Progression in Multiplication ( revised Feb 2019 )

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| Experience of making equal groups of objects. | Practical work with concrete objects and related to everyday events | 2+2+2+2 |
| Repeated addition of objects and pictures | This should also be linked to sharing- arranging objects in equal groups |  |
| Using bead bars to show repeated addition and equal groups | Language to use:  this is  5x3 5 times 3  5 multiplied by 3 | 5x3---- 5times 3,-- 3 lots of 5. |
| Doubling numbers to 5 | Use games and objects |  |
| Counting in 2s  learn  2 x table to 2x12 | Using songs and counting games | 2,4,6,8,10,12  2x1, 2x2,2x3,2x4,2x5,2x6, 2x7 etc |
| Repeated addition on a number line | Use a blank number line to encourage jumping in 5s rather than counting on 1 at a time. |  |
| Counting in multiples of 5  learn  5 times table to 5x12 | Use 5p coins | 5,10,15,20,  5x1,5x2,5x3,5x4,5x5 etc  Children should use number lines or bead bars to support their understanding. |
| Learn 10 x table by heart to 10x12 | Use images to support understanding |  |
| Double numbers to 10 by heart |  |  |
| Know 2x 5x,10x tables by heart | Encourage instant recall of the whole table | Children should learn to say the whole table eg  2 times 1 is 2, 2x2 is 4, 2x3 is 6.  The symbol = should be understood as equals/ is the same as. |
| Using arrays to illustrate multiplication and solve problems  The commutative nature of multiplication needs to be understood. | Use concrete objects and images to encourage understanding of multiplication |  |
| Multiply pairs of 1 digit numbers and represent as arrays | The use of arrays will support the development of the grid method. | Recognize the commutative nature of multiplication |
| Know 3x,4x, ,8x,  tables by heart. | Continue to learn these regularly as it is crucial. | Represent tables pictorially and using objects too. Make connections to own lives where possible. |
| Recognize division as the inverse of multiplication |  | 4x10= 40 and 40÷4=10  10x4=40 and 40÷10=4 |
| Multiplying by ten and the effect on place value |  | 10x4 increases the 4 ten times and the digit moves one place to the right on place value chart |
| To know all tables by heart up to 12x12 | ( in new curriculum this is a requirement at year 4 ) | Continue to use models and images to aid understanding as well as games to practise and become “automatic” with answers. |
| Solve 1 step problems involving multiplication and division | Use concrete objects arrays, grouping and sharing. | Reinforce that multiplication is inverse of division |
| Multiply by 100, 1000, | Place value reinforcement |  |
| U x multiples of 10 | Use place value counters | 10x4  20x5 |
| U x TU | Partition TU | Introduce the grid method |
| Look at patterns in multiplication |  | X2 = double  X4 = double then double  X5 = multiply by 10 then half |
| Estimation | Make reasonable estimates of Tu x U | 23x9 is approx 23x10  Chose the correct answer. |
| TU xTU | Need to understand partitioning and place value. It is easy for children to make mistakes when adding up totals. So this needs to be part of the method | Use grid method  2160  + 576  --------- |
| HTU x U | Continue with mental methods too  Ensure that children line up digits in the correct places and are able to explain the value of each digit. | Use a standard written method eg  Use expanded method  Multiply 432x6  432  X 6  --------  12 (6x2)  180 (6x30)  2400 (6x400 )  2592 |
| Th HTU xTU | Multiply the unit (ones) digit first then the tens and add them together. | Use compact method  1  ~~2 1 1~~  5,432  x 36  32,592  162,960  195,552  1 1 |
| Extend to decimals | Use money and measures to add context to multiplying decimals. | It is useful to approximate first eg 4.92 X 3 is approximately 15 |