# Anderton Primary School

Maths Mastery Calculation Policy
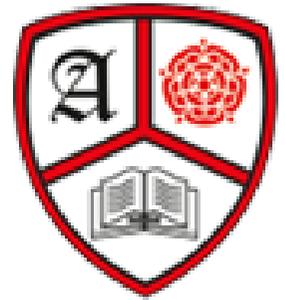
Date reviewed:

Date for next review:

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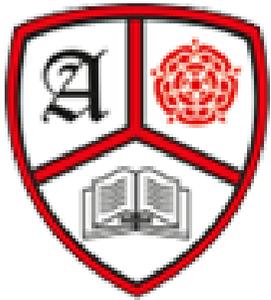
Year 4-6 Addition
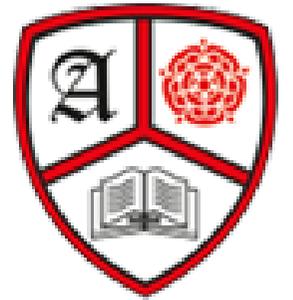
Objective ,Strategy Key Vocabulary	Concrete	Pictorial	Abstract
Y4—add numbers with up to 4 digits	Children continue to use dienes or pv counters to add, exchanging ten ones for a ten and ten tens for a hundred and ten hundreds for a thousand.	Draw representations using pv grid.	2634 + 4517 / 7141 / 1 1 / Continue from previous work to carry ones, tens and hundreds. Relate to money and measures.
Y5—add numbers with more than 4 digits. Add decimals with 2 decimal places, including money.	As year 4 Introduce decimal place value counters	2.37 + 81.79	22,634 + 15,673 / 38,307 / 1 1 / £ 127.67 +£ 38.45 / £ 166·12 / 1 1 1
Y6—add several numbers of increasing complexity Including adding money, measure and decimals with different numbers of decimal points.	Some children may need to ruse manipulatives and/or representations for longer. See year 5		89,472 / 63,673 + 3,016 / 156,161 / 1 1 1 1 / 1.437 / 0.600 +3.020 / 4·057 / 1 / Insert zeros for place holders.
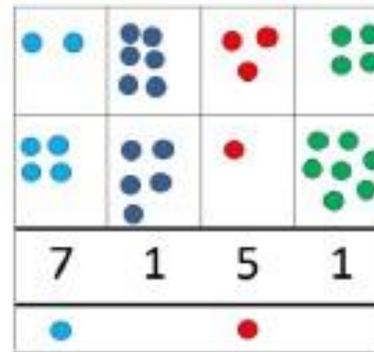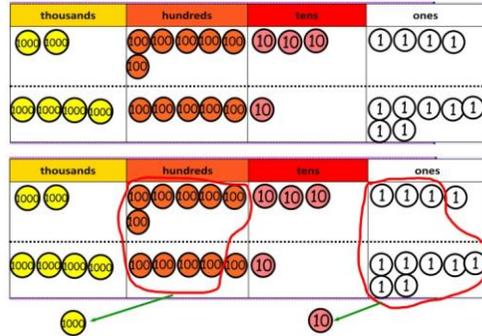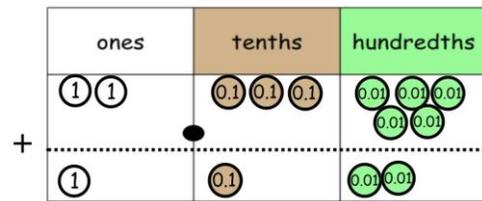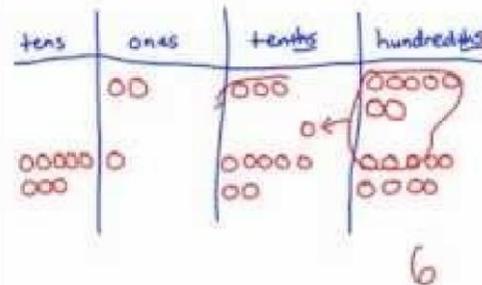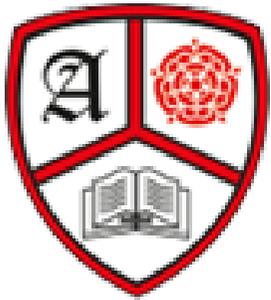
Year 4 – 6 Subtraction

Objective & Strategy	Concrete	Pictorial	Abstract
Subtracting tens and ones Year 4 subtract with up to 4 digits. *Introduce decimal subtraction through context of money*	234 - 179 Model process of exchange using Numicon, base ten and then move to PV counters.	Children to draw pv counters and show their exchange—see Y3	 Use the phrase 'take and make' for exchange
Year 5- Subtract with at least 4 digits, including money and measures. *Subtract with decimal values, including mixtures of integers and decimals and aligning the decimal point.*	As Year 4	Children to draw pv counters and show their exchange—see Y3	 Use zeros for placeholders.
Year 6—Subtract with increasingly large and more complex numbers and decimal values.			
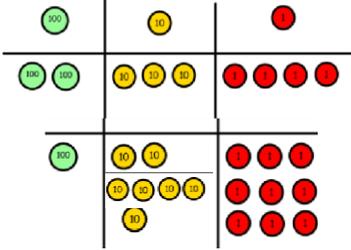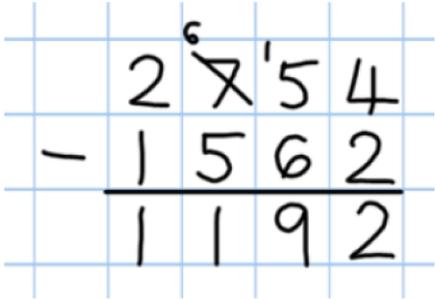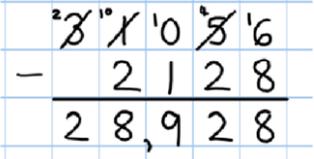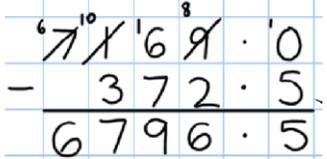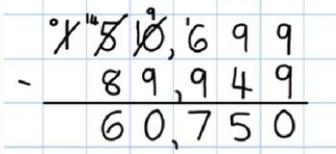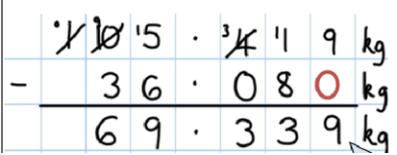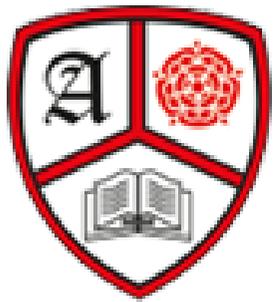
Year 4 Multiplication

Objective & Strategy	Concrete	Pictorial	Abstract
Understand the 7 times table	Children use representations which show groups of 7 including real life contexts.	Linear models show jumps of 7.	There are 14 players. $2 \times 7 = 14$ $7 \times 2 = 14$

Objective & Strategy	Concrete	Pictorial	Abstract
Understanding the commutative law.	**A** • 'Three groups of five are equal to fifteen.' • 'Five, three times is equal to fifteen.' **B** • 'Five groups of three are equal to fifteen.' "Three groups of five is equal to five groups of three."		$3 \times 5 = 15$ $5 \times 3 = 15$ $5 \times 3 = 3 \times 5 = 15$ $15 \div 3 = 5$ $15 \div 5 = 3$
Understanding the distributive law			$4 \times 5 = 3 \times 5 + 5 = 20$ $4 \times 5 = 5 \times 5 - 5 = 20$
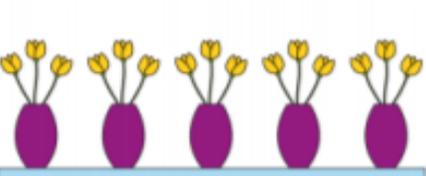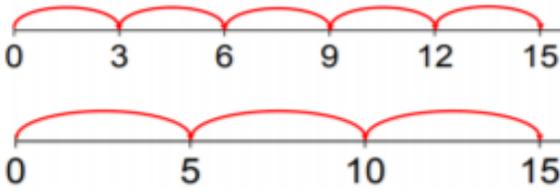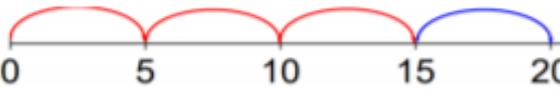
Objective & Strategy	Concrete	Pictorial	Abstract
Multiply 3 digit numbers by 1 digit. (no exchange)	Use place value counters to show how we are finding groups of a number. We are multiplying by 3 so we need 3 rows 123 x3 = 369 	hundreds	tens	ones	 300 + 60 + 9 Add up each column, starting with the ones.	Children can represent their work with place value counters by drawing place value counters or Dienes.	2 3 1 x 3 _____ 6 9 3 3 x 1 *ones* is three ones 3 x 3 *tens* is nine tens 3 x 2 *hundreds* is six hundreds
Multiply 3 digit numbers by 1 digit. (with exchange)	224 x 3 | hundreds	tens	ones | Regroup ten ones to make a new ten. | hundreds	tens	ones | We can take 10 ones to make a new ten. 600 + 70 + 2 =672	261 x 2 H T O 500 + 20 + 2 =522	2 4 1 x 4 _____ 9 6 4 1 4 times 1 *ones* is 4 ones 4 times 4 *tens* is 16 tens. I put 6 tens down and carry ten tens which is now a hundred. 4 times 2 *hundreds* is 8 hundreds. I add the hundred I have carried to make 9 hundreds.
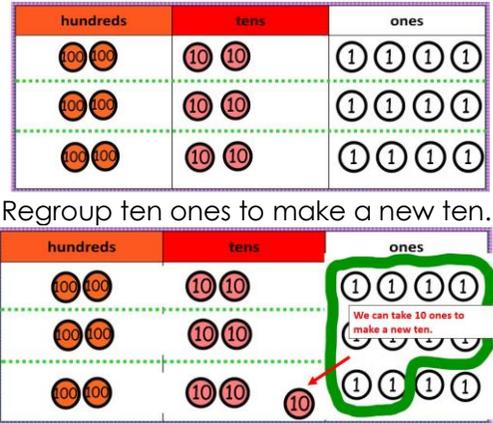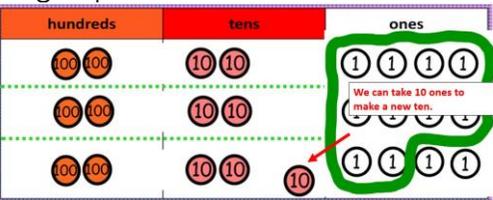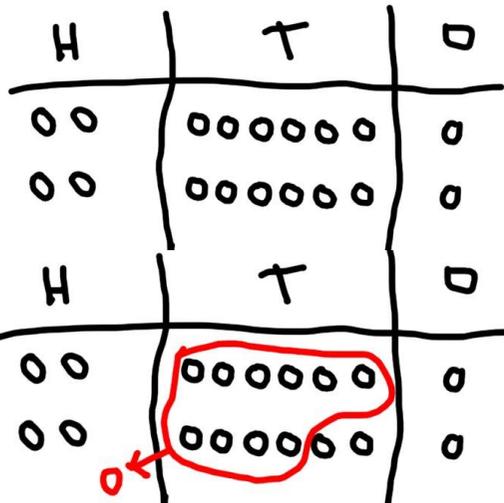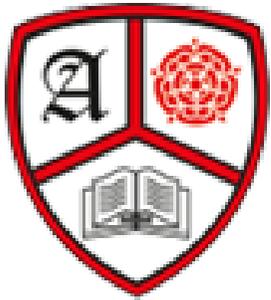
Year 4 Division

Objective & Strategy	Concrete	Pictorial	Abstract
Interpreting division with remainders.	Bracelets are made using 4 beads. There are 23 beads. How many bracelets can be made? How many beads left over?	Bar model representations may be used. 	23						
4	4	4	4	4	3		$23 \div 4 = 5\ r\ 3$
Interpreting division with remainders.	4 scouts can fit in each tent. How many tents needed for 30 scouts?		30								
4	4	4	4	4	4	4	2		$30 \div 4 = 7\ r\ 2$ 8 tents are needed. Discuss with pupils the need to round up in this context.
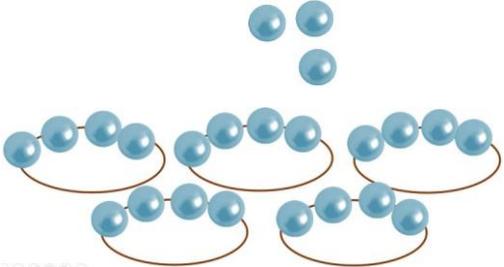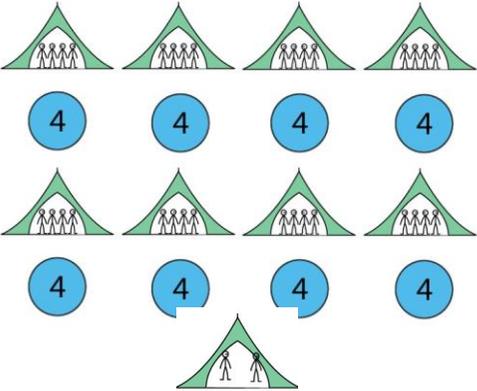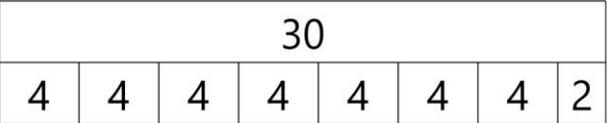
Objective & Strategy	Concrete	Pictorial	Abstract
Divide 2 & 3 digit numbers by 1 digit Short Division	96 ÷3 Use place value counters to make groups of the divisor, starting with the largest value digit. There are 3 groups of 3 tens. There are 2 groups of 3 ones. 42 ÷ 3 There is 1 group of 3 tens. There is a ten left over. We exchange this for 10 ones. 12 ones divided by 3 is 4. 432 ÷ 4 There is 1 group of 4 hundreds. There are no groups of 4 tens and 3 tens left over. There are 8 groups of 4 ones after exchanging the left over tens.	Students use drawn diagrams with spots or circles to show their understanding.	Begin with divisions that divide equally with no remainder. 1 2 4 3) 3 7 ²2 Move on to divisions with a remainder. Return to concrete if necessary. 1 3 8 r 3 4) 5 ²2 7
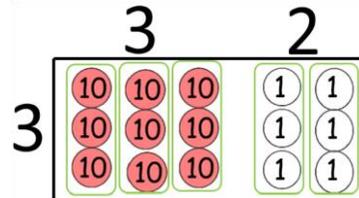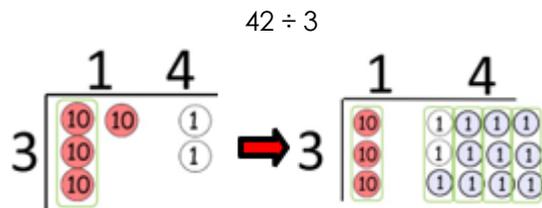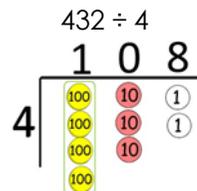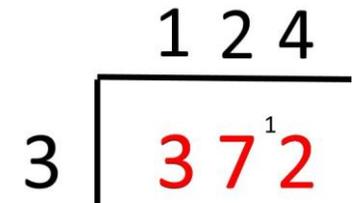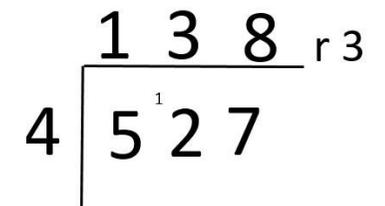
Divisibility rules in numerical order	
2	A number is divisible by 2 if the ones digit is even.
3	For a number to be divisible by 3, the sum of the digits of the number must be divisible by 3.
4	If halving a number gives an even value, then the number is divisible by 4. *and* For numbers with more than two digits: if the final two digits are divisible by 4 then the number is divisible by 4.
5	A number is divisible by 5 if the ones digit is 5 or 0.

Divisibility rules in numerical order	
6	For a number to be divisible by 6, the number must be divisible by *both* 2 *and* 3.
8	If halving a number twice gives an even value, the number is divisible by 8.
9	For a number to be divisible by 9, the sum of the digits of the number must be divisible by 9.
10	A number is divisible by 10 if the ones digit is 0.