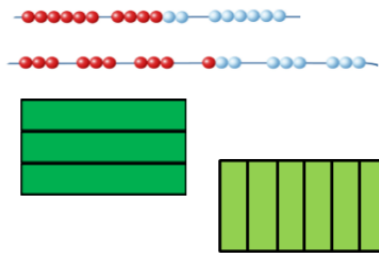# Year 3 Unit 6: Multiplication & Division (2 weeks)
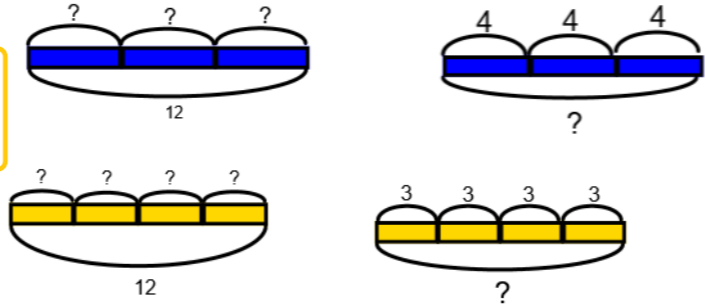
Before you start…
- *Can pupils use multiplication and division to describe equal groups or parts?*
- *Do pupils have experience with division as sharing and division as grouping?*
- *Can they recall multiplication facts for 2, 5 and 10 times tables?*
- *Are they aware of the 3 and 4 times table?*

Video: Commutativity and inverse

Cuisenaire commutativity
This article gives further suggestions on using Cuisenaire to represent multiplication, particularly considering commutativity.

Video: Multiplication and division: Using Cuisenaire

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 three equal parts each with a value of four"
"There are four parts. Each part has a value of three"

Can ten be shared equally into 3 groups?

Video: Language structures

Exploring properties of multiplication and division
L1 Explore commutativity
L2 Explore inverse relationships

Pupils explore the commutative property of multiplication, that 3 × 5 = 5 × 3, and demonstrate understanding of the relationship between multiplication and division.

? *Doing and undoing actions is an important mathematical theme. What opportunities will you take to draw attention to this?*

Recalling multiplication and division facts
L3 Recall multiplication and division facts using inverse (3×)
L4 Recall multiplication and division facts (2, 3, 4, 5 & 10)

Pupils use a variety of representations, including bar models, to develop understanding of, and fluency with, the 3 and 4 times tables. The same models are used to represent division to emphasise the connection with multiplication.

? *How will you develop connections between the abstract calculation and the manipulatives chosen to represent them?*

Using knowledge of multiplication to divide
L5 Use knowledge of factors and multiples

Pupils use the vocabulary of 'factor' and 'multiple' to continue to explore the relationship between multiplication and division. They build representations to demonstrate if a number is a multiple of, or is divisible by, another number.

? *How will you develop pupils' confidence with using the terms factor and multiple?*

Video: Bar modelling - Multiplication as equal parts

Video: Bar modelling - Multiplication as times as many

Robin shot his arrow three times as far as the Sheriff. The Sheriff's arrow went 20 metres. How far did Robin shoot his arrow?

Friar Tuck cooked three bags of sausages. There were 20 sausages in each bag. How many sausages did he cook?

You may wish to make use of the consolidation lesson here or before L5. Time should be spent ensuring pupils are secure with multiplication and division facts and language associated with multiplication and division.

Can you compare the representations of the two problems? What's the same? What's different?

What's the same? What's different?

Video: Exploring ten times greater

Video: Multiplying and dividing integers by 10

I have 3 different hats and 4 different tops. How many outfits can I create?

Representing problems using bar models
L9 Use bar models to represent word problems

Pupils use their understanding of part-whole relationships and known and unknown values in word problems to represent these as bar models. Attention is drawn to different multiplicative structures for both multiplication and division word problems.

? *How will you support pupils to create and explain their own bar models?*

Deriving multiplication facts
L7 Use doubling to find facts
L8 Use 'ten times greater'

Pupils use known multiplication facts to complete other calculations, first using doubling to find facts. Connections are made between the 3 and 6 times tables. Pupils use known facts to derive facts where one of the factors is ten times greater.

? *How will you establish routines that ensure pupils refer to the known facts they are using?*
? *What benefits can you see to establishing this routine?*

Solving correspondence problems
L6 Solve correspondence problems

Correspondence problems involve finding all the ways to pair up two sets. Arranging in a grid (see above) reveals the link with arrays and multiplication. This is an opportunity to work systematically and discover an unfamiliar context for multiplication.

? *How will you support pupils to work systematically? Will you provide a structure? Could they create their own ways?*

The Progression in Calculations document has further information on bar models for multiplicative reasoning.

Lesson 6 can be moved around within this unit.