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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 = 24Y3MaBE-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.
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|  |  |  |
| --- | --- | --- |
| **×** | **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 × 10Multiply 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 methods67 × 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** |  |  |