <p>Estimate answers before calculation.</p>	<p>Break numbers down by partitioning. 134 would be broken down into 100, 30 and 4.</p> <p>Avoid numbers that will require remainders until method is secure e.g 62 divided by 5.</p>

MATHS CALCULATION POLICY

Calculation Policy: Division

Stages	Method	Objectives and vocabulary	Help at home
Stage 6	<p>$977 \div 36$ is approximately $1000 \div 40 = 25$</p> <p>Partition the dividend into multiples of the divisor:</p> $977 = 720 + 180 + 77$ $720 \div 36 = 20$ $180 \div 36 = 5$ $77 \div 36 = 2r5$ $20 + 5 + 2r5 = 27r5$ <p>OR</p> $\begin{array}{r} 977 \\ - \underline{720} \quad (20 \text{ groups}) \\ 257 \\ - \underline{180} \quad (5 \text{ groups}) \\ 77 \\ - \underline{72} \quad (2 \text{ groups}) \\ 5 \end{array}$ <p>Answer: $27 \frac{5}{36}$</p>	<p>Quotient, Divisor / Divide, Divided by/ Division Product, Multiply/ Multiplied by, Multiple of Factor / Factorise, Inverse,, Prime Prime Factor, Share equally, Array Put in groups of, Halve Share between, Chunking</p> <p>Quotients expressed as fractions or decimal fractions $21 \div 4 = 5 \frac{1}{4}$ or 5.25</p> <p>Estimate answers before calculation.</p>	<p>Look for patterns and links to known multiplications.</p>

MATHS CALCULATION POLICY

Calculation Policy: Division

Stages	Method	Objectives and vocabulary	Help at home
Stage 7	<p>Write down how many times your divisor goes into the first number of the dividend.</p> <p>Write down any remainder to the left of the next digit in the dividend. Repeat for all digits.</p> <p>Record quotients as fractions or decimal fractions.</p> <div style="text-align: center;"> $\begin{array}{r} \text{quotient} \\ \text{divisor } 5 \overline{)847} \text{ dividend} \end{array}$ $\begin{array}{r} 169r2 \\ 5 \overline{)847} \end{array}$ </div>	<p>Quotient, Divisor / Divide, Divided by/ Division Product, Multiply/ Multiplied by, Multiple of Factor / Factorise, Inverse,, Prime Prime Factor, Share equally, Array Put in groups of, Halve Share between, Chunking</p> <p>Ensure understanding of use of zero to record results.</p> <p>Quotients expressed as fractions or decimal fractions $21 \div 4 = 5 \frac{1}{4}$ or 5.25</p>	Continue to use school based methods to record and calculate division calculations.

MATHS CALCULATION POLICY

Mathematics Non- negotiables - the minimum guarantee of competence for the next teacher

	Year 1	Year 2	Year 3
Number and Place Value	<p>A. Use number names in order and one-to-one correspondence to count sets of at least 20 objects reliably.</p> <p>B. Read and write numbers to 10.</p> <p>C. Count and order numbers from 1 to at least 20 in ascending and descending order.</p> <p>D. Know the number that is 1 more and 1 less than any number up to 20.</p> <p>E. Use the language of more than, less than (fewer), most, equal to.</p> <p>F. Identify and represent numbers to at least 20 using objects, structured apparatus and number lines.</p>	<p>A. Count to and across 100, forwards or backwards, beginning with 0 or 1, or from any given number.</p> <p>B. Count in multiples of 2s, 5s and 10s.</p> <p>C. Count in steps of 10 within 100, starting from any number.</p> <p>D. Read and write numbers from 1 to 100 in numerals, and up to 20 in words (not necessarily spelled correctly).</p> <p>E. Use the place value of each digit to order numbers to 100.</p> <p>F. Identify and represent numbers using objects, structured apparatus and number lines.</p> <p>Use place value and number facts to solve simple problems.</p>	<p>A. Count in steps of 2 and 5 from 0, and in 10s to 100, forwards and backwards.</p> <p>B. Count in multiples of 3 to at least 30.</p> <p>C. Use place value to compare and order numbers up to 100 sometimes using less than (<), equals (=) and greater than (>) signs correctly.</p>
	<p>A. All aspects of number and place value up to Year 3 are embedded.</p>	<p>A. All aspects of number and place value up to Year 4 are embedded.</p> <p>B. Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit</p> <p>C. Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000</p> <p>D. Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero</p> <p>E. Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000</p> <p>F. Read Roman numerals to 1000 (M) and recognise years written in Roman numerals.</p>	<p>A. Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit</p> <p>B. Round any whole number to a required degree of accuracy</p> <p>C. Use negative numbers in context, and calculate intervals across zero</p> <p>D. Solve number and practical problems that involve all of the above.</p>

MATHS CALCULATION POLICY

Mathematics Non- negotiables - the minimum guarantee of competence for the next teacher

	Year 1	Year 2	Year 3
Addition and Subtraction	<p>A. Recall and use addition and subtraction facts for all numbers up to 5.</p> <p>B. Using apparatus represent and use number bonds and related subtraction facts within 20.</p> <p>C. Add and subtract 1-digit and 2-digit numbers to 20, including zero, using concrete objects, structured apparatus, pictorial representations and basic written methods.</p> <p>D. Read the mathematical statements they have recorded.</p>	<p>A. Recall and use addition and subtraction facts for all numbers up to 10.</p> <p>A. Add and subtract numbers mentally, including:</p> <ul style="list-style-type: none"> a. 2 single-digit numbers b. a number up to 20 and 1s. <p>B. Add and subtract numbers using concrete objects, pictorial representations including:</p> <ul style="list-style-type: none"> a. a two-digit number and 1 b. adding 3 single-digit numbers with a total up to 20. <p>C. Read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=).</p> <p>D. Solve missing number addition problems involving single-digit numbers.</p> <p>E. Show that addition can be done in any order (commutative).</p>	<p>A. Relate number facts to 10 to adding and subtracting multiples of 10 within 100.</p> <p>B. Add and subtract numbers mentally, including:</p> <ul style="list-style-type: none"> a. a 2-digit number and 10s b. 2 simple, 2-digit numbers, which do not involve bridging a 10 <p>C. Add and subtract numbers using objects, pictorial representations and the written columnar methods including:</p> <ul style="list-style-type: none"> a. a 2-digit number and 10s b. adding 2, 2-digit numbers c. simple cases of subtracting 2-digit numbers d. adding 3 single-digit numbers. <p>D. Solve simple 2-step problems with addition and subtraction, applying increasing knowledge of mental and written methods.</p> <p>E. • Show that subtraction can't be done in any order.</p>
	<p>Year 4</p> <p>A. All aspects of number - addition and subtraction up to Year 3 are embedded.</p> <p>B. Recall and use addition and subtraction facts to 20 fluently; derive and use related facts to 100 and beyond.</p> <p>C. Add and subtract numbers mentally using appropriate strategies, including:</p> <ul style="list-style-type: none"> a. 2 2-digit numbers <p>D. Solve missing number problems involving a wider range of numbers.</p>	<p>Year 5</p> <p>A. All aspects of addition and subtraction up to Year 4 are embedded.</p> <p>B. Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)</p> <p>C. Add and subtract numbers mentally with increasingly large numbers</p> <p>D. Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.</p>	<p>Year 6</p> <p>A. Use their knowledge of the order of operations to carry out calculations involving the four operations</p> <p>B. Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why</p>

MATHS CALCULATION POLICY

Mathematics Non- negotiables - the minimum guarantee of competence for the next teacher

	Year 1	Year 2	Year 3
Multiplication And Division	A. Recall and use doubling and halving facts for numbers up to double 5.	A. Recall multiplication facts for the 10 multiplication table and use them to derive division facts, and count in steps of 10 to answer questions. B. Recall and use doubling and halving facts for numbers up to double 10 and other significant doubles. C. Recognise odd and even numbers to 20.	A. Recall and use multiplication and division facts for the 2 and 5 multiplication tables using appropriate signs. B. Show that multiplication of 2 numbers can be done in any order (commutative). C. Understand multiplication as repeated addition.
	Year 4	Year 5	Year 6
	A. All aspects of multiplication and division up to Year 3 are embedded. B. Recall and use multiplication and division facts for the 2,3, 4,5 and 10 multiplication tables and be able to see and discuss patterns therein. Write mathematical statements using the multiplication (.), division (\div) and equals (=) signs. C. Count in 3s to solve multiplication and division problems for the 3 multiplication table. Make connections between place value and multiplication/division by 10 and use known multiplication and division facts to derive others	A. All aspects of multiplication and division up to Year 4 are embedded. B. Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers C. Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers D. 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 E. Multiply and divide numbers mentally drawing upon known facts F. 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 G. Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000	A. Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication B. 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 C. 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 D. Identify common factors, common multiples and prime numbers

MATHS CALCULATION POLICY

Mathematics Non- negotiables - the minimum guarantee of competence for the next teacher

	Year 1	Year 2	Year 3
Fractions	<p>A. Recognise, find and name a half as 1 of 2 equal parts of an object or shape.</p> <p>B. Recognise and find half of a moveable small set of objects or a quantity.</p>	<p>A. Recognise, find and name a quarter as 1 of 4 equal parts of an object, shape or quantity.</p>	<p>A. Find $\frac{1}{3}$ and $\frac{1}{4}$ of a small set of objects.</p> <p>B. Recognise the equivalence of $\frac{2}{4}$s and $\frac{1}{2}$ in practical contexts and when counting in fractions.</p> <p>C. Recognise the percent symbol (%) and understand that percent relates to 'number of parts per 100'.</p>
	Year 4	Year 5	Year 6
	<p>A. All aspects of number – fractions up to Year 3 are embedded.</p> <p>B. Recognise, find, name and write fractions: $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape, set of objects or quantity.</p>	<p>A. All aspects of fractions up to Year 4 are embedded</p> <p>B. Compare and order fractions whose denominators are all multiples of the same number</p> <p>C. Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths</p> <p>D. Recognise mixed numbers and improper fractions and convert from one form to the other.</p> <p>E. Add and subtract fractions with the same denominator and denominators that are multiples of the same number</p> <p>F. Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams</p> <p>G. Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents</p> <p>H. Read, write, order and compare numbers with up to three decimal places ; solve problems involving number up to three decimal places</p> <p>I. Write percentages as a fraction with denominator 100, and as a decimal.</p>	<p>A. Use common factors to simplify fractions; use common multiples to express fractions in the same denomination</p> <p>B. Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions</p> <p>C. Multiply simple pairs of proper fractions, writing the answer in its simplest form</p> <p>D. Divide proper fractions by whole numbers</p> <p>E. Associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction</p> <p>F. recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.</p>

MATHS CALCULATION POLICY

Mathematics Non- negotiables - the minimum guarantee of competence for the next teacher

	Year 1	Year 2	Year 3
Measurement	<p>A. Sort coins and recognise the value of 1p, 2p, 5p, 10p, 20p, £1 and £2 coins.</p> <p>B. Recognise the days of the week and sequence the events of a day in chronological order using appropriate language such as before, after, next, morning, afternoon.</p> <p>C. Tell the time at the hour.</p>	<p>A. Measure and record using the following: meters, centimeters, kilograms, grams, minutes, hours.</p> <p>B. Recognise and use the symbols for pounds (£) and pence (p).</p> <p>C. Tell the time to half past the hour.</p> <p>D. Use language relating to dates, including days of the week, weeks, months and years.</p> <p>E. Know there are 7 days in a week.</p> <p>F. Know the name of the day before or after a given day.</p>	<p>A. Compare and order lengths, mass, volume or capacity and record the results using greater than (>), less than (<) and equals (=).</p> <p>B. 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 labelled unit using rulers, scales, thermometers and measuring vessels.</p> <p>C. Compare and order intervals of time.</p> <p>D. Recognise, tell and write the times: o'clock, half past and quarter past and quarter to the hour.</p>
	Year 4	Year 5	Year 6
	<p>A. All aspects of measurement up to Year 3 are embedded.</p> <p>B. Find all possible combinations of coins to equal a given amount or how to pay a given amount using the fewest possible number of coins.</p> <p>C. Know that there are 60 minutes in an hour and 24 hours in a day and use these facts to solve problems.</p> <p>D. Tell and write the time to 5 minutes. <ul style="list-style-type: none"> To know and recall measurement facts eg: 1 meter = 100cm, 1000g = 1KG etc. </p>	<p>A. All aspects of measurement up to Year 4 are embedded.</p> <p>B. Convert between different units of metric measure</p> <p>C. Understand and use approximate equivalences between metric units and common imperial units.</p> <p>D. Measure and calculate the perimeter of composite rectilinear shapes.</p> <p>E. Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm²) and square metres (m²) and estimate the area of irregular shapes</p> <p>F. Estimate volume to build cuboids (including cubes)] and capacity.</p> <p>G. Solve problems involving converting between units of time</p>	<p>A. 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</p> <p>B. Recognise that shapes with the same areas can have different perimeters and vice versa</p> <p>C. Recognise when it is possible to use formulae for area and volume of shapes</p> <p>D. Calculate the area of parallelograms and triangles</p> <p>E. Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm³) and cubic metres (m³), and extending to other units [for example, mm³ and km³].</p>

MATHS CALCULATION POLICY

Mathematics Non- negotiables - the minimum guarantee of competence for the next teacher

	Year 1	Year 2	Year 3
Shape	<p>A. Recognise, name and describe the key properties of: rectangles, squares, circles and triangles.</p> <p>B. Recognise, name and describe the key properties of: cubes and pyramids.</p> <p>C. Physically sort shapes based on simple properties.</p>	<p>A. Recognise, name and describe the key properties of: pentagons and hexagons.</p> <p>B. Recognise, name and describe the key properties of: cones and spheres.</p>	<p>A. Compare and sort common 2-D and 3-D shapes on the basis of: sides, edges, faces.</p> <p>B. Identify vertical lines of symmetry.</p> <p>C. Identify 2-D shapes on the surface of 3-D shapes.</p>
	Year 4	Year 5	Year 6
	<p>A. All aspects of shape up to Year 3 are embedded.</p> <p>B. Compare and sort common 2-D and 3-D shapes using more than 1 criterion, identifying and describing their properties.</p>	<p>A. All aspects of shape up to Year 4 are embedded</p> <p>B. Identify 3-D shapes, including cubes and other cuboids, from 2-D representations</p> <p>C. Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles</p> <p>D. Draw given angles, and measure them in degrees (o)</p> <p>E. Know that: angles at a point and one whole turn (total 360o): angles at a point on a straight line and 2: 1 a turn (total 180o): other multiples of 90o</p> <p>F. Use the properties of rectangles to deduce related facts and find missing lengths and angles</p> <p>G. Distinguish between regular and irregular polygons based on reasoning about equal sides and angles.</p>	<p>A. Draw 2-D shapes using given dimensions and angles</p> <p>B. Recognise, describe and build simple 3-D shapes, including making nets</p> <p>C. Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons</p> <p>D. Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius</p> <p>E. Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.</p> <p>a.</p>

MATHS CALCULATION POLICY

Mathematics Non- negotiables - the minimum guarantee of competence for the next teacher

	Year 1	Year 2	Year 3
Position And Direction	<p>A. Respond to and use terms such as first, second and third.</p> <p>B. Describe position, directions and movement for whole and half turns.</p>	<p>A. Describe position, directions and movement, including quarter and three-quarter turns.</p>	<p>A. Use mathematical vocabulary to describe position, direction and movement, including movement in a straight line; distinguish between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise).</p>
	Year 4	Year 5	Year 6
	<p>A. All aspects of position and direction up to Year 3 are embedded.</p>	<p>A. All aspects of position and direction up to Year 4 are embedded.</p> <p>B. 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.</p>	<p>A. Describe positions on the full coordinate grid (all four quadrants)</p> <p>B. Draw and translate simple shapes on the coordinate plane, and reflect them in the axes.</p>

MATHS CALCULATION POLICY

Mathematics Non- negotiables - the minimum guarantee of competence for the next teacher

	Year 1	Year 2	Year 3
Statistics	A. Group objects into sets according to simple properties.	A. Interpret and construct simple pictograms where the picture is worth 1 unit. B. Interpret simple tally charts and block diagrams. C. Ask and answer questions that require counting the number of objects in each category.	A. Interpret and construct simple block diagrams and simple tables. B. Ask and answer simple questions that require sorting the categories by quantity, totalling and comparing simple categorical data.
	Year 4	Year 5	Year 6
	A. All aspects of statistics up to Year 3 are embedded. B. Interpret and construct pictograms (where the symbols show many to one correspondence), block diagrams (where the scale is divided into 2s or 5s) and more complex tables.	A. All aspects of statistics up to Year 4 are embedded. B. Solve comparison, sum and difference problems using information presented in a line graph C. Complete, read and interpret information in tables, including timetables.	A. Interpret and construct pie charts and line graphs and use these to solve problems B. Calculate and interpret the mean as an average.