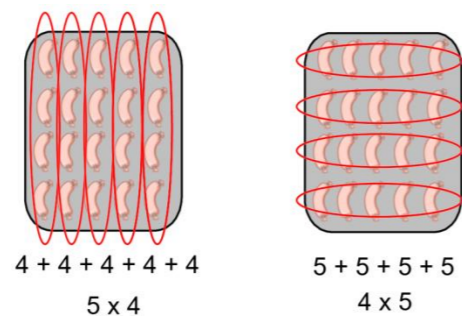


Year 2 Unit 6: Multiplication and Division (3 weeks)

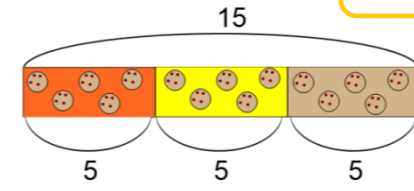
Multiplication: say what?!
 Due to its commutative nature, multiplication symbols can be read in many different ways: 'groups of', 'lots of', 'times' and 'parts'. For example, '3 x 2' could be interpreted as 'three groups of two', 'three parts each with a value of 2' or 'three, two times' which is equal to '2 x 3'. Use these definitions flexibly alongside models and images, so pupils develop this interconnected understanding.

Before starting:

- What previous experiences have pupils had with adding equal groups and sharing equally?
- How confident are pupils in skip counting in different ways?



Video: Knowns and unknowns



Introducing the multiplication symbol
 L1 Use the multiplication symbol
 L2 Understand that multiplication is commutative

Pupils begin by interpreting arrays and opportunities should be made for dialogue and to allow for the exploration of commutativity: 'I see 4 groups of 5' writing this as '5 + 5 + 5 + 5' and 'I see 5 groups of 4' writing this as '4 + 4 + 4 + 4 + 4' emphasising how 'the whole is 20' in both cases. Encourage pupils to start making sense of the abstract multiplication symbol by first activating prior knowledge of repeated addition, to allow a meaningful introduction to 'equal groups'. Provide opportunities for pupils to create both concrete and pictorial representations of arrays and make connections to 'part-whole' representations by modelling the associated language.

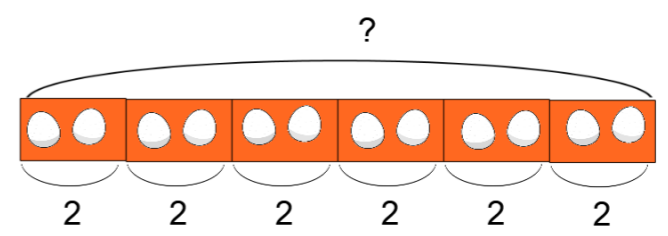
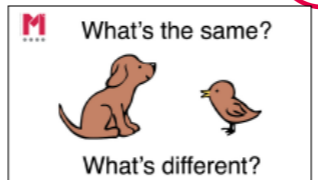
Introducing the division symbol
 L3 Use the division symbol when sharing
 L4 Use the division symbol when grouping
 L5 Explore representation of division
 L6 Find related multiplication and division facts

When introducing division, mirror scenarios from lesson 2 to make connections to multiplication as the inverse operation. Continue describing arrays with part-whole language to emphasise these connections as well as the concept of 'equal parts/groups'. This way, pupils can flexibly apply their knowledge of multiplication tables when solving division equations. Two division structures are explored: first 'division as sharing' then 'division as grouping' and pupils explore a mixture of word problems in both contexts. Pupils continue to ask themselves 'what do we know? What do we not know?' to interpret the word problem and represent the known and unknown values using bar models. Pupils apply their learning from earlier lessons in this unit during lesson 6 through interpreting arrays and engaging in dialogue to reason about related multiplication and division facts.

? How can concrete manipulatives and modelling 'part-whole' language help pupils overcome misconceptions such as $3 \div 2 = 6$ or $6 \times 3 = 2$?

Variation and task design

Tasks in this unit have purposefully been designed with variation in mind – equations have been deliberately chosen to evoke pattern seeking. Encourage pupils to ask themselves 'What's the same? What's different?' about the groups of equations. The purpose is for pupils to pay attention to the underlying mathematical structures. For example, when multiplying, increasing and decreasing the number of groups affects the value of the whole. To find out more about variation have a look at our [articles](#).



Pattern seeking and problem solving
 L12 Spot patterns in 2, 5 and 10 times tables
 L13 Solve multiplication and division word problems

In lesson 12, pupils explore and compare the patterns in the multiplication tables 2, 5 and 10 on a 100 square. Encourage pupils to make conjectures around the properties of these multiplication tables (e.g. multiples of two are always even, multiples of five always have a 5 or a 0 in the ones digit) and then explore and test out their conjectures. Learning across the entire unit is applied in lesson 13 where pupils solve missing number multiplication and division equations to crack a code. The position of the missing number and the 'is equal to' sign has been purposefully varied to encourage deeper mathematical thinking.

There are two consolidation lessons in this unit which can be used to suit the needs of pupils.

Exploring the two, five and ten times tables
 L7 Calculate multiples of two by skip counting
 L8 Explore representations of multiplication problems
 L9 Relate multiplying by two to doubling
 L10 Calculate multiples of five by skip counting
 L11 Calculate multiples of ten by skip counting

In lesson 7, understanding around repeated addition and skip counting in twos is connected to the multiplication table of two. Encourage pupils to make groups of two using concrete manipulatives (cubes / bead strings) to help make sense of the abstract spoken and written equations (e.g. 'one group of 2' = 'one part with a value of 2' = '1 x 2 = 2'). Make connections to prior learning in this unit when arrays and bar models are re-introduced to explore word problems in lesson 8. These representations are extended in lesson 9 when pupils make connections between multiplying by two and doubling. Learning (including representations and language structures) from lesson 7-9 is applied to the multiplication tables of five and ten in lessons 10 and 11.