# Calculation Policy

# Multiplication

January 2024

| **EYFS:** | | | |
|---|---|---|---|
| **Vocabulary:** | Double. Equal, groups, grouping | **Manipulatives & scaffolds:** | Fingers<br>Five frames<br>Ten frames<br>Double sided counters<br>Numicon<br>Cubes<br>Bead strings<br>Part-whole model |
| | | | |
| **Small step:** | **Concrete:** | **Pictorial:** | **Abstract:** |
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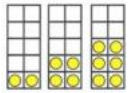
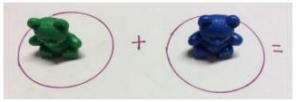
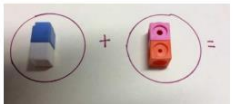
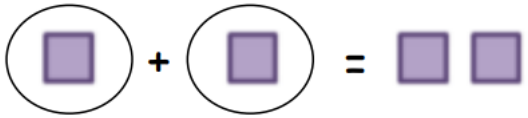
| Doubling | The link between addition and multiplication can be introduced through doubling. Domino and dice fames can be used to do this as well as fingers.<br>Representing the even number pair-wise on 10 frames supports the children to make the link between doubling and halving.<br>They can also be used to illustrate the odd and even patterns of numbers<br>  <br>  <br>  | Children have a go at recording by drawing pictures in groups<br>  | 1 + 1 = 2<br>Double 1 equals 2<br><br>Double ___ is ___ |

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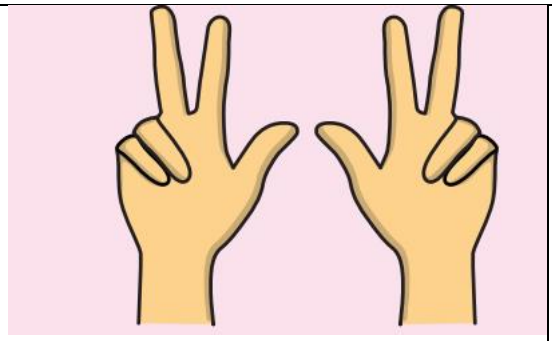
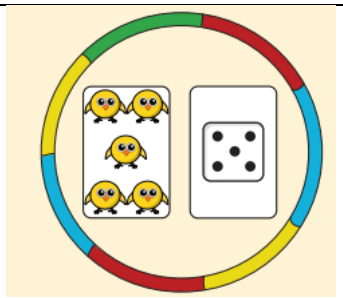
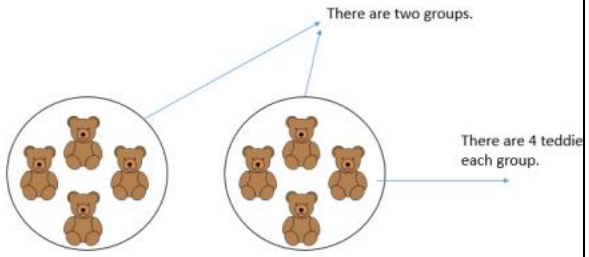
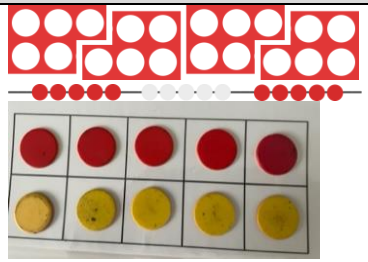
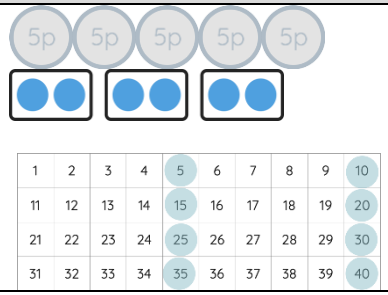
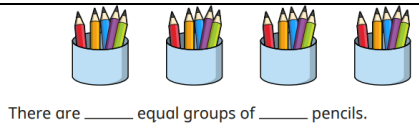
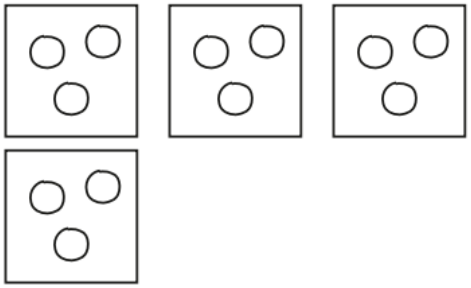
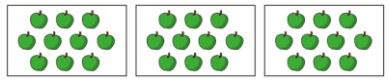
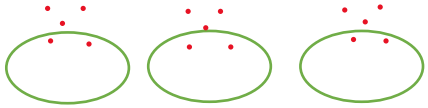
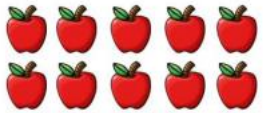
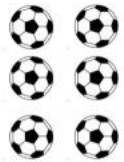
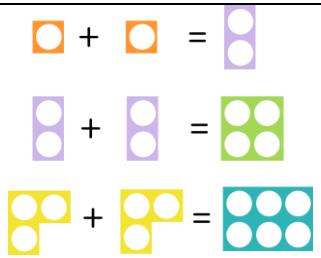
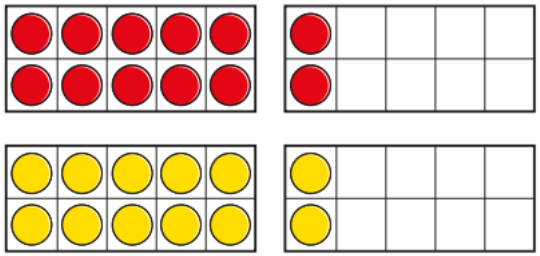
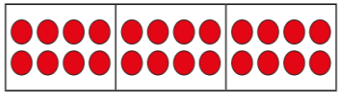
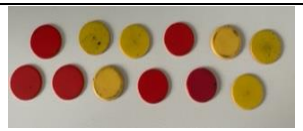
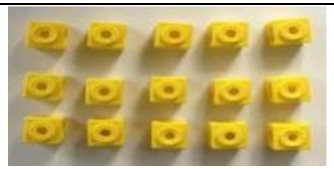
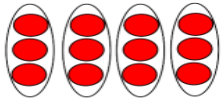
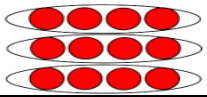
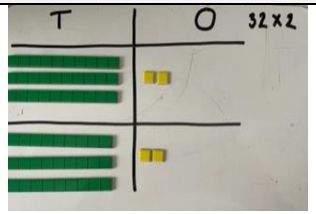
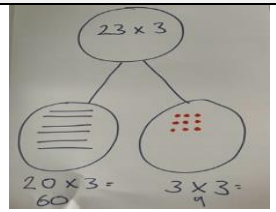
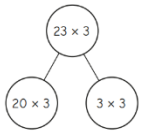
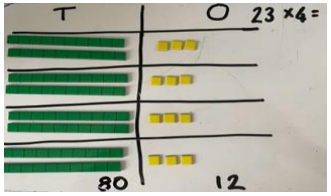
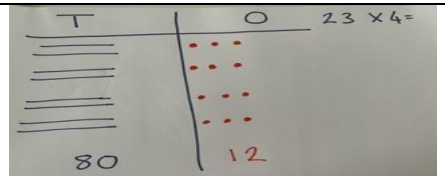
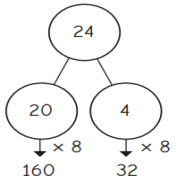
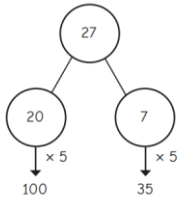
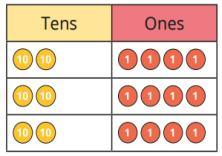
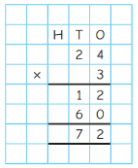
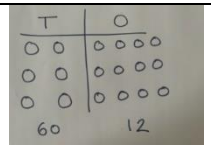
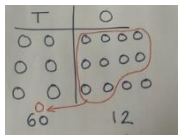
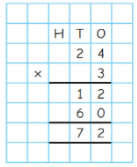
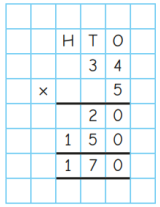
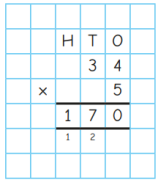
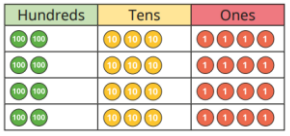
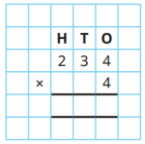
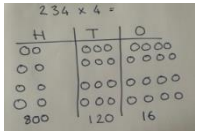
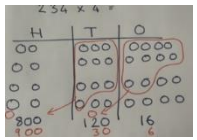
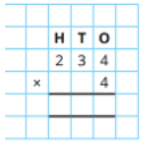
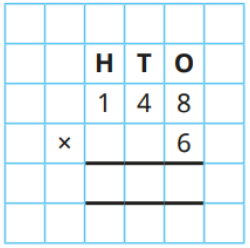
|---|---|---|---|
| Doubles to 10 |  <br>There are 3 here and 3 there.<br>Double 3 is 6.<br>6 is double 3. |  <br>There are 5 here and 5 there.<br>Double 5 is 10.<br>10 is double 5. | There are ___here and ___there.<br>Double ___ is ___<br>___ is double ___ |
| Grouping | Children will experience equal groups of objects. Children will be encouraged to count the groups, then count how many objects are in a group – 4 and 4<br> |  | Stem sentence:<br>There are __ groups<br>There are __ in each group |
| **Y1** | | | |

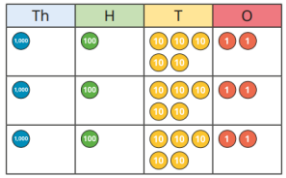
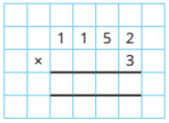
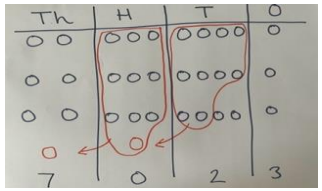
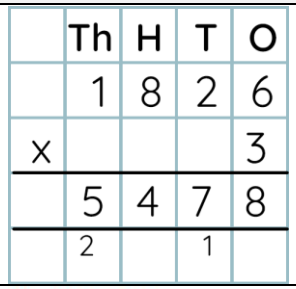
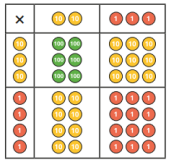
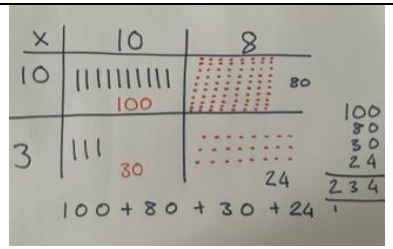
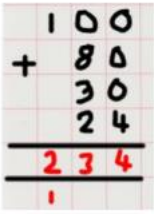
| **Vocabulary:** | equal, unequal, group, odd, even, array, multiple, multiplication, multiplied by, division, dividing, grouping, groups of | **Manipulatives & scaffolds:** | Ten frames<br>Double sided counters<br>Numicon<br>Cubes<br>Bead strings<br>Number line<br>Bar model |
|---|---|---|---|
| | | | |
| **Small step:** | **Concrete:** | **Pictorial:** | **Abstract:** |
| Counting in multiples – 2s, 5, 10s |  |  | Say/write sequences:<br>2, 4, 6, 8…<br>10, 20, 30, 40…<br>5, 10, 15, 20, 25, 30… |
| Recognise equal groups |  |  <br>There are ___ equal groups of___ | There are ___ equal groups of___ |
| Add equal groups |  | 5 + 5 + 5 = 15 | 5 + 5 + 5 = 15 |

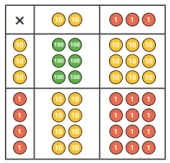
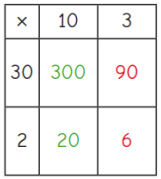
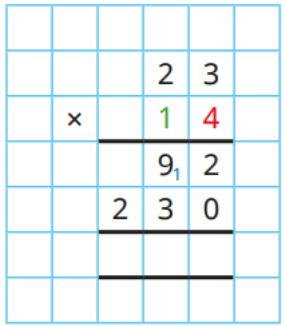
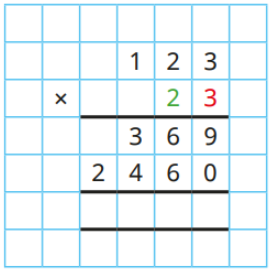
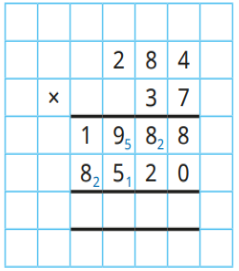
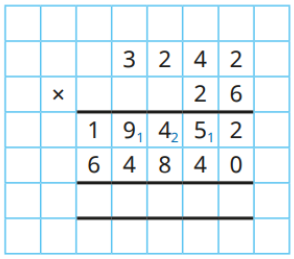
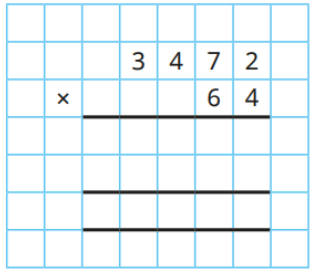
| | | | |
|---|---|---|---|
| | 10 + 10 + 10 = 30 |  | |
| Make arrays | <br>There are __ rows.<br>There are __ in a row.<br>There are __ in total.<br>There are __ columns.<br>There are __ in a column.<br>There are __ altogether. |   <br>There are __ rows.<br>There are __ in a row.<br>There are __ in total.<br>There are __ columns.<br>There are __ in a column.<br>There are __ altogether. | 2 + 2 + 2 = 6<br>3 + 3 = 6<br>There are 6 altogether |
| Make doubles |  |  <br>Double 12 is ___ | Double 6 is__ |

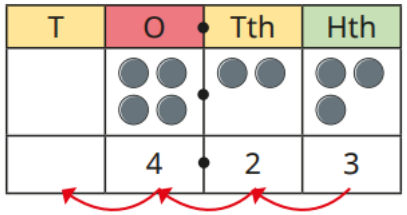
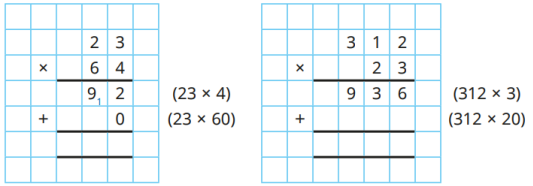
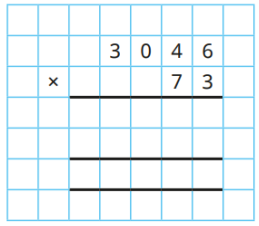
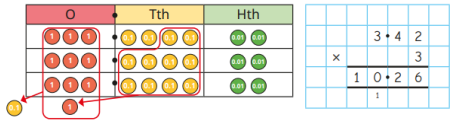
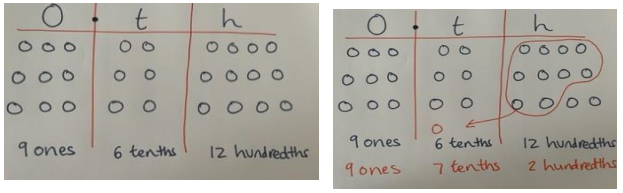
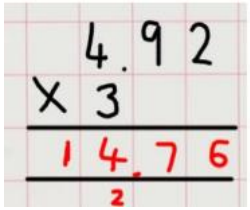
| **Y2** | | | |
|---|---|---|---|
| **Vocabulary:** | equal, unequal, group, odd, even, array, multiple, multiplication, multiplied by, division, dividing, grouping, groups of, times, repeated addition, row, column, commutative | **Manipulatives & scaffolds:** | Ten frames<br>Double sided counters<br>Numicon<br>Cubes<br>Bead strings<br>Number line<br>Bar model |
| | | | |
| **Small step:** | **Concrete:** | **Pictorial:** | **Abstract:** |
| | | | |
| Multiplication symbol | <br>5 + 5 + 5 + 5 + 5 + 5 =<br>There are 6 lots of 5<br>5 x 6 = 30 |  <br>There are _____ equal groups with _____ in each group.<br>_____ + _____ + _____ = 24<br>_____ × _____ = 24 | _____ + _____ + _____ = _____<br>_____ × _____ = _____ |
| Multiplication sentences |  <br>3 + 3 + 3 + 3 = 12<br>__ lots of 3 = 12<br>__ multiplied by __ = 12 __ x __ = 12 | <br>5 + 5 + 5 = 15<br>3 + 3 + 3 + 3 + 3 = 15<br>5 x 3 = 15<br>3 x 5 = 15 | 5 + 5 + 5 + 5 = 20<br>4 × 5 = 20<br>5 × 4 = 20 |
| Use arrays |  <br>5 x 3 = 15 3 x 5 = 15 |  <br>4 × 3 =12<br>  <br>3 × 4 = 12 | __ X __ = 20<br>__ x __ = 20 |

| **Y3:** | | | |
|---|---|---|---|
| **Vocabulary:** | equal, unequal, group, odd, even, array, multiple, multiplication, multiplied by, division, dividing, grouping, groups of, times, repeated addition, row, column, commutative, factor, product | **Manipulatives and scaffolds:** | Base 10/Dienes<br>Place value charts<br>Part whole models |
| | | | |
| **Small step:** | **Concrete:** | **Pictorial:** | **Abstract:** |
| Multiply a 2-digit number by a 1-digit number (no exchange) |  <br>3 tens x 2 = __ tens<br>2 ones x 2 = __ ones<br>__ + __ =<br>32 x 2 = |  <br>  <br>20 × 3 = 60<br>3 × 3 = 9<br>23 × 3 = 69 | 42 × 3<br>= ___ tens × 3 + ___ ones × 3<br>= ___ + ___<br>= ___ |
| Multiply a 2-digit number by a 1-digit number (with exchange) |  <br>2 tens X 4 = __ tens<br>3 ones X 4 = __ ones<br>24 X 3 = __ + __<br>24 X 3 = |  <br>  <br>160 + 32 = 192<br>24 × 8 = 192 | 24 × 8<br>= 20 × 8 + 4 × 8<br>= ___ + ___<br>= ___ |

| **Y4** | | | |
|---|---|---|---|
| **Vocabulary:** | equal, unequal, group, odd, even, array, multiple, multiplication, multiplied by, division, dividing, grouping, groups of, times, repeated addition, row, column, commutative, factor, product | **Manipulatives & scaffolds:** | Base 10/Dienes<br>Place value charts<br>Place value counters<br>Part whole models |
| | | | |
| **Small step:** | **Concrete:** | **Pictorial:** | **Abstract:** |
| Informal methods | 3 × 26 = 60 + 18 = 78 |  27 × 5 = 100 + 35 = 135 | 36 X 4 = 160 + 35 = 195 |
| Multiply a 2-digit number by a 1-digit number |   (4 × 3)<br>(20 × 3) |    (4 × 3)<br>(20 × 3) |  (4 × 5)<br>(30 × 5)  |
| Multiply a 3-digit number by a 1-digit number |   |    |  |

| **Y5** | | | |
|---|---|---|---|
| **Vocabulary:** | equal, unequal, group, odd, even, array, multiple, multiplication, multiplied by, division, dividing, grouping, groups of, times, repeated addition, row, column, commutative, factor, product | **Manipulatives & scaffolds:** | Base 10/Dienes<br>Place value charts<br>Place value counters<br>Part whole models |
| | | | |
| **Small step:** | **Concrete:** | **Pictorial:** | **Abstract:** |
| Multiply a 4-digit number by a 1-digit number |   | 2341 x 3 =<br>  |  |
| Multiply a 2-digit number by a 2-digit number (area model) |  34 × 23<br>= 600 + 90 + 80 + 12 = 782 |  | 18 x 13 = 234<br>X \| 10 \| 8<br>10 \| 100 \| 80<br>3 \| 30 \| 24<br>  |

| | | | |
|---|---|---|---|
| Multiply a 2-digit number by a 2-digit number |  <br>34 × 23<br>= 600 + 90 + 80 + 12 = 782 |  <br>300 + 90 + 20 + 6 = 416 |  <br>(23 × 4)<br>(23 × 10) |
| Multiply a 3-digit number by a 2-digit number | When children begin to multiply larger numbers, written methods become more efficient; concrete and pictorial methods are less effective and take too much time |  <br>(123 × 3)<br>(123 × 20) |  <br>(_____ × _____)<br>(_____ × _____) |
| Multiply a 4-digit number by a 2-digit number | |  <br>(3,242 × _____)<br>(3,242 × _____) |  <br>(_____ × _____)<br>(_____ × _____) |

| | | | |
|---|---|---|---|
| Multiply decimals – missing values | 4.23 × _____ = 42.3<br>  | 4.82 × _____ = 482<br>1,000 2,000 3,000 4,000 5,000 6,000 7,000 8,000 9,000<br>100 200 300 400 500 600 700 800 900<br>10 20 30 40 50 60 70 80 90<br>1 2 3 4 5 6 7 8 9<br>0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9<br>0.01 0.02 0.03 0.04 0.05 0.06 0.07 0.08 0.09<br>0.001 0.002 0.003 0.004 0.005 0.006 0.007 0.008 0.009 | 3.4 × _____ = 34<br>_____ × 5.62 = 5,620<br>1,000 × _____ = 345 |
| **Y6** | | | |
| **Vocabulary:** | equal, unequal, group, odd, even, array, multiple, multiplication, multiplied by, division, dividing, grouping, groups of, times, repeated addition, row, column, commutative, factor, product | **Manipulatives & scaffolds:** | Base 10/Dienes<br>Place value charts<br>Place value counters<br>Part whole models |
| | | | |
| **Small step:** | **Concrete:** | **Pictorial:** | **Abstract:** |
| Multiply up to a 4-digit number by a 2-digit number | |  |  |
| Multiply decimals by integers |  | 3.24 X 3 =<br>  |  |