Year 5 Unit 4: Multiplication & Division (3 weeks)

Video: *Factor buggin'*

Before you start…
- *What facts can pupils fluently recall?*
- *How familiar are your pupils with:*
  - *a range of models and manipulatives to represent multiplication and division*
  - *the different calculations that one array can represent*
  - *commutativity of multiplication*
  - *the relationship between multiplication and division?*
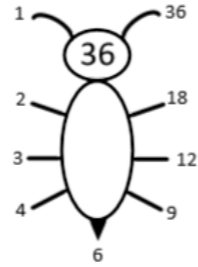
Prime numbers
This website will allow for further thinking on the use of prime numbers

$2 \times 3 = 6$
$3 \times 2 = 6$

Video: *Representing properties of number*

Understanding multiples, factors & squares

L1 Identify multiples and factors
L2 Find all factor pairs of a number
L3 Solve problems using factors, multiples and square numbers
L4 Establish if a number less than 100 is prime

This sequence of lessons explores the properties of numbers. Teaching should focus on comparing and contrasting the features of factors, multiples, square and prime numbers. This should lead to pattern seeking and pupils developing deeper understanding of these key properties of number.

? *How do you want pupils to find all of the factors of a number?*
? *How do you want pupils to decide if a number is prime?*

Exploring mental strategies for multiplication & division

L5 Multiply and divide by 10, 100 and 1000
L6 Multiply and divide mentally using doubling and halving
L7 Multiply and divide using derived facts

Within these lessons, pupils should be exposed to a range of strategies to support increasingly efficient mental multiplication and division. Encourage pupils to compare and contrast their ideas to identify similarities and differences and encourage them to consider the most appropriate strategy *for them*.

? *Which representations will support pupils to demonstrate their strategies?*
? *Doing and undoing actions is an important mathematical theme. What opportunities will you take to draw attention to this?*

Thinking in blocks?
This website offers one possibility in allowing pupils to represent problems more practically with bar models.

Number talks
Watch this Jo Boaler video on strategies for multiplication.

Using and explaining division methods

L12 Use knowledge of multiples to divide
L13 Use a written method to divide
L14 Solve problems involving division with remainders

As with lessons on multiplication, pupils should represent and solve problems choosing from a range of strategies, resorting to the written method only when it is the most efficient strategy for them. Pupils may draw or visualise bar models to make sense of the problem and should be encouraged to estimate mentally.

? *Can pupils identify the similarities and differences when solving multiplication and division problems?*

Using and explaining multiplication methods

L9 Use a written method to multiply
L10 Multiply two 2-digit numbers using long multiplication
L11 Multiply using knowledge of factors

As well as encountering and practicing formal written methods, pupils should explore how to represent problems and continue to develop flexibility when selecting strategies.

Exploring and selecting appropriate strategies

L8 Solve problems using a range of strategies

You may wish to use more than one lesson to allow pupils to explore applying strategies from previous lessons in an unfamiliar context. The focus is on justifying the efficiency of the strategy.

? *How might pupils decide on an appropriate strategy?*
? *How will you encourage pupils to justify their choices?*
? *What might affect the number of strategies pupils are able to access / understand / apply? What can you do to scaffold access?*

L15 is the suggested time for a consolidation lesson to allow pupils more time on exploring multiplication and division problems.
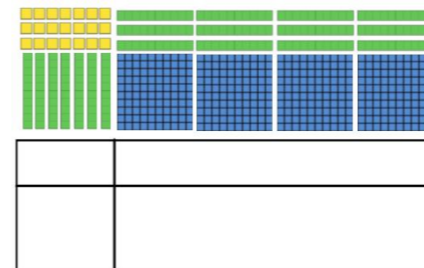
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?

$21 \div 8 = 2 \text{ r } 5$

Three buses are needed

Video: *Short multiplication using an area model*

Video: *Short multiplication with regrouping using an area model*

Video: *Long multiplication algorithm*

Pupils should feel confident in using a range of strategies. Maths Meetings should be used to continue to discuss and explore a range of strategies for a given calculation.

120
720
6

118	2
?	12
6