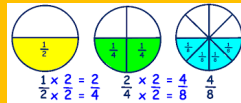







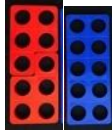


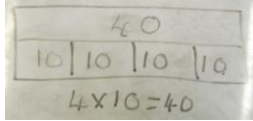



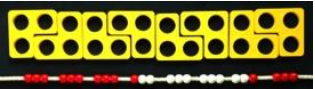
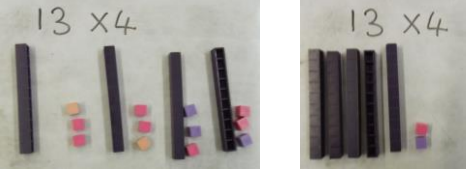
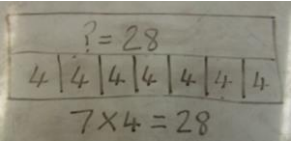




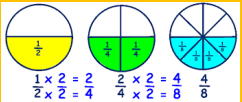
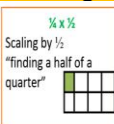

Calculation Policy- Multiplication

Year	FS- ‘Maths Moments video’	Year 1- ‘Maths Moments video’	Year 2- ‘Maths Moments video’	Year 3- ‘Maths Moments video’
Mental Calculations and Methods	Doubling with apparatus. Count in 2's	Count in 2s, 10s, 5s, . Doubles up to 10. Double multiples of 10 Solve one-step problems involving multiplication.	2 x, 10x, 5x multiplication facts Doubles up to 20 and multiples of 5. Count in 3s. Recognise odd and even numbers. Show that multiplication of two numbers can be done in any order (commutative- $5 \times 4 = 4 \times 5$). Solve problems involving multiplication, using materials, arrays, repeated addition, mental methods, and multiplication facts, including problems in contexts	Review 2x, 5x and 10x multiplication facts. 4x, 8x, 3x, 6x multiplication facts (using doubling patterns). Double two digit numbers. Develop efficient mental methods using commutativity $5 \times 4 = 4 \times 5$ and associativity $(2 \times 4) \times 3 = 2 \times (4 \times 3)$. Derive related multiplication and division facts. Calculate multiplication statements including 2 digit multiplied by 1 digit. Partitioning-multiply the tens first then the ones. ($39 \times 7 = 30 \times 7 + 9 \times 7$)
Fractions			Write simple fractions for example $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$. Begin to relate multiplication and division models to fractions and measures.	Recognise and show using diagrams, equivalent fractions with small denominators. 
Written Methods	Children begin to record in the context of play, practical activities, or problem solving.	Encourage children to begin to write it as repeated addition in preparation for Year 2. e.g. , $2+2+2+2=8$	Calculate mathematical statements for multiplication within the multiplication tables and write them using the multiplication (\times), division (\div) and equals (=) signs.	Write and calculate mathematical statements for \div using the \times tables they know progressing to formal written methods.




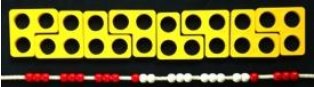

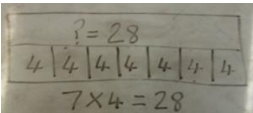
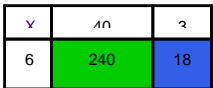


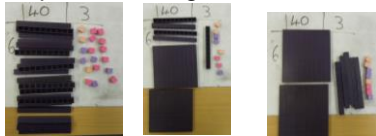
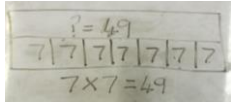

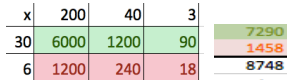
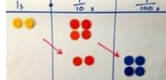
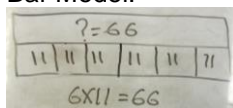
Calculation Policy- Multiplication

Year	FS- 'Maths Moments video'	Year 1- 'Maths Moments video'	Year 2- 'Maths Moments video'	Year 3- 'Maths Moments video'
Developing conceptual understanding	<p>Practical examples. E.g. How many wellies for three children?</p> <p>Doubling in practical contexts. E.g. adding spots to ladybirds.</p> <p>Using fingers and dominoes.</p> <p>Look at Numicon pieces for odd and even.</p>	<p>Represent multiplication facts using objects: 2 frogs on each of the 3 lily pads: $3 \times 2 = 6$</p>  <p>2 groups of 3: $2 \times 3 = 6$</p>  <p>Represent multiplication facts using Numicon: $3 \times 2 = 6$ 3 groups of 2:</p>  <p>Represent multiplication facts using bead strings- 3 groups of 2:</p>  <p>Link to repeated addition:</p> 	<p>Represent multiplication facts using objects: 5 frogs on each of the 3 lily pads: $3 \times 5 = 15$</p>  <p>Represent multiplication facts using bead strings- 3 groups of 5:</p>  <p>Represent multiplication facts using Numicon: $5 \times 2 = 2 \times 5$</p>  <p>Build multiplication facts on counting stick:</p>  <p>Link to repeated addition:</p>  <p>Bar Model:</p> 	<p>Show multiplication using arrays: $13 \times 4 = (10 \times 4) + (3 \times 4)$</p>  <p>Build multiplication facts on counting stick: $12 \times 3 = 36$</p>  <p>Show tables on a number line</p>  <p>Represent multiplication facts using Numicon and bead strings: $8 \times 3 = 24$</p>  <p>Represent using Diennes:</p>  <p>Bar Model:</p> 

Calculation Policy- Multiplication

Year	Year 3- 'Maths Moments video'	Year 4- 'Maths Moments video'	Year 5- 'Maths Moments video'	Year 6- 'Maths Moments video'
Mental Calculations and Methods	<p>Review 2x, 5x and 10x multiplication facts.</p> <p>4x, 8x, 3x, 6x multiplication facts (using doubling patterns).</p> <p>Double two digit numbers.</p> <p>Develop efficient mental methods using commutativity $5 \times 4 = 4 \times 5$ and associativity $(2 \times 4) \times 3 = 2 \times (4 \times 3)$.</p> <p>Derive related multiplication and division facts.</p> <p>Calculate multiplication statements including 2 digit multiplied by 1 digit.</p> <p>Partitioning-multiply the tens first then the ones. $(39 \times 7 = 30 \times 7 + 9 \times 7)$</p>	<p>Review 2x, 5x, 10x, 4x, 8x, 3x, and 6x multiplication facts.</p> <p>10 times bigger.</p> <p>7x, 9x, 11x, 12x multiplication facts.</p> <p>Double larger numbers and decimals.</p> <p>Recognise and use factor pairs and commutativity $(5 \times 4 = 4 \times 5)$ in mental calculations.</p> <p>Multiply by 0 and 1.</p> <p>Multiplying together three numbers (using the associative law $(2 \times 4) \times 3 = 2 \times (4 \times 3)$).</p> <p>Practice mental methods and extend this to three-digit numbers to derive facts, (for example $3 \times 200 = 600$ can be derived from $2 \times 3 = 6$)</p>	<p>Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers</p> <p>Establish whether a number up to 100 is prime.</p> <p>Recognise and use cube and square numbers.</p> <p>Multiplication facts up to 12×12.</p> <p>10, 100, 1000 times bigger.</p> <p>Double larger numbers and decimals.</p> <p>Partition to multiply mentally.</p> <p>Multiply whole numbers and those involving decimals by 10, 100 and 1000.</p>	<p>Perform mental calculations, including with mixed operations and large numbers (increasingly large numbers & more complex calculations).</p> <p>Use estimation to check answers to calculations.</p> <p>Know the square numbers up to 12×12 & derive the corresponding squares of multiples of 10 e.g. $80 \times 80 = 6400$</p> <p>Multiply numbers by 10, 100 and 1000 giving answers up to three decimal places.</p> <p>Review multiplication facts up to 12×12.</p> <p>Partition to multiply mentally larger numbers.</p> <p>Double larger numbers and decimals.</p>
Fractions	<p>Recognise and show using diagrams, equivalent fractions with small denominators.</p>  <p>$\frac{1}{2} \times \frac{2}{2} = \frac{2}{4}$ $\frac{2}{4} \times \frac{2}{2} = \frac{4}{8}$ $\frac{4}{8}$</p>	<p>Recognise and show, using diagrams, families of common equivalent fractions.</p> <p>Understand the relation between non-unit fractions and multiplication of quantities, with particular emphasis on tenths and hundredths.</p> <p>Make connections between fractions of a length, of a shape and as a representation of one whole or set of quantities.</p> <p>Use factors and multiples to recognise equivalent fractions and simplify where appropriate.</p>	<p>Multiply mixed numbers and proper fractions by whole number, supported by diagrams and materials.</p> <p>Identify name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths.</p> <p>Scaling by finding $\frac{1}{4}$ of $\frac{1}{2}$</p>  <p>Scaling by $\frac{1}{2}$ "finding a half of a quarter"</p> <p>$\frac{1}{2} \times \frac{1}{4}$ "% of a %": find a $\frac{1}{2}$, then divide it by 4.</p> <p>Encourage children to draw diagrams to represent situations or problems involving fractions. Model how to do this, for example:</p> <p>$\frac{10}{20}$ of a number is 20. What is the number? $\frac{10}{20}$ Whole = 50</p>	<p>Multiply simple pairs of proper fractions writing the answer in its simplest form. E.g. $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$</p> <p>Three key applications of understanding:</p> <ul style="list-style-type: none"> *Recognise that $\frac{1}{2}$ of 12, $\frac{1}{3}$ of 12 and $\frac{1}{4}$ of 12 divided by 4 are equivalent. *Use cancellation to simplify the product of a fraction and an integer e.g. $\frac{1}{2} \times 15 = 7\frac{1}{2}$, $\frac{1}{3} \times 15 = 5$, $\frac{1}{4} \times 15 = 3\frac{3}{4}$ *Work out how many $\frac{1}{2}$s in 15, how many $\frac{1}{3}$s in 15, how many $\frac{1}{4}$s in 15 etc. <p>Pupils should use a variety of images to support their understanding of multiplication with fractions. This follows earlier work about fractions as operators (fractions of), as numbers, and as equal parts of objects, e.g. as parts of a rectangle.</p> 

Calculation Policy- Multiplication

Year	Year 3- 'Maths Moments video'	Year 4- 'Maths Moments video'	Year 5- 'Maths Moments video'	Year 6- 'Maths Moments video'
Written Methods	Write and calculate mathematical statements for \div using the \times tables they know progressing to formal written methods.	Multiply two-digit and three-digit numbers by a one-digit number using formal written layout $\begin{array}{r} 243 \\ \times 6 \\ \hline 1,458 \end{array}$	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 $\begin{array}{r} 1,432 \\ \times 36 \\ \hline 8,592 \\ 42,960 \\ \hline 51,552 \end{array}$	Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication. $\begin{array}{r} 5,432 \\ \times 36 \\ \hline 32,592 \\ 162,960 \\ \hline 195,552 \end{array}$
Developing conceptual understanding	<p>Show multiplication using arrays: $13 \times 4 = (10 \times 4) + (3 \times 4)$</p>  <p>Build multiplication facts on counting stick: $12 \times 3 = 36$</p>  <p>Show tables on a number line $8 \times 3 = 24$</p>  <p>Represent multiplication facts using Numicon and bead strings: $8 \times 3 = 24$</p>  <p>Represent using Diennes: 13×4</p>  <p>Bar Model: $7 \times 4 = 28$</p> 	<p>Grid method:  </p> <p>Represent using Place Value counters:  </p> <p>Partition and multiply- exchange- regroup. 43×6 by partitioning $40 \times 6 = 240$ $3 \times 6 = 18$ $43 \times 6 = 258$ If I know $4 \times 6 = 24$ then 40×6 is ten times bigger.</p> <p>Build multiplication facts on counting stick: $12 \times 7 = 84$</p>  <p>Represent using Diennes:  </p> <p>Partition and multiply- exchange- regroup</p> <p>Bar Model: $7 \times 7 = 49$</p> 	<p>Represent using Place value counters:  </p> <p>Partition and multiply- exchange- regroup</p> <p>Grid method linked to formal written method:  </p> <p>If I know 4×6 then 0.4×6 is ten times smaller 0.4×0.6 is ten times smaller again</p>  <p>Multiply $1,432 \times 6$ $(6 \times 2, 6 \times 30, 6 \times 400, 6 \times 1000)$ Carried numbers are recorded above 1,432.</p> $\begin{array}{r} 1,432 \\ \times 6 \\ \hline 8,592 \end{array}$ <p>Then multiply $1,432 \times 30$ $(30 \times 2, 30 \times 30, 30 \times 400, 30 \times 1000)$</p> $\begin{array}{r} 1,432 \\ \times 36 \\ \hline 8,592 \\ 42,960 \\ \hline 51,552 \end{array}$ <p>Then use column addition to find the total of the products.</p> $\begin{array}{r} 1,432 \\ \times 36 \\ \hline 8,592 \\ 42,960 \\ \hline 51,552 \end{array}$ <p>Bar Model: $6 \times 11 = 66$</p> 	<p>(When multiplying begin with units and carry above the calculation to ensure numbers are not confused when adding)</p>