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| https://nrich.maths.org/content/id/8773/P8030034.JPGMultiplication in KS2 at Great Moor Junior School   * As much as possible, **multiplication should be taught alongside division as an inverse.** * **Concrete materials** such as place value discs, base ten resources, place value charts, number lines, number squares, blocks or counters etc. are integral to support children’s understanding of multiplication. * **Arrays** in particular are a clear visual representation of multiplication that will underpin understanding. These can be used to support the introduction of the more formal grid method.   Teaching should move from a more concrete representation to a more abstract. An on-screen or visual model can help to bridge between the two. | | | | | |
| **Year 3**  Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods | Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables  Multiply single digits by 20,30,40,50 and 80 | 4 × 6 = 24  Y3MaBE-f5Use arrays and number lines to count in multiples | **Using partitioning to multiply**  **57 × 2 = 114**  **50 × 2 7 × 2**  **100 + 14 =114**  **57**  **100 14**  **114** | **Scaling**  Making a 5cm line 4 times longer  *5cm × 4 = 20cm*  **Readiness for the Grid Method**  Children may be ready for the grid method when:   * they are able to partition into tens and ones * they can X multiples of 10 by one digit numbers * they know their number facts for the 2, 3, 4, 5, 8, and 10 x tables. | |  |  |  | | --- | --- | --- | | **×** | **40** | **8** | | **3** | **120** | **24** |   **48 × 3 = 144**  **(Partitioning)**  4 × 10 × 3 or 4 × 3 × 10  **120 + 24 = 144** |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| **Year 4**  Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers  Multiply and divide two-digit and three-digit numbers by a one-digit number using formal written layout | Recall multiplication and division facts for multiplication tables up to 10 × 10  Multiply single digits by 60,70, and 90 | **Mental**  **Multiplying by 10 and 100**  **Eg. 24 × 100**   |  |  |  |  | | --- | --- | --- | --- | | **Th** | **H** | **T** | **U** | |  |  | **2** | **4** | | **2** | **4** | **0** | **0** |   **Partitioning**  **267 × 2**  **200 × 2 = 400 400 + 120 + 14 =**  **60 × 2 = 120 534**  **7 × 2 = 14** | |  |  |  | | --- | --- | --- | | **×** | **60** | **7**  **540 + 63 = 603** | | **9** | **540** | **63** |   **67 × 9**  **437 × 6**   |  |  |  |  | | --- | --- | --- | --- | | **×** | **400** | **30** | **7** | | **6** | **2400** | **180** | **42** |   **2400 + 180 + 42 = 2622** | Partitioning grid multiplication leading to formal compact methods  67 × 9 =  6 7  9  6 0 3  6 |

**Learning Times Tables**

By learning facts up to 10 x 10 and teaching the children to *derive* the facts up to 12 x 12 (***National Curriculum*** requirement) , we are equipping the children with valuable skills that they can apply to even more complex multiplication challenges.

**Estimation**

Children should be encouraged to estimate before calculating to reduce likely mistakes.

After completing a calculation, they should consider the reasonableness of their answer against the question and their original estimate.

**Standard Written Method Multiplication**

“Carried” numbers should be written underneath the equals, in the middle of the correct column.

Children start with the ones first.

Digits should be referred to by their value i.e 6 in the tens column is 6 TENS or 60 not 6.

Carried digits are struck out once added (not erased/scribbled out.)

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Year 5**  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 and divide numbers mentally drawing upon known facts  multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 | **Mental calculation**  **Partitioning**  **407 × 4**  **407 × 2**  **400 × 4 = 1600**  **0 × 4 = 0**  **7 × 4 = 28**  **1600 + 28 = 1628**  **Rounding and adjusting**  **£3.99 × 6**  **£4 × 6 = £24**  **£24.00 – £0.06 = £23.94**  **28 × 19**  **28 × 10 × 2 = 560**  **560 – 28 = 532** | **TU × TU by partitioning**  **47 × 58**   |  |  |  | | --- | --- | --- | |  | **40** | **7** | | **50** | **2000**  (4 x 10 x 5 x 10)  Or 4 x 5 x 100 | **350**  (5 x 10 x 7) | | **8** | **320**  (8 x 4 x 10) | **56** | | **Leading to multiplication using a compact method**  **3 7 8**  **7 ×**  **2 6 4 6**  **5 5**  **4 5 6 9**  **8 ×**  **3 6 5 5 2**  **4 5 7** | **Compact for TU × TU**  **28 × 39**  **Long Written Multiplication: Carrying**  “Carried” numbers should be written underneath the current row but may be offset slightly to allow space.  **2 8**  **3 9 ×**  **2 5 2**  **2**  **7**  **8 4 0**  **1 0 9 2**  **567 × 86**  **5 6 7**  **8 6 x**  **3 4 0 2**  **5**  **5**  **4**  **4**  **4 5 3 6 0**  **4 8 7 6 2** |
| **Year 6**  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 | **Mental calculation**  **Partitioning**  **5.7 × 6**  **5 × 6 = 30**  **0.7 × 7 = 4.2**  **30 + 4.2 = 34.2**  **5.3 × 19**  **5.3 × 10 × 2 = 106**  **106 – 5.3 = 100.7** | **3749 × 38**  **3 7 4 9**  **3 8 ×**  **7**  **2 9 9 9 2**  **1**  **2**  **2**  **5**  **3**  **1 1 2 4 7 0**  **1 4 2 3 9 2** |  |  |