

## Unit 6: Coherence

### Handout 4: Sequencing activity

Sorting activity statements: Create a concept overview using the Primary Professional Development Materials.

1.1	Multiplication is commutative.
1.2	Use a quotitive division problem and use multiplication and division equations to show that: 'The <u>product</u> in the multiplication equation has the same value as the <u>dividend</u> in the matching division equation.'
1.3	Focus on how the factors in the multiplication equations correspond to the divisor and quotient in the division equation. Draw attention to what each number represents in the multiplication and division equations.
1.4	Draw children's attention to the fact that when we need to solve a problem, the known factor in the multiplication equation becomes the divisor and the missing factor becomes the quotient.
1.5	Use a partitive division problem and use multiplication and division equations to show that: 'The <u>product</u> in the multiplication equation has the same value as the <u>dividend</u> in the matching division equation.'
1.6	Explore multiplication equations where zero is a factor, and how this translates into the corresponding division equation. Make the following generalisation: 'We should never write a calculation where the divisor is zero.'
1.7	Solve some division calculations of the form $0 \div n = ?$ , using the corresponding multiplication facts for support. Work towards the generalisation: 'When the dividend is zero, the quotient is zero.'
1.8	Provide children with practice matching/writing associated multiplication and division equations.

2.1	Children have already used the distributive law informally. For each times table learnt, review children's knowledge of the 'adjacent multiples rule'.
2.2	Represent calculations using a part-part-whole diagram (cherry diagram), using it to write out the more 'expanded' form of the equations (including the factor of '1') such as: $5 \times 8 = 4 \times 8 + 1 \times 8$ $4 \times 8 = 5 \times 8 - 1 \times 8$ Ensure the language represents unitising in the 'common' factor.
2.3	Use the same representations to reveal the structure of the maths and partition in a different way. Write equations based on the representations used.
2.4	Use the same representations to look at cases with other group sizes. Vary the order of the factors.
2.5	Provide children with some practice partitioning the number of groups and writing associated equations.
2.6	Demonstrate that the distributive law can be applied to any multiplication equation, irrespective of whether the 'common' factor represents the number of groups or the group size.
2.7	Apply learning to a contextual problem where the most efficient method of solving it corresponds to partitioning the factor that represents the group size.
2.8	Provide children with further practice using the distributive law, including: missing-number/symbol problems, completing ratio charts and contextual problems.
2.9	Explore how two-part problems with a 'common' factor (e.g. $9 \times 4 + 9 \times 5$ ) can be most efficiently solved by applying the distributive law and performing one multiplication calculation rather than two multiplication calculations and an addition (for example, calculating $9 \times 9$ rather than calculating and adding together $9 \times 4$ and $9 \times 5$ ).
2.10	Finally, provide children with practice solving two-part contextual problems with a 'common' factor (including measures contexts). Work through the first example as a class, encouraging children to read the entire question carefully, and then to write a single equation to represent the whole problem. Children should then be able to see how they can apply the distributive law, so they need to perform only one multiplication calculation.
3	The distributive law can be used to derive multiplication facts beyond known times tables.