

St.Bartholomew's C of E Primary School :Multiplication Calculation Policy

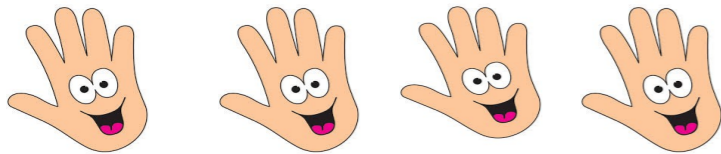
Stage 1 Multiplication– counting and practical repeated addition

The children will initially need to count repeated groups of objects of the same size in 2s,5s and 10s in practical contexts .

$$3 \times 2 = 6$$

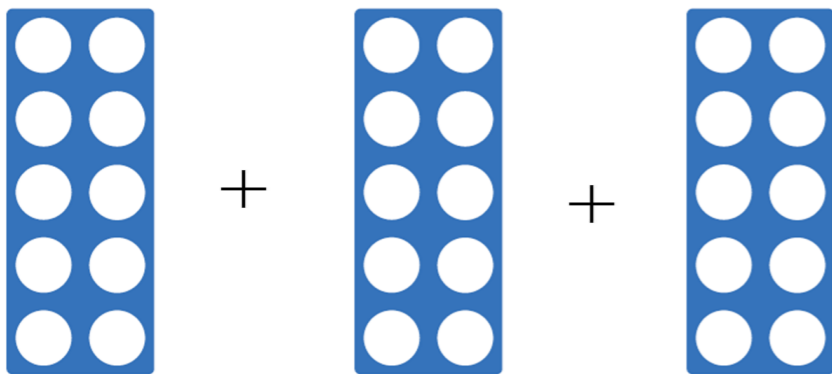


$$4 \times 5 = 10$$



Once the children are secure with counting repeated groups of the same size they need to begin to understand the concept of multiplication using 'lots of' and the multiplication sign. This can be introduced through practical repeated addition. For example:

$$3 \times 10 = 30$$

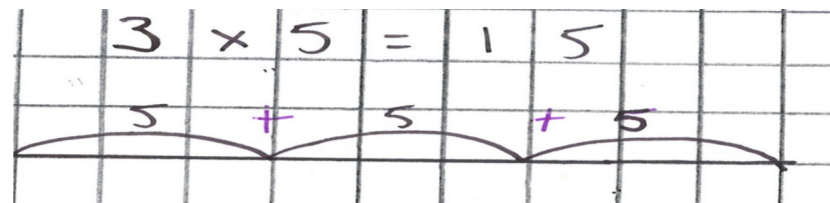


Vocabulary : count in 2s, 5s and 10s, lots of , equal sizes, and groups

Stage 2 Multiplication - number line repeated addition and arrays

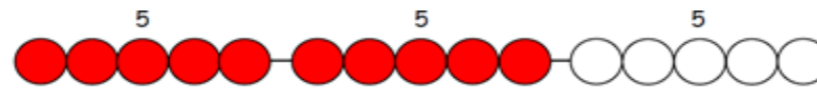
Once the children are secure with practical repeated addition they need to use repeated addition on a number line . Starting from zero they need to make equal jumps up on a number line to work out multiplication facts and write multiplication statements using the (X and =) sign. The children's calculation should be written on either side of the equals sign so that (=) is not just interpreted as an answer .

$$\text{e.g. } 3 \times 5 = 15 \text{ so } 15 = 3 \times 5$$



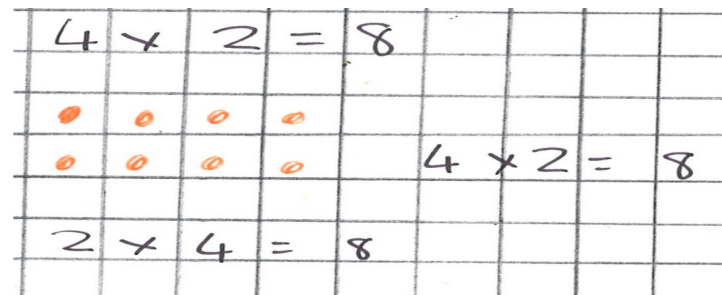
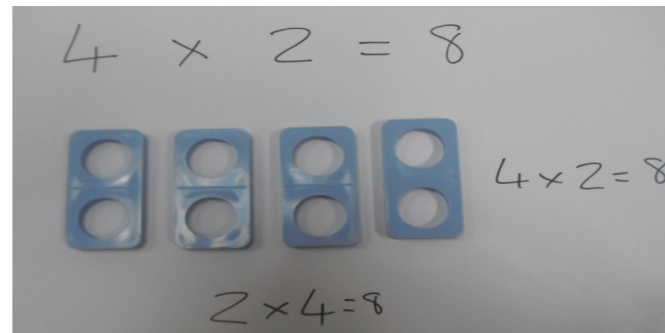
can also be supported using a bead bar as a model and image .

$$5 \times 3 = 5 + 5 + 5$$



The children then need to understand that commutative law of multiplication through arrays using practical apparatus then jottings .For example :

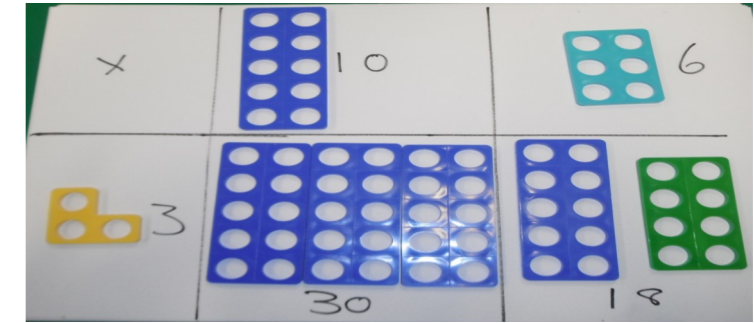
$$2 \times 4 = 4 + 4 = 8 \text{ or } 4 \times 2 = 2 + 2 + 2 + 2 = 8$$



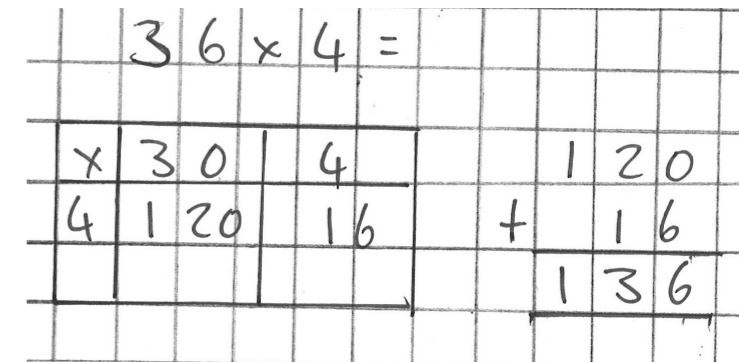
Vocabulary in addition to previous stages: times by , multiply, repeated addition, any order and numberline.

Stage 3 Multiplication– Grid Method TO by O and HTO by O

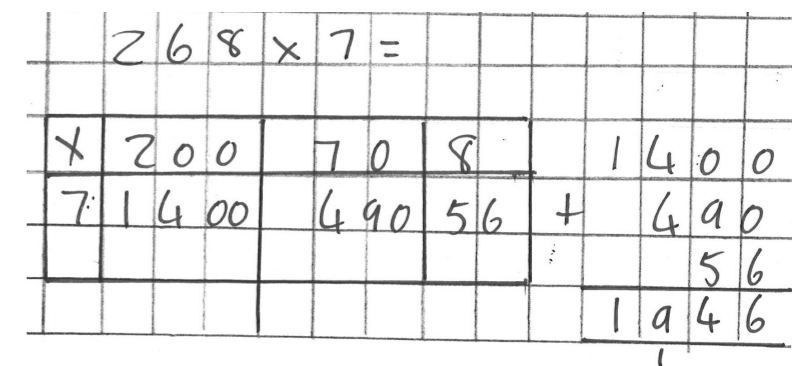
When introducing the children to using the grid method it is vital that they are provided with the opportunity to do this physically using practical apparatus within in the grid For example



When the children are confident with making arrays in the grid method they should then translate this understanding into using a prepared grid or drawing their own using TO X O encouraging the children to partition the numbers. **The children should use jottings to estimate their answer using rounding and record relevant multiples. .**



The children should then move on to multiplying HTO by O using column addition along side this to support accurate addition . **The children should use jottings to estimate their answers using rounding and record relevant multiples.**



Jottings

The children should use jottings to estimate their answer using rounding and use repeated addition number lines to support recall of multiplication facts and

Vocabulary in addition to previous stages: partition, multiple, grid method and product of.

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Stage 4 Multiplication – expanded and short multiplication TO x O and HTU x O

Initially the children need to be introduced to formal methods of multiplication using the grid method alongside expanded short multiplication so that they can recognise how the steps are related to one another initially using TO x O then moving on to HTU by O.

8	6	x	7	=								
										8	6	
x	8	0			6				x		7	
	7	5	6	0		4	2			4	2	
										5	6	0
										6	0	2

Once the children are secure with this they can then move on to short multiplication initially using TU x O then HTU x O. The carrying digit should be written underneath the equals box.

	3	6	8	x	6	=								
x	3	0	0	6	0	8				3	6	8		
	6	1	8	0	0	3	6	0	4	8				
											2	1	0	8
											3	4		

Jottings

The children should use jottings to estimate their answer using rounding and use repeated addition number lines to support recall of multiplication facts and relevant multiples.

Vocabulary in addition to previous stages: short multiplication, inverse and carry.

Stage 5 Multiplication - Grid method and long multiplication TO by TO then up to 4 digit numbers

When multiplying larger numbers the children should use the grid method as a model and image. This will enable the children to recognise what numbers they are multiplying. **The children should be encouraged to estimate their answers first by rounding.** The children should use column addition alongside this to ensure accurate addition.

	7	6	x	4	2									
x	7	0		6						2	8	0	0	
	4	0		2	8	0	0		+	2	4	0		
											1	4	0	
												1	2	
											2	1	9	2

Once the children are secure with this they should then move on to long multiplication multiplying the units column first and carry any digits across. They should then multiply the 10's column ensuring they use '0' in the units column first as a place holder. The children should then add the rows using column addition.

	1	2	3	4							
x				1	6						
				7	4	0	4			(1234x6)	
				1	2	3	4	0		(1234x10)	
				1	9	7	4	4			

Jottings

The children should use jottings to estimate their answer using rounding and use repeated addition number lines to support recall of multiplication facts and relevant multiples.

Vocabulary in addition to previous stages: long multiplication, zero and place holder.

Stage 6 Multiplication –short multiplication with decimals up to 2 decimal places

Initially the children need to be introduced to multiply decimal numbers in context using measures or money. It is vital that the children recognise that the whole numbers go in the units column and the decimal point is lined up in the question and answer.

		3	.	1	9	kg					
x		8	.	0	0	kg					
		2	5	.	5	2					

Once the children are secure with this they can be introduced multiplying decimal numbers out of context.

		6	:	8	6						
x		4	.	0	0						
		2	7	.	4	4					

Jottings

The children should use jottings to estimate their answer by rounding the decimal number to the nearest whole number and record and relevant multiples.

Vocabulary in addition to previous stages: decimals, tenths and hundredths