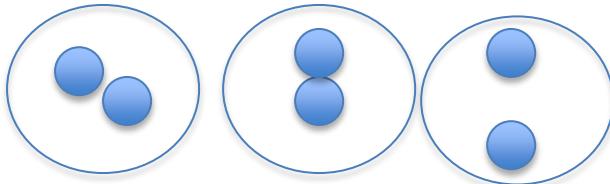


Multiplication: Know $4 \times 3 = 3 \times 4$ etc. 'Commutative'

Notes: The commutative law simply means that multiplication sums can be done in either order and the answer will be the same. So $3 \times 4 = 12$, and $4 \times 3 = 12$. At this stage the child will be at the early stages of multiplication understanding and we should be using concrete materials and visual supports to develop their deeper understanding.

Grouping using counters

One of the first introductions of the concept of multiplication is through "Grouping". So, 3×4 would be 3 groups of 4 or 4 groups of 3. This can be modelling simply using counters. Model a multiplication sum to the child. So 3×2 would be 3 groups of 2 or 2 groups of 3. If you place the counters on a whiteboard, you can draw a circle around each group to clarify. See the image below:



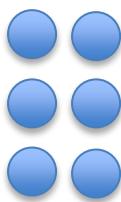
This shows 3 groups of 2, or 3×2 . The child can count all the counters and see that the answer is 6.

Rearrange the counters so that now there are 2 groups of 3. Encourage the child to count them all again, record the sum and therefore show that 2×3 , and 3×2 are the same. Repeat this process with various other multiplication sums and show that they can be done in any way.

(It is not part of this activity, but be aware that the child may have met this grouping diagram in the first stage of learning division - it also shows 6 divided by 3 equals 2.)

Arrays using counters

An array is a set of rows and columns that visually show a multiplication sum. For example:



This array shows 3 **rows** of 2, or $3 \times 2 = 6$.

It can also show 2 **columns** of 3, or $2 \times 3 = 6$

If you walk the child round the desk, from one side they can see 3 rows of 2 and from the next side they can see 2 rows of 3! This should help them understand $2 \times 3 = 3 \times 2$.

Using counters, model how to show a multiplication sum using an array (it may be helpful to check if there are certain multiplication tables the teacher would like them to work on, for example, 2, 3, 5, or 10 times tables.). Once you have made the array with counters, record the two multiplication sums shown. So the example above would be $3 \times 2 = 6$, AND $2 \times 3 = 6$. Repeat this for a range of different multiplication sums, recording the two sums each time and reminding the child that "Even though the numbers are in a different order, they make the same product."

Challenge

Choose a number which can be expressed as a product in different ways – for example 20 is 1x20 or 2x10 or 4x5 (or of course 20x1 or 10x2 or 5x4). Give them that number of counters and get them to make as many arrays as they can.

Vocabulary: the answer in a multiplication is the **product**. In $2 \times 3 = 6$, the product is 6. You should vary the terms you use for the written “x”, including “times”, “multiplied by”, “multiply”.