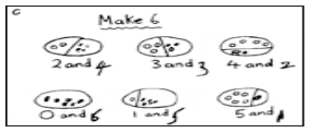
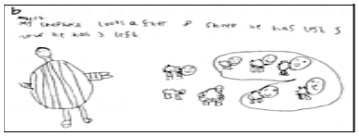
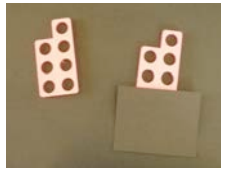
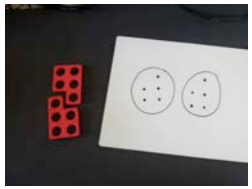
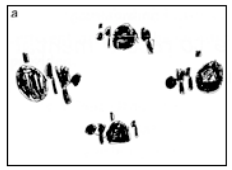
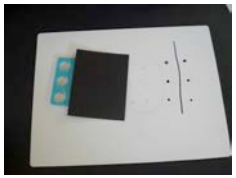
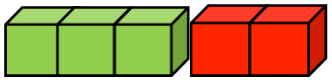
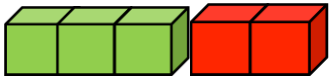
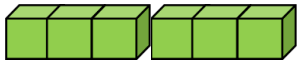
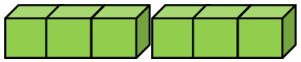
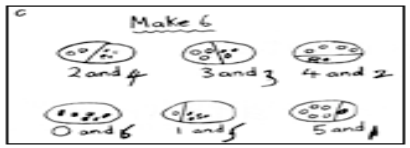
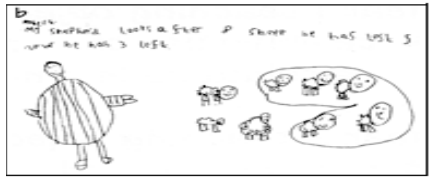
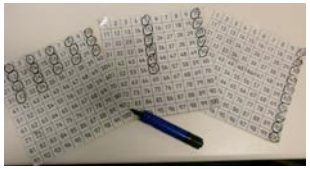
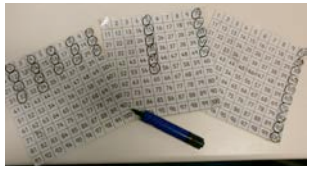
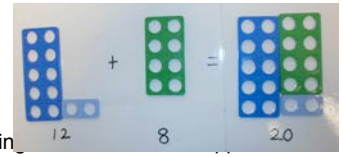
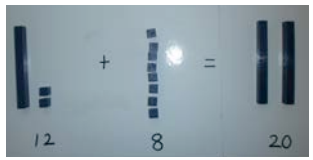
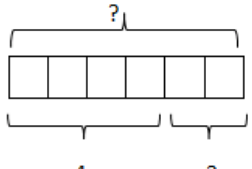
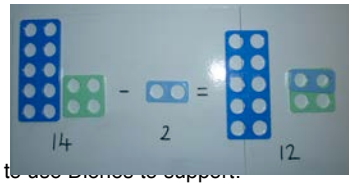
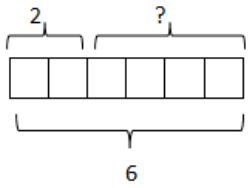
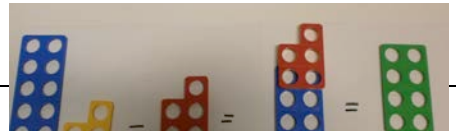
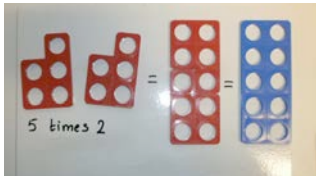
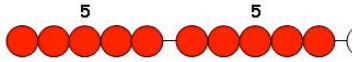
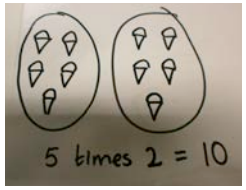
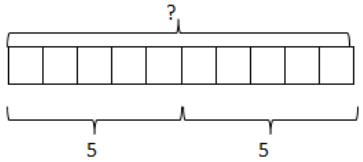
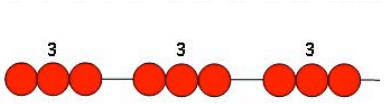
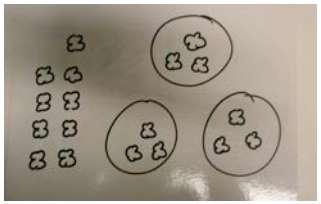
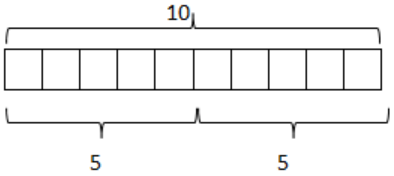
The Alderton Infant Calculation Policy

	Addition	Subtraction	Multiplication	Division
Rec	***Early Learning Goal*** **Children count and say which number is one more than a given number with numbers to 20. Using quantities and objects, they add two single-digit numbers and count on to find the answer.** Children are encouraged to develop a mental picture of the number system in their heads to use for calculation. They develop ways of recording calculations using pictures, etc.  Numicon is used to support: Number bonds within 10 e.g. 3+3=6, 4+2=6, 5+1=6  Adding two single digits up to 9+9 Counters, bears, multilink and other objects in a linear presentation are used to illustrate addition.  Organising groups of real objects into linear forms.  3+2=5	***Early Learning Goal*** **Children count and say which number is one less than a given number with numbers up to 20. Using quantities and objects, they subtract two single-digit numbers and count back to find the answer.** Children are encouraged to develop a mental picture of the number system in their heads to use for calculation. They develop ways of recording calculations using pictures etc.  Numicon is used to support: Subtraction with single digits to 10 e.g. 7-2=5  Counters, bears, multilink and other objects in a linear presentation used to illustrate subtraction including bridging through ten by counting back 3 then counting back 2.  Using linear forms to subtract 5-2= 	***Early Learning Goal*** **Children solve problems, including doubling.** Children are encouraged to develop an understanding of doubling. They develop ways of using Numicon and recording calculations. e.g. Double 5 (2 x 5 =10)  Children will experience equal groups of objects. They will count in 2s and 10s and begin to count in 5s. They will work on practical problem solving activities involving equal sets or groups.  Organising groups of real objects into linear forms.	***Early Learning Goal*** **Children solve problems, including halving and sharing.** Children are encouraged to develop an understanding of halving. e.g. half of 6 (6 ÷ 2 = 3)  Children will understand equal groups and share items out in play and problem solving. They will count in 2s and 10s and later in 5s.  Organising groups of real objects into linear forms.

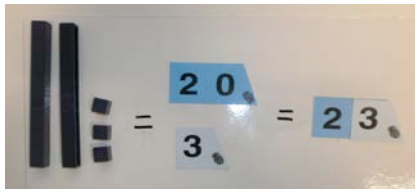
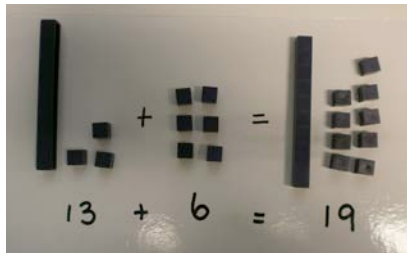
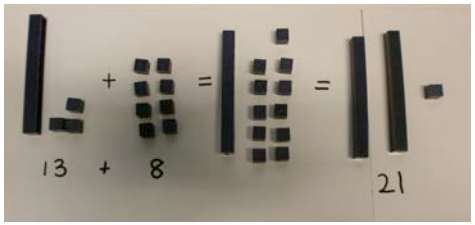
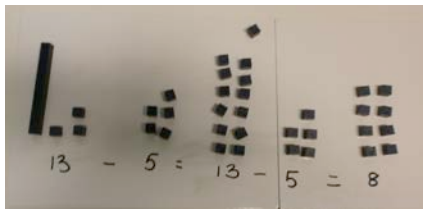
The Alderton Infant Calculation Policy

	Addition	Subtraction	Multiplication	Division
	 8+2=10 Build linear models using generic objects 3+2   They use numberlines and practical resources to support calculation and teachers *demonstrate* the use of the numberline e.g. Washing lines, puzzles, stepping stones, number cones etc Teacher's model number sentences and children begin to identify the meaning of these.	 6-2=4 Build linear models using generic objects 5-2   They use numberlines and practical resources to support calculation. Teachers *demonstrate* the use of the numberline. e.g. Washing lines, puzzles, stepping stones, number cones etc Teacher's model number sentences and children begin to identify the meaning of these.	Build linear models using generic objects 3+3  	Build linear models using generic objects Half of 6 
Y1	**Pupils should be taught to:** **Read, write and interpret mathematical statements involving addition (+),and equals (=) signs. Represent and use number bonds and related subtraction facts within 20. Add one-digit and two-digit numbers to 20, including 0. Solve one-step problems that involve addition using concrete objects and pictorial representations, and missing number problems such as 6 = ? + 4** using pictures  Numicon is used to support when working with two digits and a single digit:	**Pupils should be taught to:** **Read, write and interpret mathematical statements involving subtraction (–) and equals (=) signs. Represent and use number bonds and related subtraction facts within 20. Subtract one-digit and two-digit numbers to 20, including 0. Solve one-step problems that involve subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ? – 9** using pictures  Numicon is used to support when working with two digits and a single digit:	**Pupils should be taught to:** **Solve simple one-step problems involving multiplication, calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.** They will count in 2s, 5s and 10s. Explore patterns of 2, 5, 10s on a hundred square.  Children will experience equal groups of	**Pupils should be taught to:** **Solve simple one-step problems involving division, calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.** **To recognise, find and name a half as one of two equal parts of an object, shape or quantity and recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.** They will count in 2s, 5s and 10s. Explore patterns of 2, 5, 10s on a hundred square.  Children will understand equal groups and

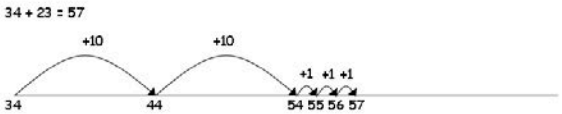
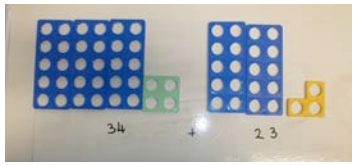
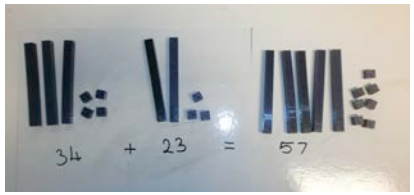
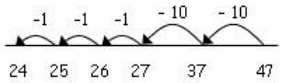
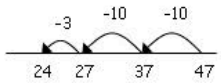
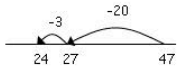
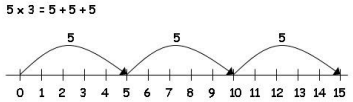
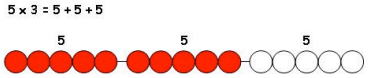
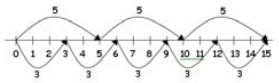
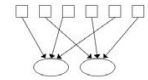
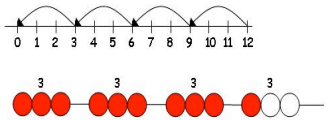
The Alderton Infant Calculation Policy

	Addition	Subtraction	Multiplication	Division
	12 + 8 =  Starting 12 + 8 =  Counters, bears, multilink and other objects in a linear presentation are used to illustrate addition. 8 + 5 =  Develop linear models using squares. 4+2=  They use numberlines and practical resources to support calculation and teachers *demonstrate* the use of the numberline. Children then begin to use numbered lines to support their own calculations using a numbered line to count on in ones. Using Dienes and Arrow Cards to begin to partition numbers e.g. 12 = 10 + 2	14 – 2 =  Starting to use Dienes to support: 14 – 2 =  Counters, bears, multilink and other objects in a linear presentation are used to illustrate subtraction. 13 – 5 =  Develop linear models using squares. 6-2=  Children then begin to use numbered lines to support their own calculations - using a numbered line to count back in ones. Using Numicon to support: 13 – 5 = 	objects. They will work on practical problem solving activities involving equal sets or groups. Numicon is used to support: 5 times 2  Counters, bears, multilink and other objects in a linear presentation are used to illustrate multiplication: 5 times 2  Using pictures:  Develop linear models using squares. 5x2=  	share items out in play and problem solving. Numicon is used to support: 9 shared 3 ways  Counters, bears, multilink and other objects in a linear presentation are used to illustrate division: 9 shared 3 ways  Using pictures: 9 shared 3 ways  Develop linear models using squares. 10 ÷5= 

The Alderton Infant Calculation Policy

	Addition	Subtraction	Multiplication	Division
	Look at how: 23 = 20 + 3  13 + 6 =  13 + 8 = 21  	Using Dienes to support: 13 – 5 =  		

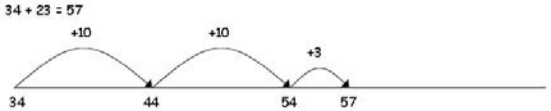
The Alderton Infant Calculation Policy

	Addition	Subtraction	Multiplication	Division
Y2	**Pupils should be taught to:** **Solve simple one-step problems with addition. Use concrete objects and pictorial representations, including those involving numbers, quantities and measures.** **Apply their increasing knowledge of mental and written methods. Recall and use addition facts to 20 fluently, and derive and use related facts up to 100. Add numbers using concrete objects, pictorial representations, and mentally, including:** • **a two-digit number and ones** • **a two-digit number and tens** • **two two-digit numbers** • **adding three one-digit numbers** **Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot.** **Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and missing number problems.** Children will begin to use 'empty number lines' themselves starting with the larger number and counting on. ✓ First counting on in tens and ones.  Using Dienes and Numicon 34 + 23   	**Pupils should be taught to:** **Solve simple one-step problems with subtraction. Use concrete objects and pictorial representations, including those involving numbers, quantities and measures.** **Apply their increasing knowledge of mental and written methods. Recall and use subtraction facts to 20 fluently, and derive and use related facts up to 100. Subtract numbers using concrete objects, pictorial representations, and mentally, including:** • **a two-digit number and ones** • **a two-digit number and tens** • **two two-digit numbers** • **adding three one-digit numbers** **Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot.** **Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and missing number problems.** The numberline should be used to show that 13 - 5 means the 'difference between 13 and 5' or 'the difference between 5 and 13' and how many jumps they are apart. Children will begin to use empty number lines to support calculations. **Counting back:** ✓ First counting back in tens and ones. 47 – 23 = 24  ✓ Then helping children to become more efficient by subtracting the units in one jump (by using the known fact 7 – 3 = 4). 47 – 23 = 24  ✓ Subtracting the tens in one jump and the units in one jump. 47 – 23 = 24  	**Pupils should be taught to:** **Recall and use facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers.** **Calculate mathematical statements for multiplication within the multiplication tables and write them using the multiplication (×) and equals (=) signs.** **Recognise and use the inverse relationship between multiplication and division in calculations.** **Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.** **Solve one-step problems involving multiplication using materials, arrays, repeated addition, mental methods, and multiplication facts, including problems in contexts.** Children will develop their understanding of multiplication and use jottings to support calculation (Counting in 2's, 5's, 10's and begin other numbers): ✓ **Repeated addition** 3 times 5 is 5 + 5 + 5 = 15 or 3 lots of 5 or 5 x3 Repeated addition can be shown easily on a number line:  and on a bead bar:  ✓ **Commutativity** Children should know that 3 x 5 has the same answer as 5 x 3. This can also be shown on the number line.  	**Pupils should be taught to:** **Recall and use division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers.** **Calculate mathematical statements for division within the multiplication tables and write them using the division (÷) and equals (=) signs.** **Recognise and use the inverse relationship between multiplication and division in calculations.** **Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot** **Solve one-step problems involving division, using materials, arrays, repeated addition, mental methods, and division facts, including problems in contexts.** Children will develop their understanding of division and use jottings to support calculation ✓ **Sharing equally** 6 sweets shared between 2 people, how many do they each get?  ✓ **Grouping or repeated subtraction** There are 6 sweets, how many people can have 2 sweets each?  ✓ **Repeated subtraction using a number line or bead bar** 12 ÷ 3 = 4  The bead bar will help children with interpreting division calculations such as 10 ÷ 5 as 'how many 5s make 10?'

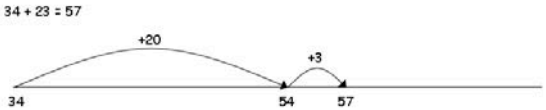
The Alderton Infant Calculation Policy

Addition

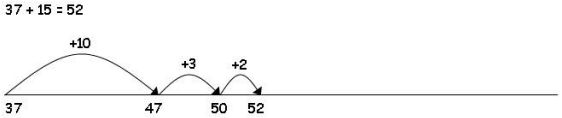
✓ Then helping children to become more efficient by adding the units in one jump (by using the known fact 4 + 3 = 7).



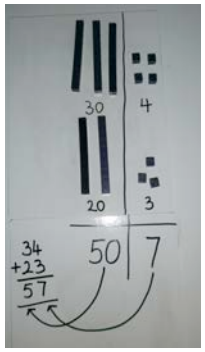
✓ Followed by adding the tens in one jump and the units in one jump.



✓ Bridging through ten can help children become more efficient.



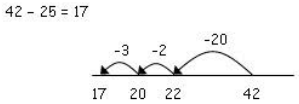
✓ Starting to look at the column addition.



✓ Starting to look at carrying 10 across from units to the tens column.

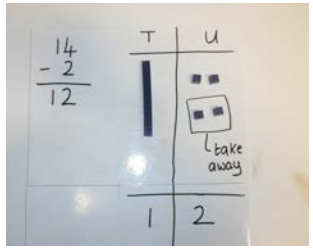
Subtraction

✓ Bridging through ten can help children become more efficient.

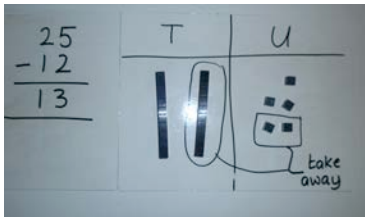


Counting on:
The number line should still show 0 so children can cross out the section from 0 to the smallest number. They then associate this method with 'taking away'.

✓ Starting to look at column subtraction



✓ Begin to look at taking away from the tens column

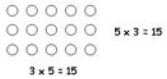


✓ **Using symbols to stand for unknown numbers to complete equations using inverse operations**

□ - 2 = 4 4 + △ = 6 □ - △ = 4
Use bar models for part / whole relationships.

Multiplication

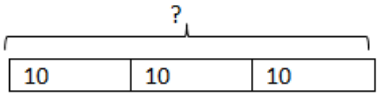
✓ **Arrays**
Children should be able to model a multiplication calculation using an array. This knowledge will support with the development of the grid method.



HA (High Achievers) should explore multiplying a 2 digit number by a single digit number. E.g. 21 x 3

Using Dienes or Numicon:

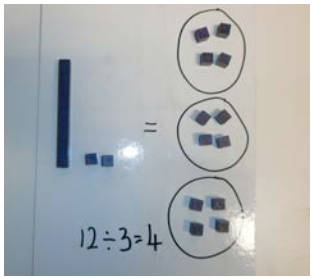
Use bar models for part / whole relationships.
3x10=

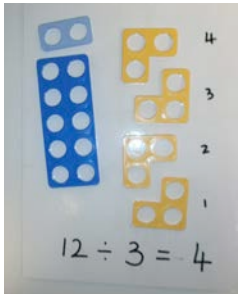


Division

Using Dienes or Numicon:

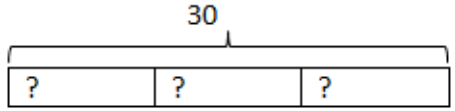
12 ÷ 3 =



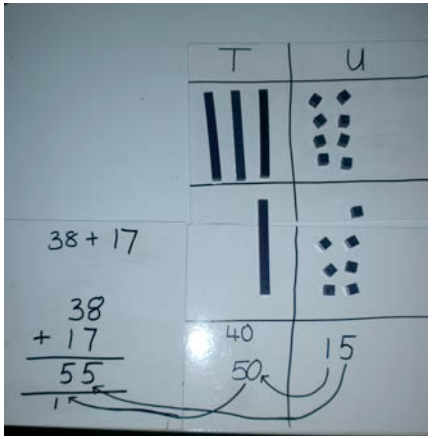
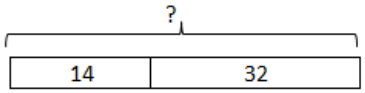


Use bar models for part / whole relationships.

30÷3=



The Alderton Infant Calculation Policy

	Addition	Subtraction	Multiplication	Division
	 ✓ **Using symbols to stand for unknown numbers to complete equations using inverse operations** □ - 2 = 4 4 + △ = 6 □ - △ = 4 Use bar models for part / whole relationships. 14+32= ? 	46-32=