

**Calculation Policy:**

**Multiplication**

**Years 4 and 5**

**PROGRESSION THROUGH CALCULATIONS FOR MULTIPLICATION**

**MENTAL CALCULATIONS**

These are a selection of mental calculation strategies:

See NNS Framework Section 5, pages 52-57 and Section 6, pages 58-65

**Doubling and halving**

Applying the knowledge of doubles and halves to known facts.

E.g. 8 x 4 is double 4 x 4

Knowing that doubling is the same as multiplying by 2.

**Using multiplication facts**

***Tables should be taught from Y1 summer term onwards, either as part of the mental oral starter or other times as appropriate within the day.***

Year 2 10 times table

5 times table

2 times table

Year 3 4 times table

8 times table

3 times table

6 times table

9 times table

Year 4 7 times table

11times table

12 times table

Derive and recall all multiplication and division facts up to 12 x 12

Years 5 & 6 Derive and recall quickly all multiplication and division facts up to 12 x 12.

Work out products such as 70 X 5, 70 X 50 and 700 X 50 using the related fact 7 X 5 and their knowledge of place value.

**Using and applying division facts**

Children should be able to utilise their knowledge of multiplication to derive other facts.

E.g. If I know 3 x 7 = 21, what else do I know?

30 x 7 = 210, 300 x 7 = 2100, 3000 x 7 = 21 000, 0.3 x 7 = 2.1 etc

**Use closely related facts already known**

13 x 11 = (13 x 10) + (13 x 1)

= 130 + 13

= 143

**Multiplying by 10 or 100**

Knowing that the effect of multiplying by 10 is a shift in the digits one place to the left and the addition of 1 place value holder.

Knowing that the effect of multiplying by 100 is a shift in the digits two places to the left and the addition of 2 place value holders.

**Partitioning**

23 x 4 = (20 x 4) + (3 x 4)

= 80 + 12

= 102

**Use of factors**

8 x 12 = 8 x 4 x 3

MANY MENTAL CALCULATION STRATEGIES WILL CONTINUE TO BE USED. THEY ARE NOT REPLACED BY WRITTEN METHODS.

**Children should not be made to go onto the next phase if:**

**1) They are not ready.**

**2) They are not confident.**

**Children should be encouraged to approximate their answers before calculating.**

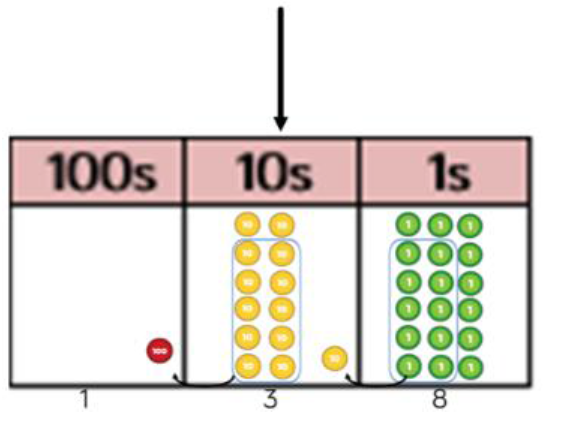
**Children should be encouraged to consider if a mental calculation would be appropriate before a written method.**

**Multiplication – Year 4**

**Formal written multiplication**

**Concrete: 23 x 6 =**

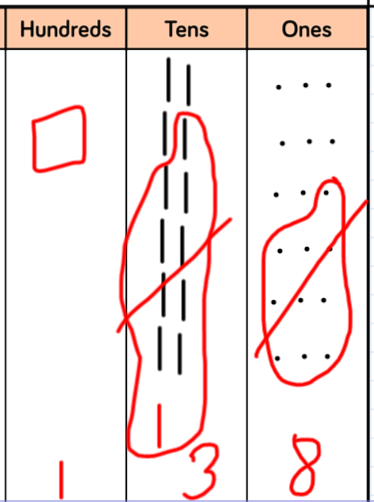




As the children are having to exchange here, they need to physically take the counters away and change it for the 10 or 100. This step is really important so ensure that children can articulate what they are doing and why.

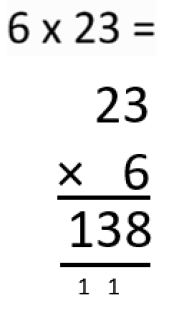
**Pictorial:**

**Children to represent the base 10 (counters) pictorially eg:**



Children to circle the counters they are exchanging and draw the new one on. They might want to circle in a different colour so that it is clear to them what they are doing. Encourage children to articulate what they are doing and why.

**Abstract:**



Refer back to when you were teaching ‘carrying’ in addition and where you put the numbers to be carried. Be consistent in your approach to where they go in the written calculation.

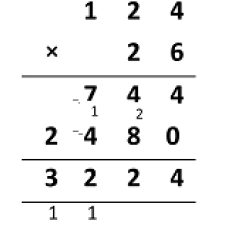
**Multiplication – Year 5 and beyond**

**Multiplying larger numbers.**

**Concrete and Pictorial:**

Children should be confident enough with the previous steps of multiplication that they don’t need to use concrete or pictorial methods. If they aren’t, please go back a stage until they are.

**Abstract:**



The main piece of learning in this example is where the children put the numbers they are carrying for each step of the calculation. In this example, children only need to carry when multiplying by the 1s. In the example below, they have to carry when multiplying by the 10s as well.

When children are first learning this, they might find it easier to use 2 different colours when multiplying and then add them at the end. Ensure that you are consistent in your approach across your school.

**Using Conceptual variation:**

**Different ways to ask 6 x 23**

**Bar model:**

David earns £23 each day for 6 days. How much does he earn?

23

?

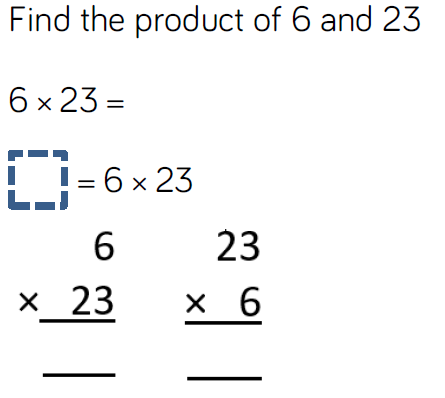
David earns altogether.

**Word problems:**

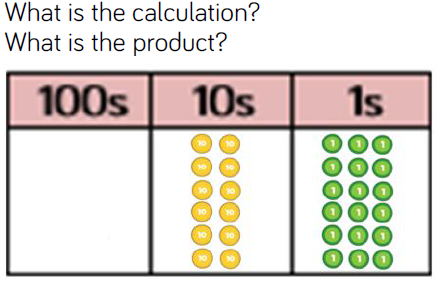
Maisy had to swim 23 lengths, 6 times a week. How many lengths did she swim in 1 week?

With counters, prove that 6 x 23 = 138

**Procedural variation:**



**Conceptual variation:**



**Scaling questions:**

