

Multiplication Stations 2

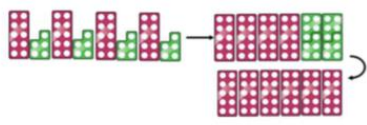
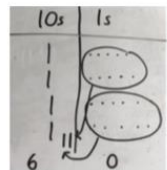
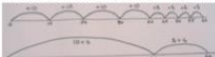
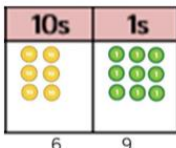
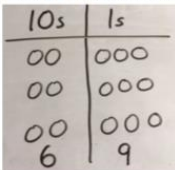
Following my previous explanations of how we perform multiplication calculations using concrete (physical) resources and visual (pictorial) representations in Key Stage 1, we are now going to explore how we carry out multiplication in Key Stage 2. An explanation of division Key Stage 1 will follow next week.

Year 3

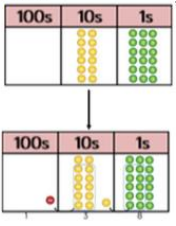
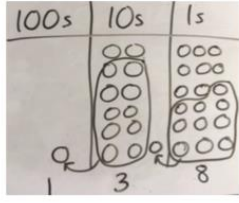
In Year 3 we tend to use the following vocabulary when teaching children to multiply: part, whole, multiple, partition, short multiplication and inverse.

Year 3 children should be able to recall the 2, 5, 10, 3, 4 and 8 times tables.

They learn to multiply a two-digit number by a one digit number. They do this by learning to partition using base 10, Numicon or Cuisenaire rods

<p>Partition to multiply using Numicon, base 10 or Cuisenaire rods. 4×15</p> 	<p>Children to represent the concrete manipulatives pictorially.</p> 	<p>Children to be encouraged to show the steps they have taken.</p> 4×15 $\begin{array}{r} 10 \\ 5 \\ \hline 40 \\ 20 \\ \hline 60 \end{array}$ <p>$10 \times 4 = 40$ $5 \times 4 = 20$ $40 + 20 = 60$</p> <p>A number line can also be used</p> 
<p>Formal column method with place value counters (base 10 can also be used.) 3×23</p> 	<p>Children to represent the counters pictorially.</p> 	<p>Children to record what it is they are doing to show understanding.</p> 3×23 $\begin{array}{r} 3 \times 20 = 60 \\ 3 \times 3 = 9 \\ \hline 60 + 9 = 69 \end{array}$ $\begin{array}{r} 23 \\ \times 3 \\ \hline 69 \end{array}$

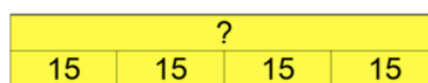
This then leads to being able to carry out a multiplication more formally, finding what 6 twenties are and then 6 threes using place value counters, then as a working drawing and finally more formally (see right below)

<p>Formal column method with place value counters. 6×23</p> 	<p>Children to represent the counters/base 10, pictorially e.g. the image below.</p> 	<p>Formal written method</p> $6 \times 23 =$ $\begin{array}{r} 23 \\ \times 6 \\ \hline 138 \\ 11 \end{array}$
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Children are encouraged to use bar models to solve problems e.g.

4 children go to the cinema.
They each pay £15. How much do they spend altogether?

Whole unknown



Year 4

In Year 4 we tend to use the following vocabulary when teaching children to multiply: part, whole, Factor, product

Children in Year 4 need to know all the times tables to 12 x 12.

In Year 4 children build on their knowledge from Year 3 and multiply both two and three digits by a one digit number using place value counters. In the example below the place value counters are used to represent two lots of 473. The counters can then be added up and exchanged, where necessary, to reach the answer.



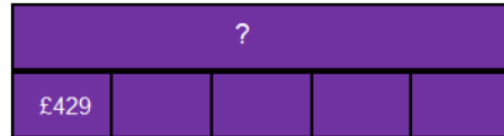
$$\begin{array}{r} 473 \\ \times 2 \\ \hline \end{array}$$

They also multiply using a bar model...

A computer costs 5 times as much as a television. The television costs £429.

How much does the computer cost?

Cost of the computer



Year 5

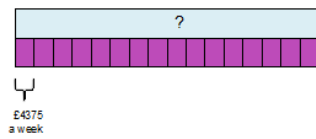
In Year 5 we tend to use the following vocabulary when teaching children to multiply: part, whole, cube numbers, prime numbers, square numbers, common factors, prime number, prime factors and composite numbers

In Year 5 the children will be multiplying up to four digit numbers by two digits using long multiplication.

Children need to be taught to approximate first, e.g. for 72×38 , they will use rounding: 72×38 is approximately $70 \times 40 = 2800$, and use the approximation to check the reasonableness of their answer.

They also use bar models to support their understanding of multiplication.

The cost to run a sports centre is £4375 a week, how much would it cost to run for 16 weeks?



Year 6

In Year 6 we tend to use the following vocabulary when teaching children to multiply: part, whole, See previous years and common factor

Year 6 children carry out short and long multiplication with up to two decimal places.

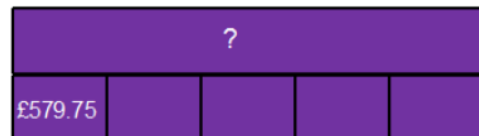
	2	3	6	8	
X			3	4	
	9	4	7	2	
	₁	₂	₃		
	7	1	0	4	0
	₁	₂	₂		
	8	0	5	1	2
	₁		₁		

	3	.	1	9
x				8
	2	5	.	5
	₁		₇	

They also use bar modelling to aid their understanding.

If 5 friends went on holiday and each paid £579.75 what was the total cost of the holiday?

Cost of the holiday



You can see that, as with addition and subtraction, when they are ready, they move from using the resources to drawing visual representations and then to abstract numbers. If children move too quickly to the abstract or don't have experience of the resources they may not understand the maths behind the concept. This is where, as adults we can go wrong sometimes, as we forget the journey we made to get to our own understanding or were taught a procedure rather than actually understanding what is going on mathematically.

Anyway, I hope that you have found this insight into how we teach multiplication in KS2 useful. Next week we will explore how we teach division in Key Stage 1.

Mr Wheat