



Marshfield CE VC Primary School



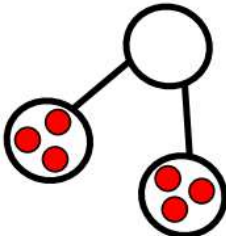
Learning together, inspiring each other, achieving our best

Multiplication

National Curriculum Objectives by Year Group

Year Group	Multiplication
EYFS	<ul style="list-style-type: none"> • ELG: solve problems, including doubling, halving and sharing. • Exceeding: solve practical problems that involve combining groups of 2, 5 or 10, or sharing into equal groups
Year 1	<ul style="list-style-type: none"> • Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.
Year 2	<ul style="list-style-type: none"> • Recall and use multiplication facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers • Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (\times), division (\div) and equals (=) signs • Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot • Solve problems involving multiplication, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.
Year 3	<ul style="list-style-type: none"> • Recall and use multiplication facts for the 3, 4 and 8 multiplication tables • Write and calculate mathematical statements for multiplication using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods • Solve problems, including missing number problems, involving multiplication, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects. • Know the number of seconds in a minute and the number of days in each month, year and leap year (link to $60\times$, $12\times$, $7\times$ tables, $\times 6$)
Year 4	<ul style="list-style-type: none"> • Recall multiplication facts for multiplication tables up to 12×12 • Use place value, known and derived facts to multiply mentally, including: multiplying by 0 and 1; multiplying together three numbers • Recognise and use factor pairs and commutativity in mental calculations • Multiply two-digit and three-digit numbers by a one-digit number using formal written layout • Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects. • Calculate different measures, including money in pounds and pence • Solve simple measure and money problems involving fractions and decimals to two decimal places.
Year 5	<ul style="list-style-type: none"> • Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers • Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers • Multiply numbers mentally drawing upon known facts

	<ul style="list-style-type: none"> • Multiply whole numbers and those involving decimals by 10, 100 and 1000 • Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign • Solve problems involving multiplication, including scaling by simple fractions and problems involving simple rates. • Calculate the area of rectangles (including squares), and including using standard units, square centimetres (cm²) and square metres (m²) and estimate the area of irregular shapes • Use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling. • Solve problems involving number up to three decimal places
Year 6	<ul style="list-style-type: none"> • Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication • Perform mental calculations, including with mixed operations and large numbers • Identify common factors, common multiples and prime numbers • Use their knowledge of the order of operations to carry out calculations involving the four operations • Solve problems involving addition, subtraction, multiplication and division • Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. • Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate

<u>Year Group</u>	<u>Possible Concrete and Visual Representations</u>	<u>Children's Recording</u>	<u>Vocabulary</u>
EYFS	<p data-bbox="235 197 929 263"><u>Doubling</u> Children build doubles using practical resources:</p>  <p data-bbox="235 539 721 571">Mirrors to show doubled amounts:</p>  <p data-bbox="235 778 822 810">Part-whole models to represent doubling:</p> 		<p data-bbox="1942 197 2166 598">double doubling sets of pairs number patterns objects groups count in twos, fives and tens (Exceeding)</p>

Year 1

Count in 2s, 5s and 10s:

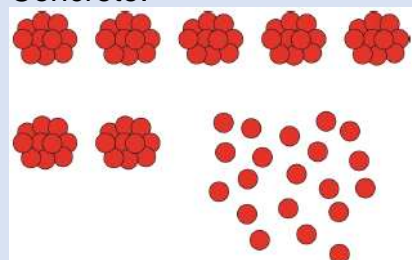


Bead strings

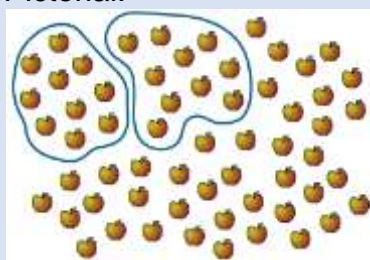


Count objects efficiently by grouping into 2s, 5s and 10s:

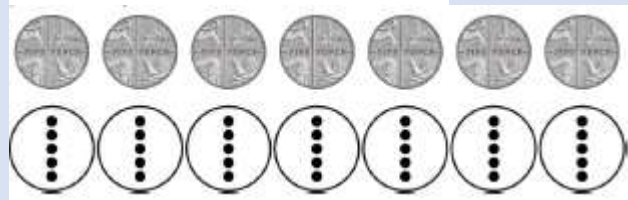
Concrete:



Pictorial:



Coins to represent 1p, 2p, 5p and 10p:



Pay for items using these coins.



$$2 + 2 + 2 + 2 + 2 = 10$$

multiplication
multiplied by
lots of
groups of
scaling
twice
times as ...
array
multiple
count up

Year 2

Multiplication as repeated addition:



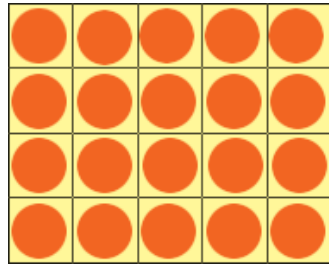
$$5 + 5 + 5$$

"There are three groups of five"

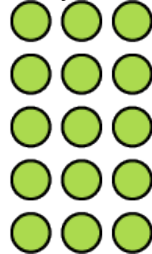
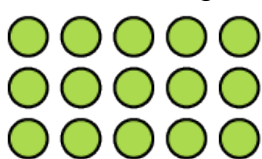
"Skip counting" on number lines:



Arrays



Demonstrating commutativity with arrays



Bar models

Use an array to write multiplication calculations and reinforce repeated addition:



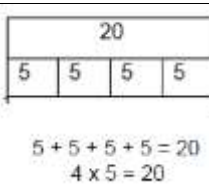
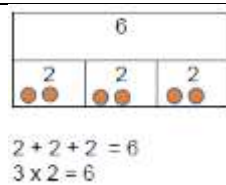
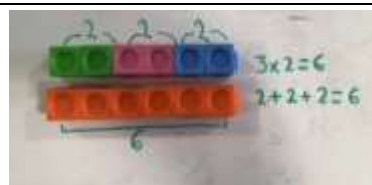
$$5 + 5 + 5 = 15$$

$$3 + 3 + 3 + 3 + 3 = 15$$

$$5 \times 3 = 15$$

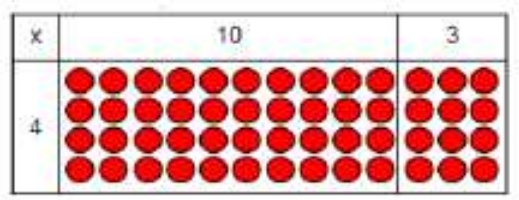
$$3 \times 5 = 15$$

times table
multiplication
row
column
fact family
odd
even
commutative
multiplication
fact
multiplication
table
repeated
addition
multiple of 2
multiple of 5
multiple of 10
multiply

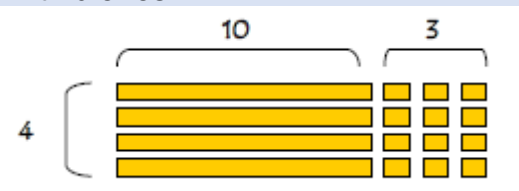


Year 3

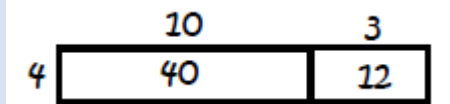
Grid method:



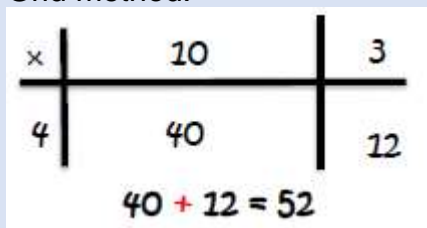
With dienes:



Area models:



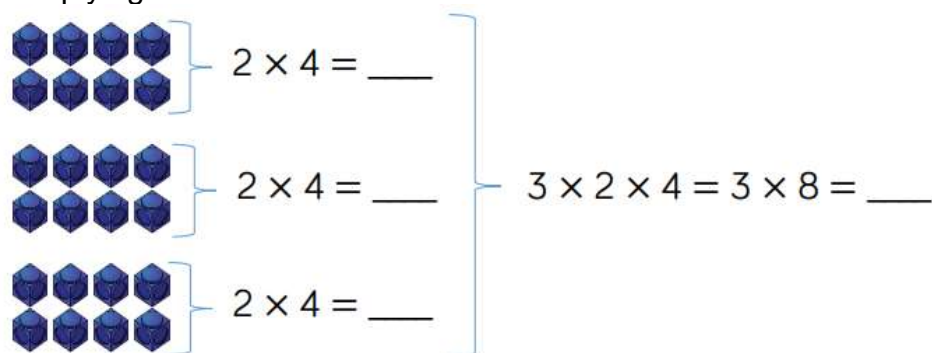
Grid method:



missing
number
scaling
multiplied by
... times
larger/smaller
product
times table
facts
fact family
partition
grid
empty box

Year 4

Multiplying 3 numbers:









2- or 3-digits x 1-digit:
26 x 3



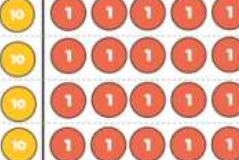
Short multiplication:



factor
factor pair
compact
method
short
multiplication

Tens	Ones
	
	
	

$$245 \times 4$$

Hundreds	Tens	Ones
		

Multiplying whole numbers by powers of 10:

HTh	TTh	Th	H	T	O
					










Physically move counters to left on place value grid. Use zero as a placeholder.

	H	T	O
	2	4	5
\times			4
	9	8	0
	1	2	

Year 5

4-digit x 1-digit:

$$1023 \times 3$$

Thousands	Hundreds	Tens	Ones
			
			
			

2-digit x 2-digit:

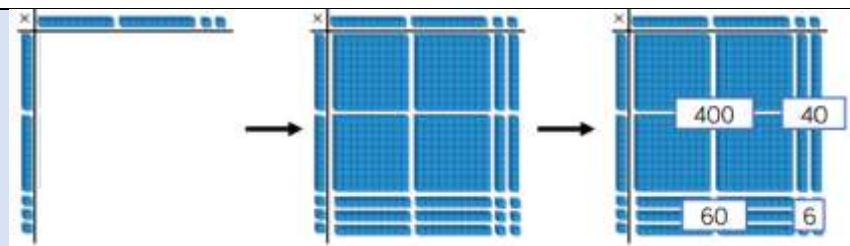
Base-10 area model

4-digit x 1-digit:

	Th	H	T	O
	1	3	2	5
\times				4
	5	3	0	0
	1	1	2	

2-digit x 2-digit:

prime number
composite
number
multiple
common factor
common
multiple
square number
cube number
squared,
cubed
long
multiplication



Place value counters area model:

×	100	10	1
100	1000	100	10
10	100	10	1
1	10	1	1

×	40	4
30	1,200	120
2	80	8

		2	3
×		1	4
		9	2
	2	3	0

(23 × 4)
(23 × 10)

3-digit x 2-digit:

		1	3	2
×			1	4
		5	2	8
	1	3	2	0
	1	8	4	8

(132 × 4)
(132 × 10)

4-digit x 2-digit:

			6	7	3	8	×
						2	4
		2	6	9	5	2	+
	1	3	4	7	6	0	
	1	6	1	7	1	2	

expanded
method
multiplier

Year 6 Multiplying decimals by powers of 10:

Thousands	Hundreds	Tens	Ones	Tenths	Hundredths
			●	●	●

Physically move counters to left on place value grid. Use zero as a placeholder.

Multiplying decimals by integers:

1)	1	8	6	×
			4	
	8	7	4	4
	3	2		

approximate
formula
term
order of
operations
precedence
brackets

Multiplying decimals by integers:
 1.212×3

Tens	Ones	Tenths	Hundredths	Thousandths
	1	2 2	1	2 2
	1	2 2	1	2 2
	1	2 2	1	2 2

Children continue to practise and apply previously-taught written methods for multiplication.