

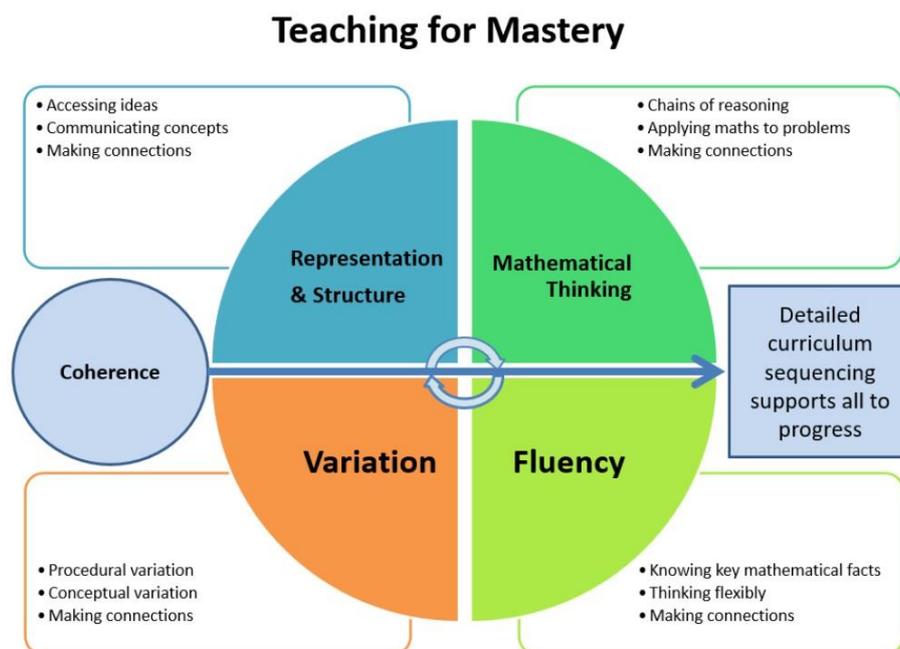


**Mathematics: A Guide to
Small Steps in Learning**

Small Steps Guidance

At Rockcliffe, we plan in small sequential steps to ensure all children can access learning while developing a deep and comprehensive understanding of mathematical concepts.

Research by the Education Endowment Foundation 'Improving Mathematics in Early Years and KS1' (EEF, 2020), provides strong support for careful planning, in which attention to next steps in teaching ensures explicit connections are made within and across lessons. Practitioner awareness of how young children progress through mathematical concepts has been proven to improve maths teaching and learning at all levels. Small steps are therefore an integral part of our approach to teaching for mastery.



NCETM, Teaching for Mastery

This document provides a basis for small steps that can be used to develop maths planning.

The small steps are a series of milestones that break down National Curriculum objectives into small, manageable steps.

All children should work together on a sequence of carefully planned 'small steps' to become fluent mathematicians who are able to reason and solve a variety of problems.

One step does not equal one lesson. You may be able to cover several small steps in one lesson, or a single step might require a whole lesson or several lessons before the learning is embedded.

It is important to use your teacher judgement when planning for, and progressing through, the small steps outlined for each area of maths; you may break learning down into further smaller steps, if needed.

Small steps shown in blue indicate key learning/concepts from the previous year group. It may be beneficial to revisit these small steps to ensure they are secure before introducing the next step, though this may not always be necessary.

Nursery Small Steps

Number, measures, shape and pattern.

Autumn Term

- Recognise the colour red
- Recognise the colour blue
- Recognise the colour yellow
- Recognise the colour green
- Recognise the colour purple
- Recognise colours
- Recognise objects that are the same shape or colour (e.g. buttons, shoes, towers)
- Match number shapes (numicon holes)
- Match the same size
- Recognise and create matching towers
- Match prints
- Sort by size
- Sort by shape
- Sort by colour
- Subitise number 1
- Count 1
- Numeral match number 1
- Subitise number 2 (dice patterns)
- Subitise number 2 (different patterns)
- Subitise number 2 (different sizes & patterns)
- Count 2 (say one number for each item)
- Number 2 (link numerals and amounts)
- Colour AB patterns
- Extend AB patterns
- Predict what will come next in patterns
- Extend ABC patterns
- Extend ABC colour patterns

Spring Term

- Subitise 3 (dice patterns)
- Subitise number 3 (different patterns)
- Subitise number 3 (different sizes & patterns)
- Count 3
- Numeral 3
- Composition of 3
- Recognise triangles
- Count 4
- Numeral 4
- Recognise squares and rectangles
- Composition of 4
- Counting 5
- Numeral 5
- Recognise pentagons
- Composition of 5
- Use 5 frame
- Count 6
- Introduce 10 frame to count 6
- Compare height (tall and short)
- Compare length (long and short)
- Mass (introduce balance scales)
- Mass (lighter or heavier)
- Capacity (full or empty)
- Capacity (nearly full or nearly empty)
- Capacity (comparing containers)

Summer Term

- Sequencing
- Position (on or under)
- Position (in or out)
- Position (front or behind)
- Comparing groups (more than)
- Comparing groups (fewer than)
- 2D shapes (circles, triangles, rectangles)
- 3D shapes (cubes, cuboids, cylinders and spheres)
- Composition of 3
- Composition of 4
- Number composition
- What comes after?
- What comes before?
- Numbers to 5

Reception Small Steps

Number & Numerical Patterns (Autumn Term)

- Subitising within 3
- Counting (sets that cannot be subitised)
- Explore how all numbers are made of 1s
- Composition of 3 & 4
- Subitise objects and sounds
- Comparison of sets 'just by looking'
- Use the language of comparison: more than and fewer than
- Counting (cardinality & 1:1 correspondence)
- The 'fiveness' of 5 using one hand and the die pattern for 5
- Comparison of sets by matching
- Use the language of comparison: more than, fewer than, an equal number
- Explore the concept of 'whole' and 'part'
- Composition of 3, 4 and 5
- Practise object counting skills
- Match numerals to quantities within 10
- Verbal counting beyond 20

Number & Numerical Patterns (Spring Term)

- Subitising within 5 (focus on die patterns)
- Match numerals to quantities within 5
- Counting (ordinality & the staircase pattern)
- See that each number one more than the previous number
- Composition of 5
- 6 & 7 as '5 a bit'
- Compare sets and use language of comparison: more than, fewer than, an equal number to
- Make unequal sets equal
- The staircase pattern and ordering numbers
- Ordering numbers to 8
- Use the language of less than
- Focus on 7
- Doubles – explore how some numbers can be made with 2 equal parts
- Sorting numbers according to attributes - odd and even numbers

Number & Numerical Patterns (Summer Term)

- Counting larger sets and things that cannot be seen
- Subitising to 6, including in structured arrangements
- Composition – '5 and a bit'
- Composition of 10
- Comparison – linked to ordinality
- Play track games
- Subitise to 5
- Automatic recall of bonds to 5
- Review composition of numbers to 10
- Comparison
- Number Patterns

Spatial Reasoning - Shape & Space

- Experience different viewpoints (visualising how things will appear when turned around and imagining how things might fit together)
- Use language of position and direction (position: 'in', 'on', 'under', direction: 'up', 'down', 'across').
- Use language of viewpoint ('in front of', 'behind', 'forwards', 'backward's - 'left' and 'right' to be used later as ideas develop)
- Represent spatial relationships (e.g. a map)
- Develop space awareness through construction
- Identify similarities between shapes
- Show awareness of properties of shapes
- Describe properties of shapes
- Develop an awareness of relationships between shapes

Measures & Pattern

- Recognise attributes (e.g. the stick is long, adults are tall)
- Compare size
- Compare mass
- Compare capacity
- Compare amounts of continuous quantities
- Show awareness of comparison in estimating and predicting
- Explore, copy and continue simple patterns
- Create patterns
- Compare indirectly
- Recognise the difference between the size of numbers and units
- Begin to use units to compare things
- Begin to use time to sequence events
- Begin to experience specific time durations

Year One Small Steps

Number and Place Value

Sort, count and represent objects
Count, read and write forwards from any number 0 to 10
Count, read and write backwards from any number 0 to 10
Count one more
Count one less
Use one-to-one correspondence to compare groups
Compare groups using language – equal, more/greater, less/ fewer
Use $<$ $>$ and $=$ symbols
Compare numbers
Order numbers
Use ordinal numbers (1st, 2nd, 3rd...)
Use a number line
Count forwards and backwards and write numbers to 20 in numerals and words.
Tens and ones
Count one more and one less up to 20
Compare and order groups of objects up to 20 $<$ $>$ $=$
Compare and order numbers up to 20.
Numbers to 50
Tens and ones
Represent numbers to 50
One more one less
Compare objects and numbers within 50
Order numbers within 50
Count in two's and fives
Counting to 100
Partitioning numbers
Comparing numbers to 100 $<$ $>$ $=$
Ordering numbers to 100
One more, one less to 100

Multiplication and Division

Count in tens
Make equal groups
Add equal groups
Make arrays
Make doubles
Make equal groups- grouping and sharing

Fractions

Find a half
Find a quarter

Geometry (position and direction)

Describe turns
Describe positions

Addition and Subtraction (Within 10 & 20)

Part whole model
Addition symbol
Fact families- addition facts
Number bonds for numbers up to 10, including systematic methods
Compare Number bonds
Addition- adding together, adding more
Finding a part
Subtraction, taking away, how many left?
Crossing out, Introducing the subtraction symbol
Fact families- 8 facts
Subtraction- counting back
Subtraction- Finding the difference
Comparing addition and subtraction statements
Add by counting on
Find and make number bonds
Add by making 10
Subtraction- not crossing 10
Subtraction- crossing 10
Related number facts
Compare number sentences

Measurement

Money

Recognising coins
Recognising notes
Counting coins

Length & Height

Compare lengths and heights
Measure lengths, including non-standard and standard measure

Mass & Capacity

Introduce weight and mass
Measure mass
Compare mass
Introduce capacity and volume
Measure capacity
Compare capacity

Time

Before and after
Dates
Time to the hour
Time to the half hour
Writing time
Comparing time

Geometry (properties of shapes)

Recognise, name and sort 3D shapes
Recognise, name and sort 2D shapes
Make patterns with 2D and 3D shapes

Year Two Small Steps

Number and Place Value

Counting forward and backwards within 20, then 50
Understanding tens and ones within 20, then 50
Compare numbers within 50
Count objects to 100 and read / write numerals and words
Represent numbers to 100 using a part-part-whole model and place value chart
Compare number and objects
Order objects and numbers
Count in 2s, 5s, 10s and 3s

Addition and Subtraction

Fact families – addition and subtraction bonds to 20
Check calculations
Compare number sentences
Related facts
Bonds to 100 (tens)
Add and subtract 1s
10 more and 10 less
Add and subtract 10s
Add by making 10
Add a 2-digit and 1-digit number – crossing ten
Subtraction - crossing 10
Subtract a 1-digit number from a 2-digit number – crossing ten
Add two 2-digit numbers – not crossing ten – add ones and add tens
Add two 2-digit numbers – crossing ten – add ones and add tens
Subtract a 2-digit number from a 2-digit number – not crossing ten
Subtract a 2-digit number from a 2-digit number – crossing ten – subtract ones and tens
Find and make number bonds
Bonds to 100 (tens and ones)

Multiplication & Division

Make equal groups
Add equal groups
Make arrays
Recognise equal groups
Make equal groups
Add equal groups
Multiplication sentences using the x symbol
Multiplication sentences from pictures
Use arrays
Make doubles
2, 5, 10 times tables
Make equal groups – sharing
Make equal groups – grouping
Divide by 2
Odd and even numbers
Divide by 5 and 10

Geometry (properties of shapes)

Recognise 2D and 3D shapes
Count sides on 2D shapes
Count vertices on 2D shapes
Draw 2D shapes
Lines of symmetry
Lines of symmetry – draw the whole
Sort 2D shapes
Make patterns with 2D shapes
Count faces, edges and vertices on 3D shapes
Sort 3D shapes
Make patterns with 3D shapes

Fractions

Make equal parts
Recognise a half
Find a half
Recognise a quarter
Find a quarter
Recognise a third
Find a third
Unit fractions
Non-unit fractions
Equivalence of a half and 2 quarters
Find three quarters
Count in fractions
Problem solving with fractions

Measurement

Money

Recognising coins and notes
Count money – pence
Count money – pounds (notes and coins)
Select money to make amounts
Make the same amount
Compare money
Find the total
Find the difference
Find change
Two-step problems

Length & Height

Compare length and heights
Measure length (cm and m)
Compare lengths
Order lengths
Four operations with lengths
Problems solving with lengths

Mass, Capacity & Temperature

Introduce weight and mass

Measure mass

Compare mass
Measure mass in grams
Measure mass in kilograms
Introduce capacity and volume

Measure capacity

Compare volume
Millilitres and litres
Temperature

Time

O'clock and half past
Quarter past and quarter to
Telling time to 5 minutes

Writing time

Hours and days
Find durations of time
Compare durations of time

Statistics

Make tally charts
Draw pictograms (1-1)
Interpret pictograms (1-1)
Draw pictograms (2,5,10)
Interpret pictograms (2,5,10)
Block diagrams

Geometry (position and direction)

Describe position

Problem solving with position
Describing movement
Describing turns
Describing movement and turns
Making patterns with shapes

Year Three Small Steps

Number and Place Value

Represent numbers to 100
Understand the place value of tens and ones
Understand the place value of hundreds
Represent numbers to 1000
Partition numbers into hundreds, tens and ones
Represent numbers on a number line to 1000
Find 1, 10 and 100 more and less than a given number
Compare objects / numbers to 1000
Order numbers
Count in 50s

Addition and Subtraction

Add and subtract multiples of 100 (apply number bonds to 10)
Add and subtract 1s
Add 2 digit and 1-digit numbers – crossing 10
Add and subtract 3 digit and 1-digit numbers – not crossing 10
Add 3-digit numbers and 1-digit numbers – crossing 10
Subtract 1-digit number from 2-digit number – crossing 10
Subtract 1-digit number from 3 digits – crossing 10
Add and subtract 3 digit and 2-digit numbers – not crossing 100
Add 3 digit and 2-digit numbers – crossing 100.
Subtract 2-digit numbers from 2-digit numbers – crossing 10
Subtract a 2-digit number from 3-digit number – crossing 100
Add ones and tens
Add and subtract 100s
Spot patterns

Multiplication & Division

Multiplication – equal groups
Using arrays
2 times table
5 times table
Make equal groups – sharing
Make equal groups – grouping
Divide by 2
Divide by 5
Divide by 10
Multiply by 3
Divide by 3
3 times table
Multiply by 4
Divide by 4
4 times table
Multiply by 8
Divide by 8
8 times table
Consolidate 2, 4 and 8 times tables.
Comparing statements
Related calculations
Multiply 2 digits by 1 digit
Divide 2 digits by 1 digit
Scaling
Listing possible combinations resulting from two groups of objects

Statistics

Make tally charts
Draw pictograms. – 2, 5 and 10 times tables
Interpret pictograms. – 2, 5 and 10 times tables
Pictograms – including 3, 4 and 8 times tables
Bar charts
Tables

Measurement

Money

Count money (pence)
Count money (pounds)
Understanding pounds and pence
Converting pounds and pence
Add money
Subtract money
Work out change

Length & Perimeter

Measure length – introducing millimetres
Measure length- metres
Equivalent lengths – metres and centimetres
Equivalent lengths – millimetres and centimetres
Compare lengths
Add lengths
Subtract lengths
Measure perimeter
Calculate perimeter

Mass & Capacity

Measure mass in kilograms and grams
Compare mass
Add and subtract mass
Measure capacity in litres and millilitres
Compare capacity
Add and subtract capacity

Time

Months and years
Hours in a day
Tell the time to 5 minutes
Tell the time to the minute
Use a.m. and p.m.
24-hour clock
Find durations
Compare durations
Find start and end times to the nearest minute
Measure time in seconds

Fractions

Make equal parts
Recognise and find a half, quarter and third/
Making the whole
Tenths
Count in tenths
Tenths as decimals
Fractions on a number line
Fractions of a set of objects
Equivalent fractions
Compare fractions
Order fractions
Add fractions
Subtract fractions

Geometry (properties of shapes)

Describe and make turns
Angle Turns
Right angles in shapes
Compare angles
Draw and measure straight lines accurately
Horizontal and vertical
Parallel and perpendicular
Recognise and describe 2D shapes
Draw Polygons
Recognise and describe 3D shapes
Make 3D shapes

Year Four Small Steps

Number and Place Value

Represent numbers to 1000
 Partition hundreds, tens and ones
 Represent numbers to 1000 on a number line
 Round numbers to the nearest 10 and 100
 Count in one 1000s
 Partition numbers into thousands, hundreds, tens and ones
 Represent numbers on a number line to 10,000
 Find 1, 10 and 100 more or less
 Find 1000 more or less
 Compare and order numbers
 Round to the nearest 1000
 Count in 25s
 Understand negative numbers
 Use Roman numerals to 100

Addition and Subtraction

Add and subtract 1s, 10s, 100s and 1,000s
 Add two 3-digit numbers - not crossing 10 or 100
 Add two 4-digit numbers – no exchange
 Add two 3-digit numbers - crossing 10 or 100
 Add two 4-digit numbers – one exchange
 Add two 4-digit numbers – more than one exchange
 Subtract a 3-digit number from a 3-digit number - no exchange
 Subtract two 4-digit numbers – no exchange
 Subtract a 3-digit number from a 3-digit number - exchange
 Subtract two 4-digit numbers – one exchange
 Subtract two 4-digit numbers – more than one exchange
 Efficient subtraction
 Estimate answers
 Checking strategies

Multiplication & Division

Multiply by 10
 Multiply by 100
 Divide by 10
 Divide by 100
 Multiply by 1 and 0
 Divide by 1 and itself
 Multiply and divide by 3
 The 3 times-table
 Multiply and divide by 6
 6 times table and division facts
 Multiply and divide by 9
 9 times table and division facts
 Multiply and divide by 7
 7 times table and division facts
 11 and 12 times-table
 Multiply 3 numbers
 Factor pairs
 Efficient multiplication
 Written methods
 Multiply 2-digits by 1-digit (without exchange)
 Multiply 2-digits by 1-digit (with exchange)
 Multiply 3-digits by 1-digit
 Divide 2-digits by 1-digit (with no remainders)
 Divide 2-digits by 1-digit
 Divide 3-digits by 1-digit
 Correspondence problems

Geometry (properties of shapes)

Identify angles
 Compare and order angles
 Triangles
 Quadrilaterals
 Lines of Symmetry
 Complete a symmetric figure

Fractions (including decimals)

What is a fraction?
 Unit and non-unit fractions
 Tenths
 Count in tenths
 Equivalent fractions
 Fractions greater than 1
 Count in fractions
 Add fractions
 Add 2 or more fractions
 Subtract fractions
 Subtract 2 fractions
 Subtract from whole amounts
 Fractions of a set of objects
 Calculate fractions of a quantity
 Problem solving – calculating fractions
Decimals
 Recognise tenths and hundredths
 Tenths as decimals
 Tenths on a place value grid
 Tenths on a number line
 Divide 1-digit by 10
 Divide 2-digits by 10
 Hundredths
 Hundredths as decimals
 Hundredths on a place value grid
 Divide 1 or 2-digits by 100
 Make a whole
 Write decimals
 Compare decimals
 Order decimals
 Round decimals
 Halves and quarters as decimals

Measurement

Money
 Pounds and pence
 Ordering money
 Estimating money
 Four operations
Length & Perimeter
 Equivalent lengths - m and cm
 Equivalent lengths - mm and cm
 Kilometres
 Add lengths
 Subtract lengths
 Measure perimeter
 Perimeter on a grid
 Perimeter of a rectangle
 Perimeter of rectilinear shapes
Area
 What is area?
 Counting squares
 Making shapes
 Comparing area
Time
 Hours, minutes and seconds
 Years, months, weeks and days
 Analogue to digital – 12 hour
 Analogue to digital – 24 hour
 Convert between different units of measure [e.g. hour to minute]

Statistics

Interpret charts
 Comparison, sum & difference
 Introducing line graphs
 Line graphs

Geometry (position and direction)

Describe position
 Draw on grid
 Move on a grid
 Describe movement on a grid