Mathematics Calculation Policy

Key Stage 1 and 2



	Year 1	Year 2	Year 3
-	Pupils memorise and reason with number bonds	Practice addition to 20 and become increasing fluent in	I can add and subtract numbers with up to three
	to 10 and 20 in several forms.	deriving facts.	digits using formal written methods.
	Complete the part whole models by drawing the	Methods taught in Year 1 should continue to be used to	Pupil needing to use number lines from Year 2 into 3
	counters then writing the numerals. Linking to bar	consolidate learning and understanding in Year 2.	should continue to do so depending on their ability.
Addition	counters then writing the numerals. Linking to bar modelling in Year 1. 4 = signs and missing numbers Children need to understand the concept of equality before using the '=' sign. Calculations should be written either side of the equality sign so that the sign is not just interpreted as 'the answer'. 2 = 1 + 1 2 + 3 = 4 + 1 Missing numbers need to be placed in all possible places. 3 + 4 = 0 = 3 + 4 3 + 0 = 7 = 3 + 4 3 + 0 = 7 = 3 + 4 3 + 0 = 7 = 3 + 4 Counting and Combining sets of Objects Combining two sets of objects (aggregation) which will progress onto adding on to a set (augmentation) 0 = 0 = 0 = 12 Understanding of counting on with a numbertrack and using numicon. 1 = 2 + 3 + 4 = 5 = 7 + 8 = 10 + 11 + 12 + 13 + 4 + 15 Understanding of counting on with a numbertrack and using numicon.	consolidate learning and understanding in Year 2. Use bar modelling to represent addition calculations. 70 + 30 = 100 Missing number problems e.g 14 + 5 = 10 + 32 + + = 100 35 = 1 + + 5 100 = 70 + ? 100 70 4+7+6 = 10+7 = 17 Combine the two numbers to make 10 and then add on the remainder.	should continue to do so depending on their ability. Counting on in tens and ones 23 + 12 = 23 + 10 + 2 = 33 + 2 = 35 Adding 9 or 11 by adding 10 and adjusting by 1 e.g. Add 9 by adding 10 and adjusting by 1 35 + 9 = 44 Starting $+ 10$ $+ 100$ Number 97 107 197 123 133 223 Partition into tens and ones Make both numbers on a place value grid. 0 0 0 0 0 0 0 0 0 0
	7+4		Count on by partitioning the second number only e.g.



Year 4	Year 5	Year 6
Pupils continue to practise mental methods with increasingly larg numbers using models and images to help them.	e Pupils co Citilturentopprotitisermentablanetlabidensvivilitimimeræsisgigljalæg numbersnusintgensddetidafildeintsygde2t@Bloeme.14,762) using mod images to help them.	e Pupils com <mark>itational-potato international international and international international program international and international programs and international and internationa international and international and internationand and internationad and internationad and internationad and</mark>
Children can draw a pictoral representation of the columns and place value counters to further support their learning and understanding. ones for a ten? Here is a number. $\frac{1}{10000} \frac{1000}{1000} \frac{100}{1000} \frac$	images to help them. Written methods (progressing to more than 4- digits) As Year 4, progressing when understanding of the expanded method is secure, children will move on to the formal column method for whole numbers and decimal numbers as an efficient written algorithm. Solve: $1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 $	Images to help them. Written methods As year 5, progressing to larger numbers, aiming for both conceptual understanding and procedural fluency with columnar method to be secured. Continue calculating with decimals, including those with different numbers of decimal places Line up the decimal points Line up the decimal points 22.3 1.234 + 34.1 + 4.1 56.4 5.334 Pupils will also learn to add three decimal numbers. 3.452 9.74 29.338 + The amount carried over can be placed above or below the line



As the children move on, introduce decimals with the same number of decimal places and different. Money can be used here.





Problem Solving

Teachers should ensure that pupils have the opportunity to apply their knowledge in a variety of contexts and problems (exploring cross curricular links) to deepen their understanding.

All the missing digits are the same. Find the missing digits.



Whole unknown:

3 children go to the cinema. They each pay £13.75. How much do they spend altogether?









	Year 4	Year 5	Year 6
	Recall all multiplication facts up to 12 x 12. Counting in multiples of 6, 7, 9, 25 and 1000, and steps of 1/100. Solving practical problems where children need to scale up. Relate to known number facts. (E.g. how tall would a 25cm sunflower be if it grew 6 times taller.	Identify multiples and factors and factor pairs of numbers. Know and use prime numbers and prime factors. Recognise squared and cubed numbers (using the correct notation).	Undertake mental multiplications with increasingly hard numbers and decimals. Continue to use all multiplication facts to aid fluency.
Multiplication	Begin by using counting objects and resources. Hundreds Tens Units OCOO OC	Begin with grid method $47x36=$ 1200 \overline{x} 40 $\overline{30}$ 1200 $\overline{6}$ 240 42 1692 Leading to expanded vertical 47 \underline{x} 42 47 \underline{x} 42 47 \underline{x} 42 47 \underline{x} 42 $6x40$ 210 240 47 x 42 $6x40$ 210 $30x70$ 1200 1692 Compact Vertical Method 2 2 4 2 4 2 3 4 2 4 2 3 4 3 3 <td< td=""><td>Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the efficient written method of long multiplication. Start with long multiplication, reminding the children about lining up their numbers clearly in columns. Compact Vertical Method 1342 x 18 10736 13420 24156 Bar modelling and number lines can support learners when solving problems with multiplication alongside the formal written methods. $\underbrace{551558 \times 60-58}_{8 \times 60-58} \times 60-58}_{8 \times 60-56} \times 60-58}_{8 \times 60-56} \times 60-58}_{8 \times 60-56} \times 60-56}_{8 \times 60-$</td></td<>	Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the efficient written method of long multiplication. Start with long multiplication, reminding the children about lining up their numbers clearly in columns. Compact Vertical Method 1342 x 18 10736 13420 24156 Bar modelling and number lines can support learners when solving problems with multiplication alongside the formal written methods. $\underbrace{551558 \times 60-58}_{8 \times 60-58} \times 60-58}_{8 \times 60-56} \times 60-58}_{8 \times 60-56} \times 60-58}_{8 \times 60-56} \times 60-56}_{8 \times 60-$



