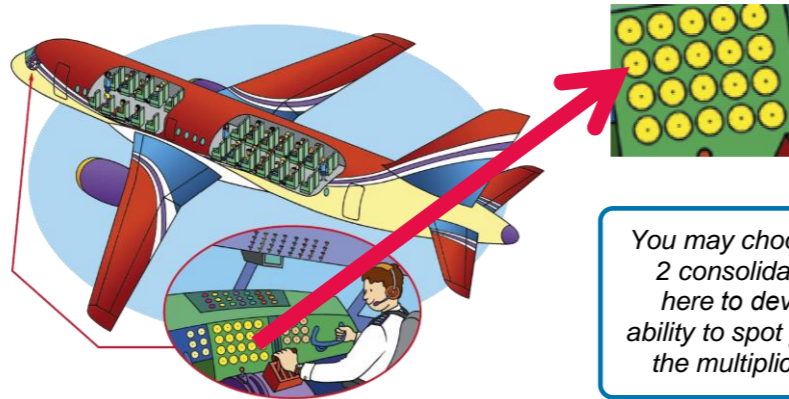# Year 2 Unit 16: Multiplication and division (3x and 4x) (3 weeks)

Before you start…
- How confident are pupils with the 2, 5 and 10 multiplication tables?
- Which representations, in relation to multiplication and division, are pupils familiar with:
  - Arrays
  - Equations
  - Part-whole models
  - Skip counting on a number line?
- What experience do pupils have in creating bar models?

The multiplication tables can be written in either way e.g. as 2×3 or 3×2. It then depends upon how the equation is interpreted, for example, for 3×2 you can say "three two times" or for 2×3 you can say "two groups of three".
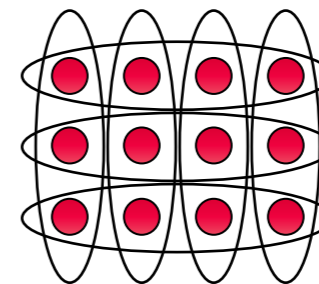
You may choose to use 1 of 2 consolidation lessons here to develop pupils' ability to spot patterns within the multiplication tables.

$4 \otimes 3 = 12$ $12 \div 4 = 3$

$3 \otimes 4 = 12$ $12 \div 3 = 4$

Exploring the multiplication tables of three and four
L1 Recall the multiplication table of three using skip counting
L2 Recall the multiplication table of four using skip counting
L3 Represent multiplication using an arrays

Pupils explore contexts where, through the use of equal groups, multiplication can be applied. Across Lesson 1 and 2, they will connect the bead string representation to a number line and skip counting, applying their knowledge to solve problems. During these lessons, pupils are introduced to the terms 'multiple' and 'product'. Lesson 3 will see pupils build arrays for both multiplication tables and explore the commutative aspect that arrays expose.

? How will you draw pupils attention to the patterns that exist within the given multiplication table?
? What does the array stress and ignore?

Connecting multiplication and division
L4 Division facts for the multiplication table of three
L5 Division facts for the multiplication table of four
L6 Identify fact families
L7 Recognise the inverse relationship

Pupils build on their understanding of arrays and multiplication tables to explore the inverse relationship that exists between multiplication and division and the flexibility this provides in learning associated division facts. In Lesson 6, with one array, pupils apply their inverse knowledge and the commutative law to identify the two division facts and two multiplication facts that it represents. They compare the orientation of two arrays both showing the same number of dots in the same number of equal parts connecting this to the part whole model to help solve missing number problems in Lesson 7.

? What opportunities will you provide for pupils to explore different ways of expressing the same or similar ideas?
? What questions and prompts might you use while learners work on the task(s) to draw their attention to key features of the concept and address misconceptions?

*There are four bananas in each pack. There are five packs. How many bananas are there altogether?*

There are five bananas in each pack. There are four packs. How many bananas are there altogether?

Which problem matches the bar model?
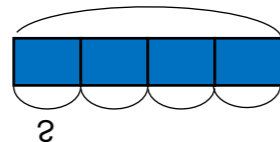
You may wish to use another consolidation lesson here before moving on to L11 and use this to develop pupils' fluency with the multiplication tables covered in this unit.

24   12
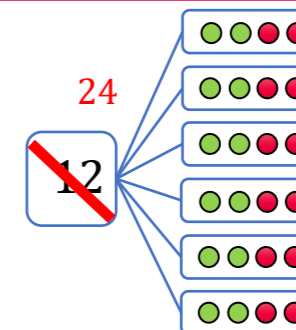
$6 \otimes 2 = 12$

Applying multiplication and division knowledge using bar models
L11 Create bar models for multiplication and division
L12 Identify the whole and parts in bar models
L13 Represent word problems using bar models
L14 Solve problems using bar models

Pupils interpret word problems representing them using an array, connecting this to a part-whole model and a bar model. Through discussing what is known and what is unknown, pupils identify and label parts of a bar model, writing the equations that each bar model represents before then matching bar models to the correct multiplication and division word problems and solving a range of problems in Lesson 13. In the final lesson, pupils move on to solve problems that include comparative language and bar models with an emphasis on two amounts and the multiplicative comparison between them.

? What language will be necessary to draw attention to connections between the representations you plan to use?
? What are the 'difficulty points' in the mathematics you are teaching?

Is it a part? Is it a whole?

Modelling and encouraging pupils to use accurate mathematical vocabulary to describe multiplication and division will support developing connections and deepen conceptual understanding.
"There are five equal parts each with a value of four"
"There are four parts. Each part has a value of five."

Deepening understanding of multiplication tables
L8 Identify multiples of 2, 3, 4, 5 and 10
L10 Recognise that the $4 \times$ table is double the $2 \times$ table

Pupils spend time arranging and rearranging arrays with the same number of counters to consider similarity in the multiples that appear in the $2, 3, 4, 5$ and 10 multiplication tables. Pupils explore the patterns which exist across related multiplication tables, developing their understanding and use of the terms 'product' and 'multiple'. Lesson 10 focuses pupils' attention on the relationship between the multiplication table of two and four.

? What thinking do you intend your pupils engage in? What questions and prompts (or other actions) could you use to model and provoke that thinking?

© Mathematics Mastery 2021