Godinton Primary School

Calculation policy guidance: Progression of skills

	EYFS/ Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Addition	Combining two parts to make a whole: part whole model. Starting at the bigger number and counting on – Using cubes and number lines Regrouping to make 10 using a ten frame. Constructing number sentences to go with practical activities. Recognise that addition can be done in any order EG. 4+7 or 7+4 Begin to partition tens and ones. Find pairs of numbers that add up to 10. Extending to numbers bonds to 20.	Adding pairs of numbers– single digits, multiples of ten, 2 digit numbers, multiples of 100. Using empty numberlines. Adding three single digits. Use of base 10 to combine two numbers. Recall and use addition facts to 20 fluently and use related facts up to 100. Partition into tens and ones and use informal written methods. Begin to understand the place value of digits up to 1000.	Using place value counters. (Up to 3 digits, multiples of 5, 10 and 100) Begin to record calculations more formally, in preparation for an efficient standard method – Knowing that that ones line up under ones, tens under tens and hundreds under hundreds etc. Begin to use and understand '*carrying*' principles. Begin to find an approximate answer before calculating. Learn to check answers using the inverse (Subtraction.)	Use known number facts to add pairs of 2 and 3 digit numbers mentally. Refine and use efficient written methods to add numbers up to four digits. Expanded written method (Vertical layout) and compact written method.	Compact standard written method – Column method. Add several numbers with different number of digits. Use of place value counters for adding decimals. Add two or more decimals up to 2 decimal places.	Compact standard written method – Column method. Abstract methods. Extend to decimals up to 4 digits.

Subtraction	Practical contexts using objects, modelling with apparatus. Taking away ones. Counting back from the larger number. Find out how many have been removed by counting up to the larger number. Find the difference. Part whole model. Make 10 using the ten frame. Start to use a number line. Begin to write number sentences using practical – and = symbols. Know all subtraction facts up to and including 10.	Finding the difference. Use of base 10. Know subtraction facts up to 20. Recognise the use of symbols, such as squares and triangles, to stand for unknown numbers. Use known number facts and place value to subtract pairs of numbers mentally including – single digits, any 2 digit numbers, multiples of 100. Use empty number lines to subtract larger 2 digit numbers and when counting on if the difference is small, or count on mentally.	Subtract multiples of 5 from 100. Continue to subtract pairs of numbers mentally including 1 and 2 digit numbers, and multiples of 100. Continue to use an empty number line for counting back – pupils to be encouraged to make fewer jumps. Use a number line to find 'the difference' by counting on. Begin to set out column subtraction without *exchanging* a 10 (**decomposition**), partitioning the tens and ones and then combining. Practical exchanging (manipulatives) Move on to *exchanging* a 10. Find an approximate answer before calculating. Check answers using the inverse (Addition).	Continue to subtract pairs of numbers mentally up to 4 digits. Use the expanded column method. Develop and refine written methods to subtract 2 and 3 digit whole numbers and £.p.	Using the formal written method, including decomposition. Can use informal methods and calculate mentally. Abstract for whole numbers. Start with place value counters for decimals – with the same amount of decimal places.	Formal compact method Abstract methods. Extend compact method to decimals up to 2 decimal places, including subtracting decimals from whole numbers. Ensuring that the decimal points line up under each other.

Multiplication						
	Recognising and making equal groups. Doubling (Linked to addition) Counting in multiples – Using cubes, numicon and other manipulatives and objects around the classroom. Count in 2's and 10's starting from 0. Begin to count forwards and backwards in different intervals from a given starting number. Count in 2's, 5's and 10's and 3's by the end of the year. Solve practical problems, draw pictures and identify patterns that involve groups of 2, 5 and 10. Begin to use the X sign.	Arrays (begin to realise that multiplication can be done in any order.) Continue to use practical activities and arrangements. Understand multiplication as repeated addition 5+5+5 = 3 lots of 5 = 3x5. Record simple mental multiplications in a number sentence using the X and = signs.	Derive and use multiplication facts for 2, 3, 4, 5, 6, 8 and 10 times tables. Record mental multiplications in a number sentence. Arrays (begin to realise that multiplication can be done in any order.) Use informal written methods to support multiplying 2 digit x 1 digit using base 10. 23x4= Start to use the relationship between X and ÷. Begin to use the grid method.	Recall all multiplication facts up to 12x12. Recognise all multiples up to 10 up to the 10th multiple. Multiply numbers to 1,000 by 10 and 100. Continue to use grid method involving partitioning. Introduce Column multiplication – introduced with place value counters. (2 and 3 digit numbers multiplied by 1 digit.) Approximations to be made.	Recall quickly all multiplication facts up 12x12. Multiply whole numbers and decimals by 10, 100 and 1,000. Refine and extend written methods. Column multiplication (up to 4 digit numbers multiplied by 1 or 2 digit numbers.) **Progression of methods:** 1. Grid method 2. Short expanded layout 3. Long multiplication 4. Compact layout	Use all multiplication facts up 12x12 to derive related multiplication facts involving decimal numbers. **E.G.** 6x3=18 therefore 0.6x3=1.8. Know by heart the squares of all numbers to 12x12. Column multiplication (Multi–digit up to 4 digits by 2 digit numbers.) Extend to decimals up to 2 decimal places. Pupils consolidate skills and choose their preferred method.

Division						
Introduce the language of sharing. Sharing objects into groups. Division as grouping E.G. I have 12 sweets and put them in groups of 3, how many groups? Use cubes and draw round 3 cubes at a time. Use simple fractions such as ½ (sharing between 2)	Division as grouping: Repeated subtraction. Sharing equally and halving. Use a number line or hundred square to illustrate groupings. Division within arrays – linking to multiplication. Record simple mental divisions in a number sentence using the ÷ and = signs. Begin to understand the idea of a remainder. Give a whole number remainder when one number is divided by another. E.G. 16÷3=5 r1	Derive and recall the corresponding division facts for the 2, 3, 4, 5 and 10 times tables. Understand that division is the inverse of multiplication and vice versa. Solve division calculations by using multiplication strategies and facts. Use practical and informal methods to support the division of a 2 digit number by a 1 digit number. Using manipulatives, times tables facts and repeated subtraction.	Mentally use multiples of the divisor. E.G. 72÷5= (50+22) ÷5= 10+4 r2 = 14 r2. Develop and use a range of written methods (up to 3 digits by 1 digit – concrete and pictorial.) Repeated subtraction – chunking with remainders. Introduce compact method. Begin to relate division and fractions. Divide mentally numbers up to 1000 by 10, and then 100 and be able to explain the effect.	Short division. Extend written methods (Up to 4 digits by a 1 digit number including remainders.) Divide whole numbers up to 10,000 by 10, 100 0r 1,000 including decimals up to 2 decimal places. Continue to derive and recall the division facts corresponding to all the multiplication facts to 10 x 10.	Short division. Long division with place value counters (up to 4 digits by 2 a 2 digit number) Children should exchange into the tenths and the hundredths column too. Pupils consolidate skills and choose their preferred method.

			Use 'Chunking' method on a numberline, leading to informal written chunking. Division with a remainder – Rounding up or down, depending on the context. Fractions as remainders. Understand the effect of dividing by 10 and 100. Find ½ of any multiple of 10 to 100 by dividing by 2.	Derive and recall the division facts corresponding to all the multiplication facts to 10 x 10. Attempt to make realistic approximations of answers to a problem.		

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