**A Q.I. Guide to Maths for Year 6**

**Four Operation Methods**

|  |
| --- |
| Pupils should be taught to: perform mental calculations, including with mixed operations and large numbers. use their knowledge of the order of operations to carry out calculations involving the four operations solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why solve problems involving addition, subtraction, multiplication and division use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.  |
| Addition strategies**CONSOLIDATE STRATEGIES FROM Year 5:****Number line addition** 125.64 + 56.7 = 182.34 + 50 +6 + 0.7 = 182.34 125.64 175.64 181.64 182.34Use **rounding and adjusting**£34.59 + £1.99 =£36.58 + £2  -1p 34.59 36.58 36.59Use **compact** **column addition** to add any pair of two-place decimal numbers including amounts of money. Ensure that children know the importance of ‘lining up’ the decimal points particularly when adding mixed amounts e.g. 16.4 m. + 7.68 m. Understand and apply concept of ***exchanging.*** £62.53 + £7.86 = £70.39 62 . 53  + 7. 86 1 1 7 0 . 3 9 1 6 . 4 **0 (note place holder)** + 7 . 6 8 1 1 2 4 . 0 8m **Develop use of column addition to add numbers with up to 5 digits.** **Use column addition to add decimal numbers with up to 3-digits.** 62.536 + 7.867 = 70.403 62 . 536  + 7. 867 1 1 1 1 7 0 . 4 0 3 | Subtraction strategiesUse **complementary addition** for subtraction of integers up to 10,000. E.g. 2504 – 1878 as  +22 +100 +504 = 6261878 1880 1900 2000 2504 Use **complementary addition** for subtractions including decimal numbers and amounts of money. E.g. £7.30 – £3.55 = £3.55 + = £7.30    +5p +40p +£3.30 = £3.75£3.55 £3.60 £4.00 £7.300.5 – 0.31 =  0.31 + = 0.50 +0.09 +0.1 = 0.19 0.31 0.40 0.50Continue to develop **compact** **column subtraction** with different numbers of digits and decimals, involving more complex problems.(Note: Children should understand the importance of lining up ones digits under ones digits, tens under tens etc.) Understand and apply concept of ***exchanging.*** 4 1 3 1 ~~5~~ 7 6 ~~4~~ . 0 - 8 2 1 . 6 4 9 4 2 . 4 |
| Pupils should be taught to: multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication. divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context. perform mental calculations, including with mixed operations and large numbers. identify common factors, common multiples and prime numbers. use their knowledge of the order of operations to carry out calculations involving the four operations. solve problems involving addition, subtraction, multiplication and division. use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.  |
| Multiplication strategies**Grid’ method** e.g. 6 x 3865 = 23,190

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| x |  **3000** |  **800** |  **60** |  **5** |
|  **6** |  18000 |  4800 |  360 | 30 |

Grid’ method. E.g. 572 x 38 =

|  |  |  |  |
| --- | --- | --- | --- |
| x |  **500** |  **70** |  **2** |
|  **30** |  15000 |  2100 | 60 |
|  **8** |  4000 |  560 | 16 |

  **17100**  **4576** **1 1** **21736**Add the numbers in the grid mentally where possible and then use column addition.**Short Multiplication**24 x 6 = 144 342 x 7 = 2394 2 4 342 X 6 x 7 2 2 1 144 2394**Long multiplication** 124 x 26 124X 26 1 2 744 248**0 Note place holder** 1 1 32241243 x 26 1243X 26 1 2 1 7458 2486**0 Note place holder** 1 1 1 32318 | Division strategies**Short division****Long division (chunking)**or 28.8 (4/5 = 0.8) |