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| --- | --- | --- | --- | --- | --- | --- | --- |
| **Multiplication** | | | | | | | |
| **Year** | | **1** | **2** | **3** | **4** | **5** | **6** |
| **Written Methods** | | Solve one-step problems involving multiplication and division by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher. | Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs | 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 (focus) and progressing to formal written methods | Multiply and divide two-digit and three-digit numbers by a one-digit number using formal written layout. | 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 whole numbers and those involving decimals by 10,100 and 1000. | Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication  Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. |
| **Developing conceptual understanding (key models and images)** | | 2 frogs on each lily pad.          How many 2s |  | Arrays  13 x 4    Partitioning  10 x 4 = 40  3 x 4 = 12 | 40 x 6 = 240  3 x 6 = 18  43 x 6 = 258‘If I know 4 x 6 = 24  Then 40 x 6 is ten times bigger’  **Expanded** vertical  43  x 6    18 ( 3 x 6)  240 (40 x 6)    258  Moving to **Compact** vertical (expected standard)  43  x 6    258  1 | **Expanded** vertical   |  |  |  |  | | --- | --- | --- | --- | |  |  | 7 | 2 | |  | **X** | 3 | 8 | |  |  | **1** | **6**  (8 x 2)  (8 x 70)  (30 x 2)  (30 x 70) | |  | **5** | **6** | **0** | |  |  | **6** | **0** | | **2** | **1** | **0** | **0** | | **2** | **71** | **3** | **6** |   **Compact** vertical  **256 x 18**  E – 250 x 20= 5000  256  X 18  2 4 4  2048  2560  1 1  4608 | **Compact** vertical  **256 x 18**  E – 250 x 20= 5000  256  X 18  2 4 4  2048  2560  1 1  4608  4608    5172  x 38  41376  155160  196536  1 |
| **With jottings (or in your head)** | | Solve one-step problems involving multiplication and division by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher. | Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.  Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot | 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 (focus) and methods | Use place value, known and derived facts to  Multiply and divide mentally, including multiplying by 0 and 1; dividing by 1; multiplying 3 numbers.  Recognise and use factor pairs and commutativity in mental calculations | Multiply and divide numbers mentally drawing upon known facts  Multiply whole numbers and those involving decimals by 10,100 and 1000.  Identify multiples and factors, including finding all factor pairs of a number, and common factors of 2 numbers  Establish whether a number up to 100 is prime. | Perform mental calculations, including with mixed operations and large numbers |
| **Just know it!** | | Count in multiples of twos, fives and tens | Recall x and ÷ facts for times tables for the 2, 5 and 10 times tables, including recognising odd and even numbers | Recall x and ÷ facts for times tables for the 3, 4 and 8 times tables  Double and halve numbers to 50 | Recall x and ÷ facts for times tables up to 12 x 12 | Recall prime numbers to 19  Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers  Recognise and use square numbers and cube numbers and cube numbers, and the notation for squared (2) and cubed (3) |  |
| **Foundations** | | Count in 2s | 2x table | Review 2x, 5x, 10x | 4x, 8x tables  10x bigger | 4x, 8x tables  100, 1000 times bigger | Multiplication facts up to 12 x 12 |
| Count in 10s | 10x table | 4x table | 3x, 6x and 12x tables | 3x, 6x and 12x tables  10, 100, 1000 times bigger | Partition to multiply mentally |
| doubles up to 10 | Doubles up to 20 and multiples of 3 | Double 2 digit numbers | Double larger numbers and decimals | Double larger numbers and decimals | Double larger numbers and decimals |
| Count in 5s | 3x table | 8x table | 3x, 9x tables | 3x, 9x tables | Multiplication facts up to 12 x 12 |
| Double multiples of 10 | Count in 3s | 3x table | 11x, 7x tables | 11x, 7x tables  Partition numbers mentally | Partition to multiply mentally |
| Count in 2s, 5s and 10s | 2x, 5x, 10x tables | 6x table or review others | 6x, 12x tables | 6x, 12x tables | Double larger numbers and decimals |
| **Division** | | | | | | | |
| **Year** | **1** | | **2** | **3** | **4** | **5** | **6** |
| Written Methods | Solve one-step problems involving multiplication and division by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher. | | Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs | 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 (focus) and progressing to formal written methods (only if secure, focus numberlines).  *Halve numbers to 50* | Divide two-digit and three-digit numbers by a one-digit number using formal written layout.  Halve any 2 digit number | Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context.  Divide whole numbers and those involving decimals by 10,100 and 1000. | 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.  Divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context. Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. |
| Developing conceptual understanding (key models and images) |  | |  |  |  |  |  |
| With jottings (or in your head) | Solve one-step problems involving multiplication and division by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher. | | Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.  Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot | 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 (focus) and methods | Use place value, known and derived facts to  Multiply and divide mentally, including multiplying by 0 and 1; dividing by 1; multiplying 3 numbers.  Recognise and use factor pairs and commutativity in mental calculations | Multiply and divide numbers mentally drawing upon known facts  Multiply whole numbers and those involving decimals by 10,100 and 1000. | Perform mental calculations, including with mixed operations and large numbers |
| Just know it! | Count in multiples of twos, fives and tens | | Recall x and ÷ facts for times tables for the 2, 5 and 10 times tables, including recognising odd and even numbers | Recall x and ÷ facts for times tables for the 3, 4 and 8 times tables  Double and halve numbers to 50 | Recall x and ÷ facts for times tables up to 12 x 12 | Recall prime numbers to 19  Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers |  |
| Foundations | Count back in 2s | | Division facts (2x table) | Review division facts (2x,5x,10x table) | Division facts (4x, 8x tables)  10 x smaller | Division facts (4x, 8x tables)  100 x, 1000 x smaller | Division facts (up to 12 x 12) |
| Count back in 10s | | Division facts (10x table) | Division facts (4x table) | Division facts (3x, 6x, 12x tables) | Division facts (3x, 6x, 12x tables)  Partition to divide mentally | Partition to divide mentally |
| Halve up to 10 | | Halves to 20 | Halve 2 digit numbers | Halve larger numbers and decimals | Halve larger numbers and decimals | Halve larger numbers and decimals |
| Count back in 5s | | Division facts (5x table) | Division facts (8x table) | Division facts (3x, 9x tables) | Division facts (3x, 9x tables)  100 x, 1000 x smaller | Division facts (up to 12 x 12) |
| Halve multiples of 10 | | Count back in 3s | Division facts (3x table) | Division facts (11x, 7x tables) | Division facts (11x, 7x tables)  Partition to divide mentally | Partition to divide mentally |
| How many 2s? 5s? 10s? | | Review division facts (2x, 5x, 10x table) | Division facts (6x table) | Division facts (6x, 12x tables) | Division facts (6x, 12x tables)  Halve larger numbers and decimals | Halve larger numbers and decimals |