**Multiplication**

The expectation for year five and six is children will long multiplication to solve complex problems both as abstract number sentences and real world word problems. They will then use place value knowledge to solve multiplication problems involving whole numbers and decimal numbers.

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| **National Curriculum Expectations** | **Written method of calculation**  |
| **Stage 5**Know by heart all the multiplication facts up to 12 × 12Multiply whole numbers and 1- and 2-place decimals by 10, 100, 1000, 10 000Use knowledge of factors and multiples in multiplicatione.g. *43 × 6 is double 43 × 3*e.g. *28 × 50 is 1/­­2 of 28 × 100 = 1400*Use knowledge of place value and rounding in mental multiplicatione.g. *67 × 199 as 67 × 200 – 67*Use doubling and halving as a strategy in mental multiplication e.g. *58 × 5 is half of 58 × 10* e.g. *34 × 4 is 34 doubled twice*Partition 2-digit numbers, including decimals, to multiply by a 1-digit number mentallye.g. *6 × 27 as 6 × 20 (120) plus 6 × 7 (42)* e.g. *6·3 × 7 as 6 × 7 (42) plus 0·3 × 7 (2·1)* Double amounts of money by partitioninge.g. *£37·45 doubled is £37 doubled (£74) plus 45p doubled (90p) giving a total of £74·90* | 23 x 1782 =(or informal variations from previous year to bridge the gap) |
| **Stage 6**Know by heart all the multiplication facts up to 12 × 12Multiply whole numbers and decimals with up to 3 places by 10, 100 or 1000e.g. *234 × 1000 = 234* *000* e.g. *0·23 × 1000 = 230*Identify common factors, common multiples and prime numbers and use factors in mental multiplicatione.g. *326 × 6 is 652 × 3 which is 1956*Use place value and number facts in mental multiplicatione.g. *4000 × 6 = 24* *000* e.g. *0·03 × 6 = 0·18*Use doubling and halving as mental multiplication strategies, including to multiply by 2, 4, 8, 5, 20, 50 and 25e.g. *28 × 25 is a quarter of 28 × 100 = 700*Use rounding in mental multiplication e.g. *34 × 19 as (34 × 20) – 34*Multiply 1- and 2-place decimals by numbers up to and including 10 using place value and partitioninge.g. *3·6 × 4 is 12 + 2·4* e.g. *2·53 × 3 is 6 + 1·5 + 0·09*Double decimal numbers with up to 2 places using partitioninge.g. *36·73 doubled is double 36 (72) plus double 0·73 (1·46)* | (This method by end of year) |

***It is important to note that although 5 x 3 = 15 and 3 x 5 = 15 are the same when discussing with the children the first number in the calculation is the number of groups. The second number being the quantity within each group. Eg. 5 x 3 is 5 groups of 3, the repeated addition would therefore be 3+3+3+3+3***

**The Grid Method**

If your child is struggling you can go to stage 4 where children will develop a secure knowledge in place value. When using the grid method children partition numbers in order to break multiplication into stages hence making it easier.

4 x 138 =

100 30 8 100 30 8

 4 400 120 32 Here the children multiply 4 x 30 followed by 4 x 8

 The final stage is to add the numbers together, they can do this using the column method or partitioning; 400 + 120 + 32 = **552**

 400 + 120 + 32 or 400

400 0 0 100 20 0 30 2 120

 + 32

 500 50 2 = 552 552

**The Column Method- Long Multiplication**

When using the expanded column method the children will continue to use their knowledge of place value to multiply the units and then the tens.



Children will multiply everything by 4

They will then multiply everything by 20

The final stage of the calculation is to add the two numbers to find the total.