

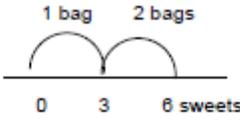
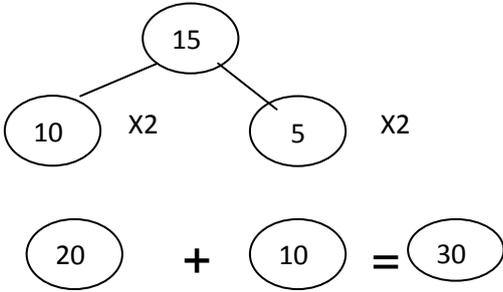
Maths Calculation – Multiplication

Foundation Stage

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|----------------------------|--|
| Mental and jottings | <ul style="list-style-type: none">• Number bonds to 10 |
| Written | <ul style="list-style-type: none">• Early Learning Goal – doubling up to 20• E.g. $3 + 3 =$ show this visually with two sets of 3 objects and link to halving• Group objects into equal sized groups• Count objects in hands e.g. socks, shoes, animal legs, coins, hands, fingers, toes – 2, 4, 6, 8. Etc• Develop doubles and halves using apparatus – e.g. multilink cubes |
| Underlying Skills | <ul style="list-style-type: none">• Count objects accurately using one to one correspondence matching a number to each objects• Number recognition 0 – 20• Count up to 20 reliably• Count in 2s and 10s |
| Vocabulary | <ul style="list-style-type: none">• Double• 2 lots of• Half, halve• Same as |

Maths Calculation – Multiplication

Key Stage 1

| | Year 1 | Year 2 |
|----------------------------|---|---|
| Mental and jottings | <ul style="list-style-type: none"> Count in multiples of 2s, 5s and 10s Odd and even numbers Doubles to 10 | <ul style="list-style-type: none"> Count in steps of 2, 3 and 5 from 0 and in tens from any number forward and backwards Recall and use multiplication facts for the 2, 5 and 10 times tables including recognising odd and even numbers Show that the multiplication of two numbers can be done in any order Show multiplication in arrays – e.g. 2 x 8 is two groups of 8 or 8 groups of 2 |
| Written | <p>A whole range of visual and practical opportunities are modelled by the teacher and practised by children. Activities are linked to role play and real life skills. For example 3 sweets are in one bag, how many sweets are in 5 bags?</p> <p>Moving towards</p> <p>Arrays and repeated addition</p> <p>• • • • 4 + 4 • • • •</p> <p>2 + 2 + 2 + 2</p> <p>Teacher models recording on a number line alongside practical problem.</p>  | <ul style="list-style-type: none"> Calculate mathematical statements for multiplication and division within the multiplication tables and write then using appropriate signs – (x, ÷, =) Use arrays to represent simple multiplication problems – use counters, cubes, peg boards etc – also use real life examples – e.g. egg boxes, cake/biscuit trays <p>Arrays and repeated addition Continue to understand multiplication as repeated addition and continue to use arrays (as in Year 1)</p> <p>x = signs and missing numbers Continue to use a range of equations as in Year 1.</p> <p>Pupils also need to understand that = means "the same as" and that a missing number can be shown as □ or ▽</p> $\begin{array}{l} 7 \times 2 = \square \\ 7 \times \square = 14 \\ \square \times 2 = 14 \\ \square \times \nabla = 14 \end{array} \quad \begin{array}{l} \square = 2 \times 7 \\ 1 = \square \times 7 \\ 4 \\ 1 = 2 \times \square \\ 4 \\ 1 = \square \times \nabla \\ 4 \end{array}$ <p>Teacher models recording on a number line alongside practical problem.</p>  <p>Partition</p> $\begin{array}{r} 10 + 5 \\ \downarrow \quad \downarrow \\ 20 + 10 = 30 \end{array}$ <p>Partition to calculate 2 x 1 digit x problems – this can be recorded as follows e.g. 2 x 15:</p>  <ul style="list-style-type: none"> Use number lines to show repeated groups of 2, 4 etc |
| Underlying Skills | <ul style="list-style-type: none"> Counting in 2s, 5s and 10s | <ul style="list-style-type: none"> Understand that multiplication means groups of Count forwards in steps of single numbers accurately |
| Vocabulary | <ul style="list-style-type: none"> Repeated addition Array Number line | <ul style="list-style-type: none"> Equal, groups of, times, multiply, repeated addition, array, number line, columns, rows |

Maths Calculation – Multiplication

Lower Key Stage 2

| | Year 3 | Year 4 |
|----------------------------|---|---|
| Mental and jottings | <ul style="list-style-type: none"> Count from 0 in multiples of 4, 8, 50 and 100 Recall and reuse multiplication and division facts for the 3, 4, 8 tables Write and calculate mathematical statements for multiplication using multiplication tables that they know including 2 digit numbers x by 1 digit numbers e.g. 23×4 – can be $20 \times 4 = 80$ and $3 \times 4 = 12$, $80 + 12 = 92$ | <ul style="list-style-type: none"> Count in multiples of 6, 7, 9, 25 and 1000 Use place value and derived facts to x and ÷ mentally including x by 0 and 1 Multiply together 3 numbers e.g. $5 \times 4 \times 3$ can be $5 \times 4 = 20$ then $20 \times 3 = 60$ Recognise and use factor pairs and commutativity in mental calculations |
| Written | <ul style="list-style-type: none"> Write and calculate mathematical statements for x and ÷ using the x tables they know – including 2 digit numbers times 1 digit numbers Build on previous work with partitioning numbers to calculate e.g. $\begin{array}{r l} x & 30 & 5 \\ \hline 2 & 60 & 10 \end{array} = 70$ <p><u>Use known facts and place value to carry out simple multiplications</u> Use the same method as above (partitioning) e.g. $32 \times 3 = 96$</p> $\begin{array}{r l} x & 30 & 2 \\ \hline 3 & 90 & 6 \end{array} = 96$ <ul style="list-style-type: none"> Extend to short multiplication starting with expanded method and progressing: e.g. $\begin{array}{r} 24 \\ \times 6 \\ \hline 144 \end{array}$ <p>Progressing to:</p> $\begin{array}{r} 32 \quad 24 \\ \times 3 \quad \times 6 \\ \hline 96 \quad 144 \end{array}$ <p>Begin with least significant digit</p> | <ul style="list-style-type: none"> Multiply 2 digit and 3 digit numbers by a 1 digit number using formal written layout <p>e.g.</p> $\begin{array}{r} 342 \\ \times 7 \\ \hline 2394 \\ 21 \end{array}$ |
| Underlying Skills | <ul style="list-style-type: none"> Multiplication by 10 Addition multiples of 10 to other numbers | |
| Vocabulary | <ul style="list-style-type: none"> Scaling | <ul style="list-style-type: none"> Partition, tens, units, ones, hundreds, thousands, place value, add, total, altogether, grid, decimal, decimal point, tenths, hundredths Scaling |

Maths Calculation – Multiplication

Upper Key Stage 2

| | Year 5 | Year 6 |
|----------------------------|--|--|
| Mental and Jottings | <ul style="list-style-type: none"> • $10^2 = 100$ • $10^3 = 1000$ • \times and \div whole numbers and those involving decimals by 10, 100 and 1000 • e.g. $35 \div 10 = 3.5$ and $3.5 \div 10 = 0.35$ • \times and \div numbers mentally drawing upon known facts • Identify multiples and factors including finding all factor pairs of a number and common factors of two numbers • Recognise and use factor pairs and commutativity in mental calculations | <ul style="list-style-type: none"> • Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy • Perform mental calculations, including with mixed operations and large numbers • Undertake mental calculations with increasingly large numbers and more complex calculations |
| Written | <ul style="list-style-type: none"> • Multiply numbers up to 4 digits by a 1 or 2 digit numbers using a formal written method including long multiplication for 2 digit numbers • When carrying during multiplication, place the 'carried numbers' at the top to avoid confusion with any carrying in the addition. $ \begin{array}{r} 2 \\ 2\ 4 \\ \times 1\ 6 \\ \hline 1\ 4\ 4 \\ + 2\ 4\ 0 \\ \hline 3\ 8\ 4 \end{array} $ <ul style="list-style-type: none"> • Practise and extend use of formal written methods of short multiplication | <ul style="list-style-type: none"> • Explore the order of operations using brackets – e.g. $2 + (1 \times 3) = 5$ and $(2 + 1) \times 3 = 9$ • Multiply multi-digit numbers up to 4 digits by a 2 digit whole number using the formal written method of long multiplication • Practise multiplication for larger numbers using formal written methods of columnar addition and subtraction, short and long multiplication |
| Underlying Skills | <ul style="list-style-type: none"> • Distributivity can be expressed as $a(b + C) = ab + ac$ • Understand the terms factor, multiple and prime, square and cube numbers and use them to construct equivalence statements e.g. $4 \times 25 = 2 \times 2 = 35$ and $3 \times 270 = 3 \times 3 \times 9 \times 10 = 9^2 \times 10$ • Apply all multiplication tables and related division facts frequently, commit them to memory and use them confidently to make larger calculations • Partition number appropriately • Recall appropriate \times facts • \times and \div number by 10, 100 and 1000 • Add together 2, 3, or 4 digit numbers including decimals • Multiply multiples of 10 • Multiply decimals, understanding place value | <ul style="list-style-type: none"> • Continue to use all the \times tables to calculate mathematical statements in order to maintain their fluency |
| Vocabulary | <ul style="list-style-type: none"> • Powers • Scaling | |