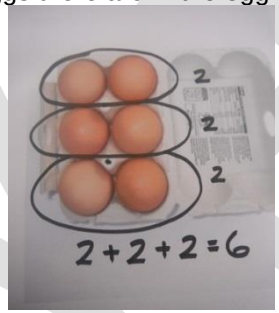
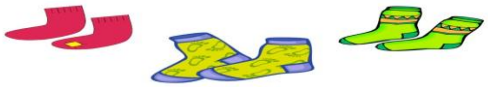
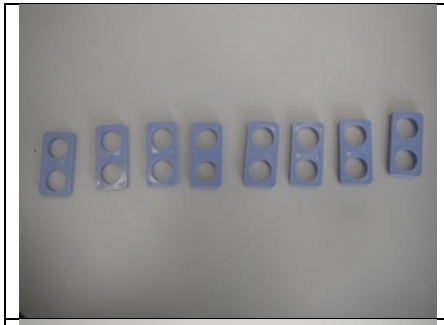
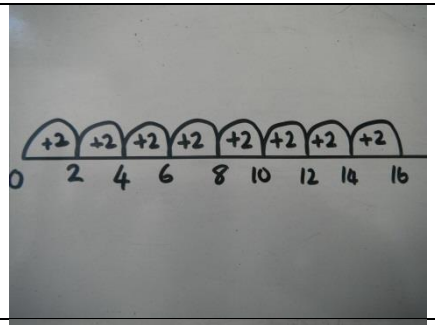
All Saints C of E Primary School

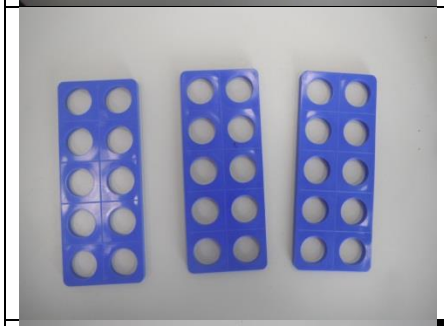
Year 2 Multiplication and Division

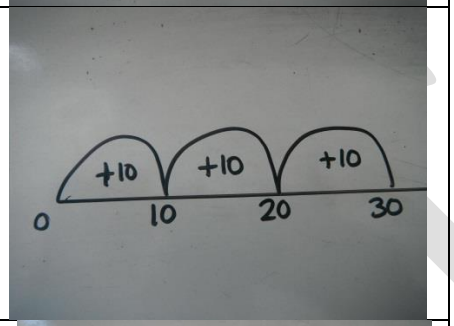
By the end of Year Two, children have been taught to:

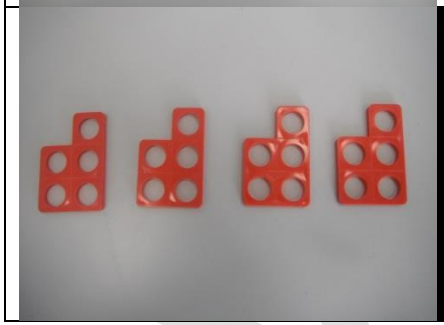
Objective	Why is it important? Things to watch out for! Taught strategies	
calculate mathematical statements for multiplication using the *2,5 and 10x* and write them using the *multiplication (×)* and *equals (=)* signs	In Year 2, children will continue to experience arrays as a visual representation of multiplication, as well as other real life contexts. Mathematical vocabulary such as; *arrays, rows, columns, groups, lots of, repeated addition, times, multiply, multiplication* and t*otal* will continue to be used to expose children to the vast range of mathematical vocabulary involved in the concept.    *Repeated addition*, which is the first step for calculating multiplication problems, lays the foundations for children to calculate the total. For example, when working out how many eggs there are in the egg box, it could look like this:   When discussing children's mathematical recording with repeated addition, we often say things like 'How many times have you added 2?' OR 'How many lots of 2 have you added?'. This reinforces the vocabulary and concept of *multiplication.* Showing *multiplication* in many ways, not only *arrays*, is crucial in developing a broad and balanced understanding of the concept of *multiplication*.  I have three pairs of socks. How many socks do I have altogether?	

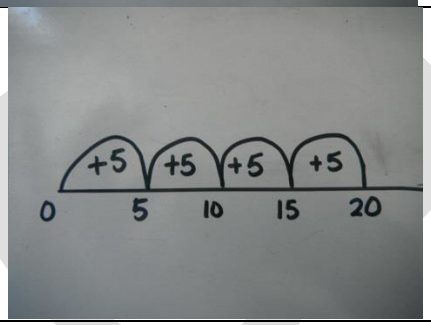












Children are encouraged to use equipment to solve problems and help build conceptual understanding of *multiplication*. Numicon is great for creating this sense of adding the same amount many times for *repeated addition*, which is the precursor for *multiplication*.
The example shows '2+2+2+2+2+2+2+2=18' represented through repeated addition on a number line. When children are ready and understand multiplication as repeated addition they are then introduced to the multiplication sign as a way to write repeated addition in a different way. This can be represented as:

8 times 2
2+2+2+2+2+2+2+2
8 lots of 2
2x8
2 added eight times

Multiplication has commutative qualities which means it can be calculated/shown as 8x2=16 OR 2x8=16, either way it still produces the same answer. Different publications, as well as different countries show it in different ways relating to multiplicand and multipliers; however, as a Year 2, the main thing children need to know is that the answer is the same whichever way they work it out. When they come to buy windows when they are an adult it will matter, but not right now!

A good place to start when discussing the multiplication symbol is asking children what it reminds them of. Many children say 'a wonky addition sign', which is a great place to start due to the link with *repeated addition*. We refer to mathematical symbols as being bossy signs because they tell children what they have to do with the numbers. As children become familiar with the multiplication symbol and understand what it entails they are able to apply the appropriate strategy. Likewise, taking time to discuss what each number in the number sentence actually means, as well as the symbol, is crucial in enabling children to develop understanding of what they have just recorded. It also helps them to respond and solve multiplication number sentences accurately.

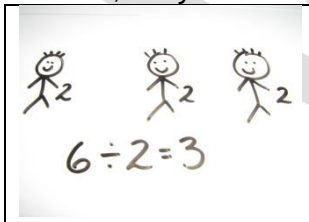
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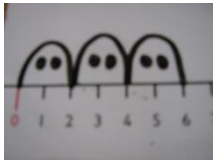
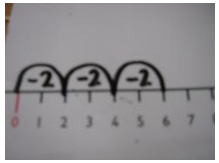
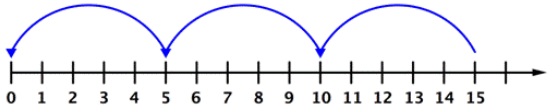
calculate *mathematical statements for division within the 2,5 and 10x using division (÷) and equals (=) signs*

As a Year 2, children will experience *division* through real life contexts building on the learning from Year 1.
Division is the inverse/opposite of multiplication, which we refer to as *grouping*. You may think, well division is division – it is, but there are very subtle differences which can confuse children if not taken into account when teaching and discussing division. In the example below, the same division number sentence is shown, although the context and the pictures look very different. If you look closely at the problem's wording it becomes clear that they are asking very different things, even though the context is still the same with children and sweets and the number sentence is the same. In the first example, the group (amount of sweets each child receives) has been set at being 2 sweets each, whereas in the second example the amount of sweets each child gets has not been set.

DIVISION THROUGH GROUPING	***DIVISION THROUGH SHARING***
There are 10 sweets, each child is given 2 sweets each. How many children receive sweets?  $10 \div 2 = 5$ Grouping – The sweets are put into groups of two, therefore five children receive sweets.	*There are 10 sweets and two children. How many sweets did each child receive if the sweets are shared equally?*  $10 \div 2 = 5$ Sharing – The sweets are shared out equally until there are none left.

In Year 2, children are introduced to the division symbol. Talking about what it reminds them of is a useful place to start. Many children say that it reminds them of a subtraction sign. To take this one step further, we can discuss the small circles either side of the horizontal line and talk about how they have been split up or divided by the horizontal line.
When introducing the division symbol to children, we relate it to their previous pictorial representations of division from Year R and the beginning of Year 1, by saying that it helps us write our division in a number sentence. Taking time to discuss what each number in the number sentence actually means, as well as the symbols, is crucial in enabling children to develop understanding of what they have just recorded. It also helps them to respond and solve division number sentences. We often refer to mathematical symbols as being *bossy signs* because they tell children what they have to do with the numbers. As children become familiar with the division symbol and understand what it entails, they are able to apply the appropriate strategy. In Year 2 children meet division in number sentences as well as in word problems.

	When solving division problems children are encouraged to use equipment, act it out and draw it to help them visualise what is happening and find the solution. The problem could have been presented in many ways such as: How many lots/groups of 2 are in 6? There are six sweets, every friend gets two sweets each. How many friends can have sweets? What is six divided by two?

<table>
<tr><td></td><td colspan="2"><table>
<tr><td></td><td>As children's understanding develops, the values are increased related to their focus on times tables. So, children will be dividing by 2, 5 and 10 to help reinforce the link between multiplication and division.</td></tr>
<tr><td>6÷2
"I was able to take away 3 lots of 2."
6-2-2-2=0
 </td><td>As children's concept of division progresses, so do the strategies taught. Repeated subtraction is introduced. Even if children have been dividing larger numbers using equipment and drawing when introducing a new strategy, the numbers are reduced so the child can focus on the strategy.
At this point, extra care needs to be taken due to:
• children's security in beginning to count backwards
• not knowing where the answer is
Sometimes, more focus is needed in class counting backwards in 2's, 5s and 10s. It has to be made explicit that the answer is the amount of jumps on the number line.
A way to bridge the gap between using equipment and a structured number line, is by using a large number line and placing the counters next to their corresponding number and then drawing the jumps over the equipment.</td></tr>
<tr><td>
15÷5 =3</td><td>The move from equipment to number line is to aid children's efficiency in calculating. For example, if they were faced with a calculation such as 95÷5, counting out 95 pieces of equipment could be very problematic, whereas if they have a strategy such as repeated subtraction they can solve it in half the time.</td></tr>
</table></td></tr>
<tr><td>Quickly recall 2, 5 and 10x facts by rote,
then at random include recognising odd and even numbers</td><td colspan="2">In Year 1, children spent time securing their ability to count in multiplies of 2, 5 and 10, which lays the foundations for children being able to apply this counting confidence to their times tables in Year 2. Children learn their multiplication facts in many different ways and can be very personal to a child depending on how they learn and acquire knowledge best. Making it memorable is key! Multiplication songs and rhymes help children develop a rhythm and pattern to multiplication when learning them by rote, whereas practical activities develop visual and conceptual understanding. In this case, they are learning from experience through practical, visual and auditory stimuli.

However, it is important that children learn them in different ways, other than rote, in order to develop their conceptual understanding and ability to calculate efficiently. For example, if a child only knows the five times tables by rote, when asked 9x5 he could take some time having to say each multiplication number sentence from 1x5 all the way up to 9x5. Alternatively, he could use rote to his advantage, if he is secure with the chant and jump backs into the chant (in his head) part way through at 7x5=35, 8x5=40, 9x5=45.</td><td>Challenging a child to make a rap, song or poem about his focus multiplication facts is a fun way of being creative.
Sing a long to times tables CDs in the car!

Play 'shoot the sherriff' – Stand back to back with a pretend pistol. Someone says a times table, such as 5x2 and the first one to turn round with the correct answer can shoot!</td></tr>
</table>

Year 2

Recognising patterns in multiplication is key in developing further skills in a child's later years as well as the ability to spot when he has made a mistake. For example, if children become aware that the rule for the two times tables is that the answers are even, they will soon recognise that 6x2=13 is incorrect because 13 is odd.
Circling multiples of 2s, 5s and 10s on a number line helps children see the patterns which could form part of a rule they develop to recognise mistakes. For example 9x10=93, cannot possibly be correct because it does not end in 0, therefore it is not a multiple of 10.
Likewise, making links and connections between children's existing knowledge and the knowledge they are acquiring is key in developing ownership and making it memorable. Developing tasks such as, what do you notice between the 5 and 10 times tables, helps to achieve this.

DOUBLE IT	
1x5=**5** 2x5=**10** 3x5=**15** 4x5=20 5x5=25 6x5=20	1x10=**10** 2x10=**20** 3x10=**30** 4x10=**40** 5x10=**50** 6x10=**60**



Skip the times table!



Every time we catch the ball we have to say the next multiplication fact.



Sing the multiplication facts.

year 7