

FRACTIONS, DECIMALS AND PERCENTAGES

(INCLUDING RATIO AND PROPORTION)

CURRICULUM PROGRESSION:

TRACKING BACK

SINGLE-AGE CLASSES

Titles in the series

Number and Place Value

Addition and Subtraction (including algebra)

Multiplication and Division (including algebra)

Fractions, Decimals and Percentages (including ratio and proportion)

Measurement

Geometry

Statistics

Guidance page

This document aims to show the progression in learning within key areas of mathematics and where the linked teaching can be found within ESSENTIALMATHS. Its purpose is to support teachers to track back to appropriate starting points for pupils who are not currently able to access age appropriate learning so that they can make appropriate adaptations for them. This document should supplement the information provided on the front cover of each ESSENTIALMATHS sequence, which identifies how learning builds within and between sequences.

In many circumstances, teachers will use the tracking back information to support them in providing appropriate scaffolding for pupils up and into new learning. In addition, it is also particularly helpful when making adaptations for pupils who are operating further away from age related expectations including pupils with SEND so that a clear progression can be seen for their learning.

This document will allow teachers to track back from any ESSENTIALMATHS sequence to see how the learning builds from Early Years across Primary so that an appropriate starting point and progression can be identified for all pupils.

The teaching of fractions, decimals and percentages has been separated into six, closely related strands of learning. These strands are:

- Fractions of quantities (discrete and continuous) including measures
- Comparing and ordering fractions including equivalence
- Calculating with fractions
- Decimals
- Percentages
- Ratio and Proportion

Within each strand, a short introduction outlines the main focus of learning and highlights key building blocks and potential areas of weakness to support teachers in assessment and planning. A progression is then identified showing a breakdown of the small steps of learning and signposting where related teaching can be found within ESSENTIALMATHS referencing the learning sequence and step number. This includes links to earlier learning with Reception ESSENTIALMATHS and Essential Foundations for Counting (EFFC). Pre-requisite learning and opportunities for application are identified through highlighted rows in each progression.

Pre-requisite learning - learning that will be built on within the progression.

The link may be across domains and therefore make reference to another booklet in the series.

The link may be across strands and therefore make reference to another strand in this booklet.

Application

Learning is often highly connected and applications may be made across domains and contexts. Where this is the case, the sequence and step numbers are highlighted green so that teachers can decide whether to explicitly make these links or continue through the progression at any one point.

Fractions of quantities (discrete and continuous) including measures

Early understanding of fractions is based on identification of parts and wholes. There are close links with **Multiplication and Division** and it is essential that pupils are able to identify equal and unequal so that they can recognise equal parts of a whole. Pupils build on their understanding of division to find fractions of a set. Their understanding of the relative size of the part to the whole is developed through considering fractions of quantities both discrete and continuous and in a range of contexts, including measures.

Pre-requisite learning	EFFC: Classification and Comparison – notice and explain same and different	
	Pattern and Group Recognition – notice and copy groups, recognise equal groups	
	R: RLS4 – Pattern recognition, RLS5 – Classification	
RLS14 Doubling and Halving	Step 1	Learning to identify equal and unequal groups
	Step 2	Identify doubles and halves (including the context of pattern)
	Step 3	Explore the relationship between doubles and halves
	Step 4	Establish part, whole understanding where the parts are equal
Multiplication and Division: Understanding and Calculating Division		
Multiplication and division – equal or unequal groups (1LS26)		
Division – sharing and grouping (1LS30)		
1LS32 Fractions – Sharing into equal groups	Step 1	Finding equal parts of a whole (halves)
	Step 2	Finding equal parts of a whole (quarters)
	Step 3	Finding half of an amount
	Step 4	Finding a quarter of an amount
	Step 5	Finding halves and quarters of amounts in context
1LS33 Fractions – equal or unequal parts of shapes	Step 1	Identifying whether a shapes has been halved or not
	Step 2	Identifying whether a shape has been quartered or not
	Step 3	Identifying and finding halves of an amount in the context of shapes
	Step 4	Identifying and finding quarters of an amount in the context of shapes
1LS34 Fractions – of continuous quantities including capacity	Step 1	Fractions in the context of capacity
	Step 2	Measuring capacity
	Step 3	Fractions in the context of length
	Step 4	Fraction of a turn using the context of a clock face
2LS21 Double and halve one and two-digit numbers and amounts of money	Step 2	Halving multiples of ten
	Step 3	Halving two-digit numbers
	Step 4	Doubling and halving in the context of money

2LS28 Fractions – finding halves, quarters and thirds of amounts	Step 1	Splitting a whole into equal groups (halves, thirds and quarters) with Cuisenaire rods
	Step 2	Finding half of an amount linked to division and sharing a whole into two equal groups (2LS21)
	Step 3	Finding quarter and thirds of amounts linked to sharing (2LS26)
2LS29 Finding halves, quarters and thirds of shapes	Step 1	Recognising shapes split equally into halves, quarters and thirds
	Step 2	Finding $\frac{1}{2}$, $\frac{1}{4}$ and $\frac{1}{3}$ of 2-D shapes
	Step 3	Finding fractions of amounts within the context of shape
	Step 4	Finding what fraction of a shape is given
2LS30 Fractions – finding three-quarters of shapes and quantities	Step 1	Finding three quarters of a shape
	Step 2	Finding three quarters of an amount
	Step 3	Finding three quarters in the context of finding amounts within shapes
2LS31 Fractions – equivalence	Step 5	Exploring $\frac{1}{2}$, $\frac{2}{4}$ equivalence of amounts
2LS32 Fractions – of continuous quantities	Step 1	Counting fractions in context
	Step 2	Counting in fractions using a number line
	Step 3	Fractions of length
	Step 4	Fractions of capacity
	Step 5	Fractions of time
2LS34 Problem-solving for all operations (including fractions)	Step 5	Pictorial representation and part, part whole – fractions of amounts
	Step 6	Making connections between the numbers $\frac{1}{2}$, $\frac{1}{4}$ or $\frac{1}{3}$; the fraction words; fractions of amounts and fractions of shapes
	Step 7	Finding $\frac{3}{4}$ in the context of worded problems
3LS21 Fractions - Finding fractions of discrete and continuous quantities	Step 1	Exploring unit fractions and non-unit fractions
	Step 2	Find and write fractions of a discrete set of objects
	Step 3	Find and write fractions as continuous quantities
	Step 4	A range of fraction worded problems including multi-step
3LS24 Fractions – problem solving with unit and non-unit fractions	Step 1	Problem solving involving fractions of shapes
4LS21 Finding fractions of quantities	Step 1	Scaling unit fractions to find fractions of quantities
	Step 2	Exploring the models for finding fractions of quantities
	Step 3	Using the whole and number of equal parts to find fractions of quantities
	Step 4	Use fractional reasoning to solve whole unknown problems
	Step 5	Relating fractions to correspondence problems

4LS22 Fractions in the context of measure	Step 1	Recognising familiar fractions expressed as measures
	Step 2	Ordering measures involving fractions
	Step 3	Mixed worded problems involving a range of measures
5LS14 Compare and order fractions	Step 7	Order fractions of amounts
5LS18 Fraction problem solving	Step 2	Using bar modelling to represent a problem involving fractions
5LS31 Solving problems involving scaling by simple fractions	Step 2	Scaling by simple fractions
6LS23 Fraction problem solving	Step 1	Reason about fractions in problems
	Step 2	Solve mixed fraction problems

Comparing and ordering fractions including equivalence

Fractional understanding is developed to include understanding of fractions as numbers that can be positioned on a number line and compared. Initially, unit fractions are compared, noting that the greater the denominator, the smaller the fraction. Later, pupils are encouraged to use the numerator, denominator and known or calculated equivalent benchmarks to compare fractions. They need to understand that equal parts do not have to look the same but that equivalent fractions have the same numerical value. They also need to understand equivalence beyond a whole in mixed numbers and improper fractions.

Pre-requisite learning	EFFC: Comparison – notice and explain same and different	
	Pattern and Group Recognition – notice and copy groups, recognise equal groups	
	R: RLS3 – Comparison – Measures, RLS7 – Using counting to compare, RLS9 – Magnitude, ordering and estimating	
	1LS26: Multiplication and division – equal or unequal groups	
	1LS30: Division – sharing and grouping	
1LS32 Fractions – Sharing into equal groups	Step 1	Finding equal parts of a whole (halves)
	Step 2	Finding equal parts of a whole (quarters)
1LS33 Fractions – equal or unequal parts of shapes	Step 1	Identifying whether a shapes has been halved or not
	Step 2	Identifying whether a shape has been quartered or not
2LS28 Fractions – finding halves, quarters and thirds of amounts	Step 1	Splitting a whole into equal groups (halves, thirds and quarters) with Cuisenaire rods
2LS29 Finding halves, quarters and thirds of shapes	Step 1	Recognising shapes split equally into halves, quarters and thirds
2LS30 Fractions – finding $\frac{3}{4}$	Step 1	Finding three quarters of a shape
2LS31 Fractions – equivalence	Step 1	Exploring $\frac{1}{2}$, $\frac{2}{4}$ equivalence in shapes
	Step 2	Exploring $\frac{1}{2}$, $\frac{2}{4}$ equivalence using Cuisenaire rods
	Step 3	Exploring $\frac{1}{2}$, $\frac{2}{4}$ equivalence on a number line
	Step 4	Exploring $\frac{1}{2}$, $\frac{2}{4}$ equivalence within shapes
2LS32 Fractions – of continuous quantities	Step 1	Counting fractions in context
	Step 2	Counting in fractions using a number line
	Step 3	Fractions of length
	Step 4	Fractions of capacity
	Step 5	Fractions of time
2LS34 Problem-solving for all operations (including fractions)	Step 6	Making connections between the numbers $\frac{1}{2}$, $\frac{1}{4}$ or $\frac{1}{3}$; the fraction words; fractions of amounts and fractions of shapes
3LS21 Finding fractions of discrete and continuous quantities	Step 1	Exploring unit fractions and non-unit fractions
3LS22 Ordering and comparing fractions	Step 1	Finding fractions of shapes
	Step 2	Compare and order unit fractions

	Step 3	Compare and order fractions with the same denominator
3LS24 Fractions – problem solving with unit and non-unit fractions	Step 2	Ordering and comparing a range of fractions
	Step 3	Mixed word problems including multi-step
4LS16 Decimal numbers	Step 5	Decimal equivalence to tenths, hundredths, $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{3}{4}$
4LS23 Equivalent fractions, ordering and comparing	Step 1	Compare and order a range of fractions
	Step 2	Showing equivalence with accurate diagrams
	Step 3	Exploring families of common equivalent fractions
	Step 4	Create equivalent fractions by multiplying and dividing
5LS13 Equivalent fractions	Step 1	Identify and name fractions
	Step 2	Recognise and create equivalent fractions
	Step 3	Improper fractions and mixed numbers
	Step 4	Convert improper fractions to mixed numbers
	Step 5	Application of mixed numbers and improper fractions
5LS14 Compare and order fractions	Step 1	Compare fractions to $\frac{1}{2}$
	Step 2	Compare fractions using visual representations
	Step 3	Identify equivalent fractions where denominators are all multiples of the same number
	Step 4	Compare fractions whose denominators are all multiples of the same number
	Step 5	Order fractions whose denominators are all multiples of the same number
	Step 6	Order fractions whose denominators are all multiples of the same number where simplification can be used
	Step 7	Order fractions of amounts
6LS9 Equivalent fractions including simplifying fractions	Step 1	Create equivalent fractions in their simplest form
	Step 2	Simplify fractions
	Step 3	Identify common multiples
	Step 4	Change fractions to have common denominators
6LS10 Comparing and ordering fractions	Step 1	Reasoning about ordering fractions
	Step 2	Compare fractions using visual representations
	Step 3	Compare fractions with consideration of their proximity to 0, half or 1
	Step 4	Compare fractions by changing to a common denominator
	Step 5	Order fractions
	Step 6	Order fractions in a range of contexts
6LS12 Fraction and decimal equivalents	Step 1	Associate fractions with division
	Step 2	Decimal and fraction equivalence

Calculating with fractions

Understanding of fractions is developed further from counting in fractions so pupils recognise that non-unit fractions are built from repeated addition of the same unit fraction. Pupils then add and subtract fractions with the same denominator including across a whole. As understanding of equivalent fractions builds, pupils are then able to convert fractions to have a common denominator to be able to add and subtract.

Pupils will build on operational understanding of multiplication as repeated addition and scaling when multiplying whole numbers by proper fractions. They will also need to use their understanding of arithmetic laws to multiply mixed numbers by proper fractions. Pupils can overgeneralise the effect of multiplication and need careful teaching and models to understand that a whole number or a proper fraction multiplied by a proper fraction generates a smaller product. Pupils also learn to divide a fraction by a whole number, building on their understanding of division as sharing.

Pre-requisite learning	EFFC: Classification, comparison, group recognition & pattern	
	R: RLS7 – Using counting to compare, RLS10 – Regrouping the whole	
RLS14 Doubling and Halving	Step 3	Explore the relationship between doubles and halves
	Step 4	Establish part, whole understanding where the parts are equal
1LS26: Multiplication and division – equal or unequal groups		
1LS30: Division – sharing and grouping		
1LS32 Fractions – Sharing into equal groups	Step 1	Finding equal parts of a whole (halves)
	Step 2	Finding equal parts of a whole (quarters)
2LS28 Fractions – finding halves, quarters and thirds of amounts	Step 1	Splitting a whole into equal groups (halves, thirds and quarters) with Cuisenaire rods
2LS32 Fractions – of continuous quantities	Step 1	Counting fractions in context
	Step 2	Counting in fractions using a number line
Addition and Subtraction: Part whole and additive understanding for whole numbers		
3LS23 Adding and subtracting fractions with the same denominators	Step 1	Finding complements of 1
	Step 2	Adding fractions with the same denominator
	Step 3	Subtracting fractions with the same denominator
	Step 4	Applying the addition and subtraction of fractions with the same denominator
Addition and Subtraction: Mental addition – regrouping and Mental subtraction - regrouping		
4LS20 Add and subtract fractions with the same denominator	Step 1	Identify equal parts and whole and find complements of 1
	Step 2	Add and subtract fractions with no regrouping
	Step 3	Add fractions with regrouping
	Step 4	Subtract fractions with regrouping
5LS13 Equivalent fractions	Step 2	Recognise and create equivalent fractions
	Step 3	Improper fractions and mixed numbers
	Step 4	Convert improper fractions to mixed numbers

5LS15 Adding and subtracting fractions	Step 1	Add and subtract fractions with the same denominator
	Step 2	Add and subtract fractions whose denominators are all multiples of the same number
	Step 3	Add and subtract fractions >1 whose denominators are all multiples of the same number
	Step 4	Application of adding and subtracting fractions
Multiplication and Division Booklet: Multiplicative understanding with whole numbers 1LS27 and 3LS18		
5LS17 Multiplying fractions by whole numbers	Step 1	Multiply unit fractions by a whole number where the answer is <1
	Step 2	Multiply fractions by whole numbers where the answer is >1
	Step 3	Evaluate the effectiveness of representations to solve problems
	Step 4	Multiply mixed numbers by whole numbers
	Step 5	Multiply fractions by whole numbers in a range of contexts
5LS18 Fraction problem solving	Step 1	Combining learning about fractions to solve a problem
	Step 2	Using bar modelling to represent a problem involving fractions
6LS9 Equivalent fractions including simplifying fractions	Step 1	Create equivalent fractions in their simplest form
	Step 2	Simplify fractions
	Step 3	Identify common multiples
	Step 4	Change fractions to have common denominators
6LS11 Adding and subtracting fractions	Step 1	Use pictorial representations to show addition and subtraction of fractions
	Step 2	Application of adding and subtracting fractions
6LS21 Multiplying fractions (simple pairs of proper fractions)	Step 1	Understand the effect of multiplying with proper fractions
	Step 2	Represent multiplication with simple pairs of proper fractions
	Step 3	Multiply simple pairs of proper fractions
	Step 4	Apply multiplication of fractions in a range of contexts
6LS22 Divide proper fractions by whole numbers	Step 1	Understand the relationship between fractions and division
	Step 2	Understand division of fractions by whole numbers in context
	Step 3	Unitary fractions divided by whole numbers - word problems
	Step 4	Non-unitary fractions divided by whole numbers
	Step 5	Solving mixed problems
6LS23 Fraction problem solving	Step 1	Reason about fractions in problems
	Step 2	Solve mixed fraction problems

Decimals

Weak understanding of place value is often exposed when pupils start to learn about decimal numbers. Pupils need to have a clear understanding of the Base 10 number system. They need to build on secure understanding of whole number regrouping. For example, that 10 ones are equal to one ten. This will enable them to recognise that all place value columns (including decimal ones) are ten times the size of the ones to either side and make links to multiplication and division by powers of 10. Pupils will build an understanding of the value of digits within decimal numbers and the magnitude of numbers themselves so that they can be positioned appropriately on number lines. Secure number magnitude is imperative to a sound understanding of rounding.

Many links are built between decimal understanding. For example, in the context of measures and through relevant fraction equivalence.

The teaching progression for calculation with decimal numbers can be found in the relevant calculating booklet.

Pre-requisite learning	Understand whole number place value (Number and Place Value Booklet)	
3LS35 Place value and decimals - ten times bigger and ten times smaller	Step 1	Ten times smaller than 1 is a tenth
	Step 2	Recording tenths as decimal numbers
	Step 3	Finding unknown tenths from known wholes
	Step 4	Finding unknown wholes from known tenths
3LS36 Place value and decimals - partitioning	Step 1	Place value with decimal numbers
	Step 2	Regrouping decimal numbers
3LS37 Place value and decimals - estimation, comparing and rounding	Step 1	Order and compare place value of numbers with 1 decimal place
	Step 2	Estimate decimal numbers
	Step 3	Round decimal numbers to nearest whole numbers
3LS38 Measures – Measuring and problem solving	Step 1	Measuring and comparing lengths
	Step 2	Measuring and comparing mass, volume and capacity
	Step 3	Using and comparing mixed units
4LS9 Multiple and Divide a one or two digit number by 10 and 100	Step 1	Multiplying and dividing by 10 – investigating the effect
	Step 2	Multiplying and dividing by 10 – understanding the effect
	Step 3	Dividing by 10 – using decimal and fraction notation
	Step 4	Multiplying and dividing by 100 – understanding the effect, using decimal notation
4LS10 Measure – Conversion of units	Step 1	Converting between units of length – understanding the calculations needed
	Step 2	Converting between units of mass and capacity – understanding the calculations needed
4LS11 Measures – Compare, estimate and calculate	Step 1	Measuring, estimating and comparing length

4LS16 Decimal numbers	Step 1	Place value with decimal numbers
	Step 2	Regrouping decimal numbers
	Step 3	Order and compare place value of numbers with up to 2 decimal places
	Step 4	Estimate decimal numbers
	Step 5	Decimal equivalence to tenths, hundredths, $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{3}{4}$
	Step 6	Round decimal numbers to nearest whole numbers
	Step 7	x and ÷ by 10 and 100
4LS19 Problem solving involving decimals to two decimal places	Step 1	Non-routine problem solving using decimals – using a simpler case to solve a complex problem
	Step 2	Non-routine problem solving using decimals– finding all possibilities
5LS3 Place Value of Numbers with up to Three Decimal Places	Step 1	Recognising and comparing tenths and hundredths
	Step 2	Comparing numbers with up to 2 decimal places
	Step 3	Read, write and compare numbers with up to 3 decimal places
	Step 4:	Ordering numbers with up to 3 decimal places
	Step 5	Rounding decimals (2 decimal places to the nearest whole number and to 1 decimal place)
5LS4 Multiple and divide by 10, 100 and 1000	Step 1	Multiplying by 10, 100 and 1000
	Step 2	Multiplying by 10, 100 and 1000 (including decimals)
	Step 3	Dividing by 10, 100 and 1000 (including decimals)
	Step 4	Multiplying and dividing by 10, 100 and 1000
5LS7 Multiply and Divide mentally, using a range of strategies and drawing upon known facts	Step 2	Use known multiplication facts to derive others
5LS19 Measure: converting units of measure	Step 1	Decimal and fraction equivalences of metric measure
	Step 2	Converting from a larger unit to a smaller unit
	Step 3	Converting a from a smaller unit to a larger unit
5LS33 Fractions, decimals and percentages – problem solving	Step 1	Revising proportions and scaling
6LS1 Place value	Step 4	Comparing numbers including to 3 decimal places
6LS2 Multiple and Divide by 10, 100, 1000 giving answers up to three decimal places	Step 1	Develop fluency of multiplying and dividing by 10, 100 and 1000
	Step 2	Application in the context of measure
6LS12 Fraction and decimal equivalents	Step 2	Decimal and fraction equivalents
6LS13 Fractions, decimals and percentages	Step 1	Making connections between fraction, decimals and percentages
6LS26 Measures	Step 1	Clarify what is known about measures and converting them

Percentages

Building on understanding of fractions and decimals, pupils are taught that percentages are a further way of expressing proportions. Pupils building understanding of percentages as the number of parts per hundred and make links to previous knowledge to identify how calculate these.

Pre-requisite learning	Understand whole number place value (Number and Place Value Booklet)	
3LS35 Place value and decimals - ten times bigger and ten times smaller	Step 1	Ten times smaller than 1 is a tenth
	Step 2	Recording tenths as decimal numbers
3LS36 Place value and decimals - partitioning	Step 1	Place value with decimal numbers
3LS37 Place value and decimals - estimation, comparing and rounding	Step 1	Order and compare place value of numbers with 1 decimal place
	Step 2	Estimate decimal numbers
	Step 3	Round decimal numbers to nearest whole numbers
4LS9 Multiple and Divide a one or two digit number by 10 and 100	Step 1	Multiplying and dividing by 10 – investigating the effect
	Step 2	Multiplying and dividing by 10 – understanding the effect
	Step 3	Dividing by 10 – using decimal and fraction notation
	Step 4	Multiplying and dividing by 100 – understanding the effect, using decimal notation
4LS16 Decimal numbers	Step 1	Place value with decimal numbers
	Step 3	Order and compare place value of numbers with up to 2 decimal places
	Step 4	Estimate decimal numbers
	Step 5	Decimal equivalence to tenths, hundredths, $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{3}{4}$
	Step 6	Round decimal numbers to nearest whole numbers
	Step 7	x and ÷ by 10 and 100
5LS3 Place Value of Numbers with up to Three Decimal Places	Step 1	Recognising and comparing tenths and hundredths
	Step 2	Comparing numbers with up to 2 decimal places
5LS4 Multiple and divide by 10, 100 and 1000	Step 1	Multiplying by 10, 100 and 1000
	Step 2	Multiplying by 10, 100 and 1000 (including decimals)
	Step 3	Dividing by 10, 100 and 1000 (including decimals)
	Step 4	Multiplying and dividing by 10, 100 and 1000
5LS13 Equivalent fractions	Step 2	Recognise and create equivalent fractions

5LS22 Percentages	Step 1	Understand that per cent relates to the number of parts per hundred
	Step 2	Express parts per hundred as fractions, decimals and percentages
	Step 3	Use scaling to identify percentages
	Step 4	Identify common equivalent fractions, decimals and percentages
Fractions of quantities – Finding fractions of amounts		
5LS22 Percentages	Step 5	Calculate percentages by finding fractions of
	Step 6	Develop strategies to calculate percentages
5LS23 Problem Solving - Percentages	Step 1	Convert between fractions, decimals and percentages
	Step 2	Draw a model to calculate a percentage
	Step 3	Draw a model to calculate the whole
	Step 4	Solve a range of percentage problems
5LS33 Fractions, decimals and percentages – problem solving	Step 1	Revising proportions and scaling
	Step 3	Comparing proportions represented differently
	Step 4	Solving multi-step problems
6LS2 Multiple and Divide by 10, 100, 1000 giving answers up to three decimal places	Step 1	Develop fluency of multiplying and dividing by 10, 100 and 1000
6LS12 Fraction and decimal equivalents	Step 2	Decimal and fraction equivalents
6LS13 Fractions, decimals and percentages	Step 1	Making connections between fraction, decimals and percentages
	Step 2	Recall and use equivalences
6LS14 Calculating percentages	Step 1	Explore a range of strategies to calculate percentages
	Step 2	Solve problems involving the calculation of percentages
6LS26 Measures	Step 1	Clarify what is known about measures and converting them

Ratio and Proportion

Ratio and proportion builds from understanding of multiplication and division. Initially, this is through scaling and application of scaling particularly within the context of measures. Scaling continues to develop accurate scale drawing and further to identifying and using scale factors for similar shapes.

Pupils should be taught to solve problems involving the relative sizes of quantities where missing values can be found by using integer multiplication and division facts.

Links are made to the calculation of percentages and the use of percentages for comparison. In addition, pupils are supported to solve problems involving unequal sharing and grouping based on knowledge of fractions and multiples.

Pre-requisite learning	EFFC: Pattern and Group Recognition – notice and copy groups, recognise equal groups	
	R: RLS5 – Classification, RLS14 – Doubling and Halving	
	1LS26: Multiplication and division – equal or unequal groups	
1LS29 Multiplication – Scaling and Counting in 2s to 24	Step 1	Exploring scaling
	Step 2	Twice as long
	Step 3	Twice as many - patterns
	Step 4	Twice as many - recipe
2LS25 Multiplication Problem Solving	Step 1	Bar modelling for multiplication problems
	Step 2	Multiplication of measures
	Step 3	Multiplication and money (£ and p)
	Step 4	Mixed worded problems
3LS20 Multiplication and Division Worded Problems	Step 1	Worded problems based on equal groups
	Step 2	Rate worded problems involving money
	Step 3	Combination worded problems
	Step 4	Mixed bar model examples including measures and time
Pre-requisite learning	Multiplication Facts	
3LS27 Division Problem Solving – Sharing and Grouping	Step 1	Division by sharing – part whole problems
	Step 2	Division by sharing – comparison problems
	Step 3	Division by grouping
	Step 4	Using known facts to solve missing number problems
Pre-requisite learning	Fractions of quantities	
3LS29 Multiplication, Division and Fractions – Scaling and Correspondence Problems	Step 1	Solving integer scaling problems
	Step 2	Varying the unknown within correspondence problems
	Step 3	Mixed problems involving fractions

4LS7 Factor Pairs, Integer Scaling and Correspondence Problems	Step 2	Solving integer scaling and correspondence problems
	Step 3	Exploring correspondence problems
	Step 4	Solving a range of correspondence problems
	Step 5	Creating their own correspondence problems
5LS19 Measure – Converting Units of Measure	Step 2	Converting from a larger unit to a smaller unit
	Step 3	Converting from a smaller unit to a larger unit
	Step 4	Mixed conversion practice
	Step 5	Scaling measures
Pre-requisite learning	Percentages	
5LS22 Percentages	Step 3	Use scaling to identify percentages
5LS31 Solving Problems by Scaling by Simple Fractions and Rates	Step 1	Model scaling and correspondence problems
	Step 2	Scaling by simple fractions
	Step 3	Scaling by simple rates
	Step 4	Scale drawings
5LS32 Imperial and Metric Conversions	Step 3	Imperial units of measure - pints
	Step 4	Imperial units of measure - inches
	Step 5	Imperial units of measure - pounds
Pre-requisite learning	Comparing and ordering fractions including equivalence	
6LS24 Ratio and Proportion	Step 1	Simplifying ratios
	Step 2	Different types of comparisons: part to part and part to whole
	Step 3	Solving problems with ratio – given the ratio and one part or the whole
	Step 4	Solving problems with ratio – given the ratio and the difference
	Step 5	Solving problems with ratio – given the parts
	Step 6	Scaling problems
	Step 7	Scale factors
6LS27 Interpret Line Graphs and Pie Charts	Step 1	Understanding pie charts
	Step 2	Interpreting simple pie charts
	Step 5	Conversion graphs
6LS32 Constructing Pie Charts	Step 2/3	Constructing simple pie charts
6LS33 Statistical Representations	Step 2	More misleading graphs