

NUMBER AND PLACE VALUE

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 number and place value has been separated into three closely related strands of learning. These strands are:

- Place value
- Counting in powers of 10
- Number magnitude and rounding

Within each strand, a short introduction outlines the 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 refer to another booklet in the series.

The link may be across strands and therefore refer 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 blue so that teachers can decide whether to explicitly make these links or continue through the progression at any one point.

Place Value

Place value is the corner stone of understanding the number system and securing this is crucial to pupils' understanding of formal calculation methods.

Place value understanding is built through pupils developing an understanding of the value of digits within numbers and identifying patterns in the base 10 number system. This means that pupils must be secure that there are 10 digits used in the system (0-9) and that once 10 of any unit have been accumulated in a place value column then this will be regrouped to increase the next place value column by one. Pupils need to know the names of numbers and understand the value of digits within place value columns, recognising the importance of 0 as a place holder.

Learning within this progression, enables pupils to understand that each place value column is ten times the size of the one next to it. This links closely with learning in the **Multiplication and Division** booklet relating to **Multiplying and Dividing by 10, 100 and 1000**.

Within this progression of learning, pupils will deal only with place value of whole numbers. This is extended in the **Fraction Decimal Percentage** booklet to include place value with **Decimals**.

Pre-requisite learning	EFFC: All areas	
	R: RLS10 regrouping the whole	
	Year 1: 1LS5 Number to ten – regrouping the whole	
RLS13 Ten and some more	Step 1	Relating the numbers zero – ten to benchmarks of 0, 5 and 10
	Step 2	Finding ten – creating the unit of ten
	Step 3	Making ten and some more
	Step 4	Making ten and some more and writing them in digits
	Step 5	Naming ten and some more
	Step 6	Matching ten and some more, the number names and the number in digits
	Step 7	Finding one more / one less than a given number
RLS16 Counting beyond 20	Step 1	Counting to identify amounts
	Step 2	Using counting to compare quantities and find a precise difference
1LS10 Numbers to Twenty – Making 10 and Some More	Step 2	Making greater than 10
	Step 3	Building numbers to 20
	Step 4	Links between the language of eleven to twenty and ten and some more
	Step 5	Ten and some more using place value, base-10, equipment
	Step 6	Links between the language of eleven to twenty and the language of place value

1LS36 Numbers to one hundred – Place Value and digits, making tens and some more	Step 5	'Tens and some more' - part, whole
	Step 6	Making 'tens and some more' with money
	Step 7	Representing 2-digit numbers
1LS37 Place Value – estimation, ordering and comparison	Step 1	Ordering and comparing lengths to 100
2LS1 Numbers to 100: counting, place value, ordering and comparing	Step 1	Ten and some more
	Step 3	Counting to 100
	Step 4	Building numbers to 100
2LS2 Place Value – Making Tens and Some More	Step 1	Regrouping ten ones for one ten
	Step 2	Regrouping ten pennies for ten pence
	Step 3	Regrouping one ten for ten ones
	Step 4	Regrouping ten pence for ten pennies
2LS3 Place Value and Regrouping Two-Digit Numbers	Step 1	Identifying the place value in 2-digit numbers using place value cards and base-10
	Step 2	Identifying the place value in 2-digit numbers using a proportional (base-10) and non-proportional (money) model
	Step 3	Comparing representations of 2-digit numbers
	Step 4	Making regroupings of the same number in different ways
	Step 5	Identify missing parts of a regrouped number in a variety of models
2LS41 Place value and written calculation review	Step 4	'Hundreds and some more'
	Step 5	3-digit numbers – part whole
3LS1 Place Value and Regrouping	Step 1	10 ones are equal to 1 ten and 10 tens are equal to 1 hundred
	Step 2	Comparing representations of 3-digit numbers
	Step 3	Varying the order and practice
	Step 4	Regrouping 3-digit numbers flexibly
	Step 5	Securing equality (for example 3 hundreds are equal to 30 tens and 300 ones)
4LS1 Order and Compare Numbers Beyond 1000	Step 1	Understanding that 10 hundreds are equal to 1 thousand, 10 tens are equal to 1 hundred and 10 ones are equal to 1 ten
	Step 4	Regrouping 4-digit numbers flexibly
5LS1 Place Value and Rounding of Large Numbers	Step 1	Value of digits within large numbers
6LS1 Place Value	Step 1	Read and write large numbers

Counting in Powers of 10

Pupils will build on their understanding of the number system and its patterns. Initially, they will build on understanding of counting in multiples of 10 and often find it more difficult to count backwards than forwards.

Pupils will benefit from practice counting across place value boundaries and links can be made explicitly to place value regrouping.

Pre-requisite learning	EFFC: All areas	
	Confidence in counting in ones R: RLS2 counting – stable order; RLS6 counting – cardinality; RLS7 counting to compare; RLS8 spatial thinking Year 1: 1LS3 Numbers to ten – counting and comparison; 1LS10 Numbers to twenty – making ten and some more	
1LS24 Counting in 2s, 5s and 10s	Step 3	Counting in 10s and spotting patterns
	Step 4	Counting in coins – 2p, 5p and 10p
1LS36 Numbers to one hundred – Place Value and digits, making tens and some more	Step 1	Counting in 10s to 100
2LS4 Counting On and Back in Ones and Tens from any Number	Step 1	Highlighting the place value of an identified number
	Step 2	Counting on and back
	Step 3	Counting on and back in through benchmarks
	Step 4	Deepening the concept of unitisation across linear and grid models
2LS22 Times tables – 2s, 5s and 10s patterns and strategies (counting in 3s)	Step 2	Patterns and strategies for the 5- and 10-times tables
2LS41 Place value and written calculation review	Step 3	Counting in tens and hundreds to 1000
3LS2 Counting on and Back in Ones, Tens and Hundreds	Step 1	Counting on and back in tens with two-digit numbers (and crossing 100)
	Step 2	Counting on and back in tens and hundreds (2- and 3-digit numbers)
	Step 3	Regrouping through hundreds
	Step 4	Counting on and back in ones, tens and hundreds including regrouping
4LS1 Order and Compare Numbers Beyond 1000	Step 2	Finding 1000 more or less than a given number
5LS1 Place Value and Rounding of Large Numbers	Step 5	Counting in steps of powers of 10
6LS1 Place Value	Step 2	Counting and regrouping large numbers

Number Magnitude and Rounding

It is essential that pupils build an understanding of number magnitude – that is a sense of the value of numbers and where these sit within the number system. Pupils will need to compare numbers and begin to develop and use benchmarks so that they can reason about where numbers fit on number lines. Once pupils are able to compare numbers, they will be able to order them.

Pupils who have weak number magnitude may find it difficult to identify near numbers and are therefore unlikely to be able to round numbers with understanding and will often have difficulty with reading or using scales (in measures or on graphs).

In addition, without a sense of number magnitude, pupils will find it hard to approximate and estimate reasonable answers to calculations.

Pre-requisite learning	EFFC: Comparison	
	R: RLS2: counting – stable order; RLS6 counting – cardinality; RLS7 counting to compare; RLS8 spatial thinking	
RLS9 Magnitude - ordering and estimating	Step 1	Recognise that a count starts with nothing (zero) and increases equally by one each time
	Step 2	Order values in a linear way, noticing and comparing their positions to each other and key benchmarks
	Step 3	Practice the count – 1 more, 1 less
	Step 4	Estimate relative position using benchmark numbers
RLS16 Counting beyond 20	Step 3	Maintaining an understanding of number magnitude with numbers beyond 20
	Step 4	Understanding that the pattern in consecutive numbers continues, using one more and one less
1LS4 Numbers to Ten – Estimating and Ordering	Step 1	Ordering values
	Step 2	Ordering consecutive numbers
	Step 3	Linking counting and sequencing
1LS10 Numbers to Twenty – Making 10 and Some More	Step 1	Benchmarks of 0, 5 and 10 and their relationship to the numbers 1-10
1LS11 Numbers to Twenty – Estimating and Ordering, 1 More and 1 Less	Step 1	Estimating and comparing smaller and larger quantities
	Step 2	Estimating and comparing sets of different objects
	Step 3	1 more / 1 less - numbers ten to twenty
	Step 4	1 more / 1 less on a number line
	Step 5	Comparing and ordering numbers on a blank number track
	Step 6	Placing numbers 0-20 on a blank number line (number magnitude)
1LS36 Numbers to one hundred – Place Value and digits, making tens and some more	Step 2	Counting in 1s to and across 100

1LS37 Place Value, estimating, ordering and comparison	Step 2	Ordering and comparing values to 100
	Step 3	Ordering and comparing values in different representations to 100
	Step 4	Estimation and number magnitude
	Step 5	Using place value to estimate and order
2LS1 Numbers to 100: counting, place value, ordering and comparing	Step 2	Number magnitude to 20
	Step 5	Equivalence (+) and inequality (< and >)
	Step 6	Ordering and comparing numbers to 100 using < and >
2LS5 Representing, Ordering and Comparing Numbers to 100 and Quantities for Measures	Step 1	Ordering numbers
	Step 2	Ordering numbers represented in a variety of ways
	Step 3	< , > and = symbols
	Step 4	Ordering and comparing quantities for measures
2LS6 Estimation and Magnitude	Step 1	Placing numbers on a number line in the correct positions
	Step 2	Using benchmarks to estimate values on a number line
	Step 3	Placing numbers proportionally correctly on a blank number line using benchmarks
2LS9 Add and Subtract Numbers Mentally Using 1- and 2- Digit Numbers	Step 2	Finding the nearest multiple of ten
3LS3 Estimation, Magnitude and Rounding	Step 1	Use value of digits to compare and order numbers (recognise most significant digit)
	Step 2	Estimate the order of 3-digit numbers
	Step 3	Estimate number magnitude
	Step 4	Round numbers to nearest ten and hundred
3LS4 Measures – Comparison, Estimation and Magnitude	Step 1	Develop understanding of appropriate units
	Step 2	Reading scales
4LS2 Rounding, Estimation and Magnitude	Step 1	Estimate number magnitude
	Step 2	Identify and estimate numbers using different representations
	Step 3	Rounding numbers to the nearest 10, 100 or 1000
	Step 4	Comparing and rounding numbers to the nearest 10, 100 and 1000
4LS29 Negative numbers – counting through zero and calculating in context	Step 1	An introduction to negative numbers
	Step 2	Counting backwards through zero
5LS1 Place Value and Rounding of Large Numbers	Step 2	Number magnitude and conservation of a million
	Step 3	Comparing numbers
	Step 4	Ordering numbers
	Step 6	Rounding numbers

5LS2 Negative numbers	Step 1	Counting forwards and backwards across zero
	Step 2	Reading scales involving negative numbers
	Step 3	Application in context
6LS1 Place Value	Step 3	Comparing and ordering numbers
	Step 5	Negative numbers
	Step 6	Rounding numbers