Mathematics

Marsh Green Primary School

Medium-Term Plans- Small Steps

Year 1 Autumn Term Small Steps and End Goals

Autumn Term

Number: Place Value (Within 10)

End Goals

- NC: count, read and write numbers to 100 in numerals
- NC: given a number, identify 1 more and 1 less
- NC: identify and represent numbers using objects and pictorial representations including the number line, and use the language of:
  equal to, more than, less than (fewer), most, least
- NC: read and write numbers from 1 to 20 in numerals and words.

Small Steps

- Sort, count and represent objects
- Recognise numbers as words and write numbers within 10
- Count forwards backwards from any number 0 to 10
- Count one more and one less
- Compare groups
- Compare groups and introduce symbols > < =
- Compare numbers
- Order objects and numbers

Number: Addition & Subtraction (Within 10)

End Goals

- NC: read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs
- NC: represent and use number bonds and related subtraction facts within 20
- NC: add and subtract one-digit including 0
- NC: solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ? - 9

Small Steps

- Part-whole models
- Write number sentences with the addition symbol
- Fact families (addition facts)
- Bonds for numbers within 10
- Adding together and adding more
- Addition problems
- Finding part of the whole
- Fact families (including subtraction, recognise the relationship between addition and subtraction)
- Subtraction - take away/cross out. How many left?
- Subtract on a number line

Geometry: Shape

End Goals

- NC: recognise and name common 2-D and 3-D shapes, including: 2-D shapes [for example, rectangles (including squares), circles and triangles] 3-D shapes [for example, cuboids (including cubes), pyramids and spheres].

Small Steps

- Recognise and name 3D shapes
- Sort 3D shapes (cube, cuboid, cylinder, pyramid, cone, sphere, hemisphere)
- Recognise and name 2D shapes
- Sort 2D shapes (circle, semi-circle, triangle, rectangle, square)
- Patterns with 2D and 3D shapes

Year 1 Spring Term Small Steps and End Goals

Spring Term

Number: Place Value (Within 20)

End Goals

- NC: given a number, identify 1 more and 1 less
- NC: identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least
- NC: read and write numbers from 1 to 20 in numerals and words.

Small Steps

- Count forward and backwards, understand, represent and write numbers to 20 in numerals and words
- Count one more and one less
- Use a number to 20
- Compare numbers to 20
- Order and order numbers to 20

Number: Addition & Subtraction (Within 20)

End Goals

- NC: read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs
- NC: represent and use number bonds and related subtraction facts within 20
- NC: add and subtract one-digit and two-digit numbers to 20, including 0
- NC: solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ? - 9

Small Steps

- Add by counting on
- Use knowledge of number bonds within 20
- Doubles and near doubles
- Subtraction (using known facts e.g. 6 - 4 = 2 so 16 - 4 = 12)
- Subtraction - finding the difference
- Related facts
- Missing number problems.

Number: Place Value (Within 50)

End Goals

- NC: count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number
- NC: count, read and write numbers to 100 in numerals; count in multiples of 2s, 5s and 10s
- NC: given a number, identify 1 more and 1 less
- NC: identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least
- NC: read and write numbers from 1 to 20 in numerals and words.

Small Steps

- Numbers to 50
- Counting forwards and backwards within 50 (in tens and ones)
- Count to 50 by grouping objects into tens and ones
- Partition into tens and ones
- Number line to 50
- One more one less

Measurement: Length & Height

End Goals

- NC: compare, describe and solve practical problems for lengths and heights [for example, long/short, longer/shorter, tall/short, double/half]
- NC: measure and begin to record lengths and heights

Small Steps

- Compare lengths and heights -
- Measuring lengths (non-standard units e.g. cubes, hands, straws
- Measure length - Introducing the ruler (in cm)

Measurement: Mass & Volume

End Goals

- NC: compare, describe and solve practical problems for mass / weight AND capacity and volume
- NC: measure and begin to record mass/weight AND capacity and volume

Small Steps

- Introduce mass -
- Measure mass
- Compare mass
- Compare volume
- Measure capacity
- Compare capacity

Year 1 Summer Term Small Steps and End Goals

Summer Term

Number: Multiplication & Division	Number: Fractions	Geometry: Position & Direction	Number: Place Value (Within 100)	Measurement: Money	Measurement: Time
End Goals • NC: solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.	**End Goals** • NC: recognise, find and name a half as 1 of 2 equal parts of an object, shape or quantity • NC: recognise, find and name a quarter as 1 of 4 equal parts of an object, shape or quantity	**End Goals** • NC: describe position, directions and movements, including whole, half, quarter and three-quarter turns.	**End Goals** • NC: count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number • NC: count, read and write numbers to 100 in numerals; count in multiples of 2s, 5s and 10s • NC: given a number, identify 1 more and 1 less • NC: identify and represent numbers using objects and pictorial representations including the number line, and use the language of correspondence	**End Goals** • NC: recognise and know the value of different denominations of coins and notes	**End Goals** • NC: compare, describe and solve practical problems for time • NC: measure and begin to record time (hours, minutes, seconds) • NC: sequence events in chronological order using language • NC: recognise and use language relating to dates, including days of the week, weeks, months and years • NC: tell the time to the hour and half past the hour and draw the hands on a clock face to show these times
Small Steps • Count in 2s, 10s and 5s (up to 50) • Recognise equal groups • Add equal groups • Make arrays • Make doubles • Make equal groups • Make equal groups	**Small Steps** • Recognise and find a half - • Recognise and find a quarter -	**Small Steps** • Describe turns • Describe position • Ordinal numbers - first, second etc.	**Small Steps** • Counting forwards and backwards within 100 in ones and tens • Partitioning numbers into tens and ones • The number line to 100 • One more, one less • Comparing numbers with the same number of 10s • Comparing any two numbers	**Small Steps** • Unitising e.g. one 5p coin represents a value of 5 pennies • Recognising coins • Recognising notes • Counting in coins	**Small Steps** • Before and after • Dates • Hours, minutes and seconds • Time to the hour • Time to the half hour

Year 2 Autumn Term Small Steps and End Goals

Autumn Term

Number: Place Value (Within 100)

End goals

- NC: read and write numbers to at least 100 in numerals and in words.
- NC: identify, represent and estimate numbers using different representations, including the number line
- NC: compare and order numbers from 0 up to 100; use <, > and = signs
- NC: count in steps of 2, 3, and 5 from 0, and in 10s from any number, forward and backward
- NC: use place value and number facts to solve problems.
- TAF = read scales in divisions of ones, twos, fives and tens
- TAF = partition any two-digit number into different combinations of tens and ones, explaining their thinking verbally, in pictures or using apparatus

- Numbers to 50 (forwards and back, tens and ones, comparing and ordering)
- Count to 100 making 10s
- Recognise tens and ones
- Place value chart
- Partition tens and ones (standard)
- Write numbers to 100 in words
- Flexible partitioning (non-standard)
- Number line to 100
- Multiples of 10- identify the previous and next multiple of 10.
- Compare objects and numbers to 100
- Order objects and numbers to 100
- Counting in 2, 5 and 10s.
- Count in 3s

Number: Addition & Subtraction

End goals

- NC: recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100
- NC: add and subtract numbers using various representations mentally, including: a two-digit and 1s, a two-digit and 10s, 2 two-digit numbers, 3 one-digit numbers
- NC: show that addition of 2 numbers is commutative and subtraction of one number from another is not
- NC: recognise and use the inverse relationship between addition and subtraction (use to check and solve missing number problems)
- NC: solve problems with addition and subtraction using representations, applying their increasing knowledge of mental and written methods
- TAF = add and subtract any 2 two-digit numbers using an efficient strategy, explaining their method verbally, in pictures or using apparatus (e.g. 48 + 35; 72 - 17)
- TAF = recall all number bonds to and within 10 and use these to reason with and calculate bonds to and within 20, recognising other associated additive relationships
  (e.g. If 7 + 3 = 10, then 17 + 3 = 20; if 7 - 3 = 4, then 17 - 3 = 14; leading to if 14 + 3 = 17, then 3 + 14 = 17, 17 - 14 = 3 and 17 - 3 = 14)

- Number bonds and fact families to 20
- Related facts and number bonds to 100 using scaling (tens e.g. 3 + 7 = 10 so 30 + 70 = 100)
- Add and subtract 1s
- Add by making 10 (bridging through 10)
- Add three 1-digit numbers
- Add to the next ten and across 10 using knowledge of number bonds to 10
- Subtract across and from a ten using knowledge of number bonds to 10 (bridging back) 10 more 10 less
- Add and subtract 10s
- Add two 2-digit numbers (not crossing and crossing 10)
- Subtract two 2 digits from 2 digit (not crossing and crossing 10)
- Addition and subtraction problems
- Compare addition and subtraction sentences (> < =)
- Missing number problems

Geometry: Shape

End goals

- NC: identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line
- NC: identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces
- NC: identify 2-D shapes on the surface of 3-D shapes
- NC: compare and sort common 2-D and 3-D shapes and everyday objects.
- TAF = name and describe properties of 2-D and 3-D shapes, including number of sides, vertices, edges, faces and lines of symmetry.

- Recognise 2-D and 3-D shapes
- Count sides on 2D shapes
- Count vertices on 2D shapes
- Draw 2D shapes
- Lines of symmetry
- Sort 2D shapes
- Count faces on 3D shapes
- Count edges on 3D shapes
- Count vertices on 3D shapes
- Sort 3D shapes
- Make patterns with 2D and 3D shapes

Year 2 Spring Term Small Steps and End Goals

Spring Term

Measurement: money

End Goals

- NC: recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value
- NC: find different combinations of coins that equal the same amounts of money.
- NC: solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change

Small steps

- Recognising coins and notes
- Count money - pence
- Count money - pounds and coins
- Choose notes and coins
- Make the same amount
- Compare amounts money
- Calculate with money
- Make a pound (number bonds to 100)
- Find change
- Two step problems

Number: Multiplication & Division

End Goals

NC: recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including odd and even numbers

NC: calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs

NC: show that multiplication of 2 numbers is commutative and division is not

NC: solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.

- TAF = recall multiplication and division facts for 2, 5 and 10 and use them to solve simple problems, demonstrating an understanding of commutativity as necessary

Small steps

Recognise equal groups
Make equal groups
Add equal groups
Multiplication sentences (introduce and use the symbol x)
Use arrays
Make equal groups - grouping
Make equal groups - sharing
2 times tables and divide by 2
Doubles and halves
Odd and even
10 times table and divide by 10
5 times table and divide by 5

Measurement: Length & Height

End Goals

- NC: choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); to the nearest appropriate unit using rulers (tape measure etc)
- NC: compare and order lengths, mass, volume/capacity and record the results using >, < and

Small steps

- Measure lengths cm
- Measure lengths m
- Compare lengths and heights
- Order lengths and heights
- Four operations with lengths -

Measurement: Mass, Capacity & Temperature

End Goals

- NC: choose and use appropriate standard units for mass (kg/g); temperature (°C); capacity (litres/ml) use scales, thermometers and measuring vessels
- NC: compare and order measures and record the results using >, < and =

Small steps

- Compare mass
- Measure mass in grams
- Measure mass in kilograms
- Four operations for mass
- Compare volume and capacity
- Measure in millilitres
- Measure in litres
- Four operations for volume and capacity
- Temperature

Year 2 Summer Term Small Steps and End Goals

Summer Term

Number: Fractions	Measurement: Time	Statistics	Geometry: Position and Direction
End Goals • NC: recognise, find, name and write fractions 1/3, 1/4, 2/4 and 3/4 of a length, shape, set of objects or quantity • NC: write simple fractions, for example 1/2 of 6 = 3 and recognise the equivalence of 2/4 and 1/2. • TAF = identify ¼ , 1/3, ½ , 2/4, ¾ of a number or shape, and know that all parts must be equal parts of the whole	**End Goals** • NC: compare and sequence intervals of time • NC: tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times. • NC: know the number of minutes in an hour and the number of hours in a day • TAF = read the time on a clock to the nearest 15 minutes	**End Goals** • NC: interpret and construct simple pictograms, tally charts, block diagrams and tables • NC: ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity • NC: ask and answer questions about totalling and comparing categorical data	**End Goals** • NC: order and arrange combinations of mathematical objects in patterns and sequences • NC: use mathematical vocabulary to describe position, direction and movement including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise).
Small steps • Introduction to parts and wholes • Equal and unequal parts • Recognise and find a half • Recognise and find a quarter • Recognise and find a third • Find the whole • Unit fractions • Non-unit fractions • Equivalence of ½ and 2/4 • Find 3 quarters • Count in fractions up to a whole	**Small steps** • O'clock and half past • Quarter past and quarter to • Tell the time past and to the hour • Telling time to 5 minutes • Minutes in an hour • Hours in a days	**Small steps** • Make tally charts and tables. • Block diagrams • Draw pictograms • Interpret pictograms • Draw pictograms (2, 5 ,10). • Interpret pictograms (2, 5, 10).	**Small steps** • Language of position • Describe movement • Describe turns • Describe movement and turns • Shape patterns with turns

Year 3 Autumn Term Small Steps and End Goals

Autumn Term

Number: Place Value (Within 100)

End goals

- NC: count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number
- NC: recognise the place value of each digit in a 3-digit number (100s, 10s, 1s)
- NC: compare and order numbers up to 1,000
- NC: identify, represent and estimate numbers using different representations
- NC: read and write numbers up to 1,000 in numerals and in words
- NC: solve number problems and practical problems involving these ideas

Small Steps

- Represent numbers to 100.
- Partition numbers to 100
- Number line to 200
- Hundreds
- Represent numbers to 1,000
- Partition numbers to 1,000
- Flexible partitioning of numbers to 1,000
- Hundreds, tens, and ones.
- Find 1, 10 or 100 more or less.
- Number line to 1,000
- Estimate on a number line to 1,000
- Compare numbers to 1,000
- Order numbers to 1,000
- Count in 50s

Number: Addition & Subtraction

End goals

- NC: add and subtract numbers mentally, including:
  - a three-digit number and 1s
  - a three-digit number and 10s
  - a three-digit number and 100s
- NC: add and subtract numbers with up to 3 digits, using formal written methods of columnar addition and subtraction
- NC: estimate the answer to a calculation and use inverse operations to check answers
- NC: solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction

Small Steps

- Apply number bonds within 10.
- Add and subtract 1s
- Add and subtract 10s
- Add and subtract 100s
- Spot the pattern
- Add 1s across a 10
- Add 10s across a 100
- Subtract 1s across a 10
- Subtract 10s across a 100
- Make connections
- Add two numbers (no exchange)
- Subtract two numbers (no exchange)
- Add two numbers (across a 10)
- Add two numbers (across a 100)
- Subtract two numbers (across a 10)
- Subtract two numbers (across a 100)
- Add 2-digit and 3-digit numbers
- Subtract a 2-digit from a 3-digit number
- Complements to 100
- Estimate answers
- Inverse operations
- Make decisions

Number: Multiplication & Division A

End goals

- NC: recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables
- NC: solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects

Small Steps

- Make equal groups
- Arrays
- Multiples of 2
- Multiples of 5 and 10.
- Sharing and grouping
- 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 tables
- 2, 4 and 8 times-tables

Year 3 Spring Term Small Steps and End Goals

Spring Term

Number: Multiplication & Division B

End Goals

- NC: write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods
- NC: solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects

Small Steps

1. Multiples of 10.
2. Related calculations
3. Reasoning about multiplication
4. Multiply a 2-digit by a 1-digit number (no exchange).
5. Multiply a 2-digit by a 1-digit number (with exchange).
6. Link multiplication & division
7. Divide a 2-digit number by a 1-digit number (no exchange).
8. Divide a 2-digit number by a 1-digit number (with exchange).
9. Divide a 2-digit number by a 1-digit number - flexible partitioning
10. Divide a 2-digit number by a 1-digit number - with remainders
11. Scaling
12. How many ways?

Measurement: Length & Perimeter

End Goals

- measure, compare, add and subtract lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)
- measure the perimeter of simple 2-D shapes

Small Steps

1. Measure in metres ad centimetres
2. Measure in millimetres
3. Measure in centimetres and millimetres
4. Metres, centimetres and millimetres
5. Equivalent lengths (metres and centimetres)
6. Equivalent lengths (centimetres and millimetres)
7. Compare lengths
8. Add lengths
9. Subtract lengths
10. What is perimeter?
11. Measure perimeter
12. Calculate perimeter.

Number: Fractions A

End Goals

- NC: count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10
- NC: recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators
- NC: recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators
- NC: recognise and show, using diagrams, equivalent fractions with small denominators

Small Steps

1. Understand the denominators of unit fractions
2. Compare and order unit fractions
3. Understand the numerators of non-unit fractions
4. Understand the whole
5. Compare and order non-unit fractions.
6. Fractions and scales
7. Fractions on a number line
8. Count in fractions on a number line
9. Equivalent fractions on a number line
10. Equivalent as bar models.

Measurement: Mass & Capacity

End Goals

- measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)

Small Steps

1. Use scales
2. Measure mass in grams
3. Measure mass in kilograms and grams
4. Equivalent masses (kilograms and grams)
5. Compare mass
6. Add and subtract mass
7. Measure capacity and volume in millilitres.
8. Measure capacity in litres and millilitres
9. Equivalent capacities and volume (litres and millilitres)
10. Compare capacity and volume
11. Add and subtract capacity and volume.

Year 3 Summer Term Small Steps and End Goals

Summer Term

Number: Fractions B

End Goals

- NC: add and subtract fractions with the same denominator within one whole [for example $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$]
- NC: compare and order unit fractions, and fractions with the same denominators
- NC: solve problems that involve all of the above

Small Steps

1. Add fractions
2. Subtract fractions
3. Partition the whole
4. Unit fractions of a set of objects
5. Non-unit fractions of a set of objects
6. Reasoning with fractions of an amount

Measurement- Money

End Goals

- add and subtract amounts of money to give change, using both £ and p in practical contexts

Small Steps

1. Pounds and pence
2. Convert pounds and pence
3. Add money
4. Subtract money
5. Find change

Measurement- Time

End Goals

- tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks
- estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, am/pm, morning, afternoon, noon and midnight
- know the number of seconds in a minute and the number of days in each month, year and leap year
- compare durations of events [for example, to calculate the time taken by particular events or tasks]

Small Steps

1. Roman numerals to 12.
2. Tell the time to 5 minutes
3. Tell the time to a minute
4. Read time on digital clocks
5. Use a.m. and p.m.
6. Years, months and days.
7. Days and hours
8. Hours and minutes- use start and end times
9. Hours and minutes- use durations
10. Minutes and seconds
11. Units of time
12. Solve problems with time

Geometry- Shape

End Goals

- draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them
- recognise angles as a property of shape or a description of a turn
- identify right angles, recognise that 2 right angles make a half-turn, 3 make three-quarters of a turn and 4 a complete turn; identify whether angles are greater than or less than a right angle
- identify horizontal and vertical lines and pairs of perpendicular and parallel lines

Small Steps

1. Turns and angles
2. Right angles
3. Compare angles
4. Measure and draw accurately
5. Horizontal and vertical
6. Parallel and perpendicular
7. Recognise and describe 2-D shapes
8. Draw polygons
9. Recognise and describe 3-D shapes
10. Make 3-D shapes.

Statistics

End Goals

- interpret and present data using bar charts, pictograms and tables
- solve one-step and two-step questions [for example 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables

Small Steps

1. Interpret pictograms
2. Draw pictograms
3. Interpret bar charts
4. Draw bar charts
5. Collect and represent data
6. Two-way tables

Year 4 Autumn Term Small Steps and End Goals

Autumn Term

Number: Place Value

End goals

- count in multiples of 6, 7, 9, 25 and 1,000
- find 1,000 more or less than a given number
- count backwards through 0 to include negative numbers
- recognise the place value of each digit in a four-digit number (1,000s, 100s, 10s, and 1s)
- order and compare numbers beyond 1,000
- identify, represent and estimate numbers using different representations
- round any number to the nearest 10, 100 or 1,000
- solve number and practical problems that involve all of the above and with increasingly large positive numbers
- read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of 0 and place value

Small Steps

1. Representing numbers to 1000
2. Partition numbers to 1000
3. Number line to 1000
4. Thousands
5. Representing numbers to 10,000
6. Partition numbers to 10,000
7. Flexibly partition numbers to 10,000
8. Find 1, 10, 100 and 1000 more or less
9. Number line to 10,000
10. Estimate on a number line to 10,000
11. Compare numbers to 10,000
12. Order numbers to 10,000
13. Roman numerals to 100
14. Round to the nearest 10
15. Round to nearest 100
16. Round to nearest 1000
17. Round to nearest 10, 100 and 1000

Number: Addition & Subtraction

End goals

- add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate
- estimate and use inverse operations to check answers to a calculation
- solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why

Small Steps

1. Add and subtract 1s, 10s, 100s and 1000s
2. Add up to two 4-digit numbers - no exchange
3. Add two 4-digit numbers with one exchange
4. Add two 4-digit numbers with more than 1 exchange
5. Subtract two 4-digit numbers - no exchange
6. Subtract two 4-digit numbers with one
7. Subtract two 4-digit numbers with more than 1 exchange
8. Efficient subtraction
9. Estimate answers
10. Checking strategies

Measurement- Area

End Goals

- find the area of rectilinear shapes by counting squares

Small Steps

1. What is area?
2. Count squares
3. Make shapes
4. Compare areas

Number: Multiplication & Division A

End goals

- recall multiplication and division facts for multiplication tables up to 12 × 12
- use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together 3 numbers

Small Steps

1. Multiples of 3.
2. Multiply and divide by 6
3. 6 times-table and division facts.
4. Multiple and divide by 9.
5. 9 times-table and division facts.
6. 3, 6 and 9 times tables
7. Multiply and divide by 7
8. 7 times-table and division facts.
9. 11 times-table and division facts.
10. 12 times-table and division facts.
11. Multiply by 1 and 0
12. Divide a number by 1 and itself
13. Multiply 3 numbers together

Year 4 Spring Term Small Steps and End Goals

Spring Term

Number: Multiplication & Division B

End goals

- recognise and use factor pairs and commutativity in mental calculations
- multiply two-digit and three-digit numbers by a one-digit number using formal written layout
- solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by 1 digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects

Small Steps

1. Factor pairs
2. Use factor pairs
3. Multiply by 10
4. Multiply by 100
5. Divide by 10
6. Divide by 100
7. Related facts – multiplication and division
8. Informal written methods for multiplication
9. Multiply a 2-digit number by a 1-digit number
10. Multiply a 3-digit number by a 1-digit number
11. Divide a 2-digit number by a 1-digit number (1)
12. Divide a 2-digit number by a 1-digit number (2)
13. Divide a 3-digit number by a 1-digit number
14. Correspondence problems
15. Efficient multiplication

Measurement: Perimeter

End goals

- measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres

Small Steps

1. Measure in kilometres and metres
2. Equivalent lengths (kilometres and metres)
3. Perimeter on a grid
4. Perimeter of a rectangle
5. Perimeter of rectilinear shapes
6. Find missing lengths in rectilinear shapes
7. Calculate perimeter of rectilinear shapes
8. Perimeter of regular polygons
9. Perimeter of polygons

Number: Fractions

End Goals

- recognise and show, using diagrams, families of common equivalent fractions
- count up and down in hundredths; recognise that hundredths arise when dividing an object by 100 and dividing tenths by 10
- solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number
- add and subtract fractions with the same denominator
- recognise and write decimal equivalents of any number of tenths or hundreds
- recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$

Small Steps

1. Understand the whole
2. Count beyond 1
3. Partition a mixed number
4. Number lines with mixed numbers
5. Compare and order mixed numbers
6. Understand improper fractions
7. Convert mixed numbers to improper fractions
8. Convert improper fractions to mixed numbers
9. Equivalent fractions on a number line
10. Equivalent fraction families
11. Add two or more fractions
12. Add fractions and mixed numbers
13. Subtract two fractions
14. Subtract from whole amounts
15. Subtract from mixed numbers

Number: Decimals A

- find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths

Small Steps

1. Tenths as fractions
2. Tenths as decimals
3. Tenths on a place value chart
4. Tenths on a number line
5. Divide a 1-digit number by 10
6. Divide a 2-digit number by 10
7. Hundredths as fractions
8. Hundredths as decimals Hundredths on a place value chart
9. Divide a 1- or 2-digit number by 100

Year 4 Summer Term Small Steps and End Goals

Summer Term

Number: Decimals B

End Goals

- round decimals with 1 decimal place to the nearest whole number
- compare numbers with the same number of decimal places up to 2 decimal places
- solve simple measure and money problems involving fractions and decimals to 2 decimal places.

Small Steps

1. Make a whole with tenths
2. Make a whole with hundredths
3. Partition decimals
4. Flexibly partition decimals
5. Compare decimals
6. Order decimals
7. Round to the nearest whole number
8. Halves and quarters as decimals

Measurement: Money

End Goals

- estimate, compare and calculate different measures, including money in pounds and pence

Small Steps

1. Write money using decimals
2. Convert between pounds and pence
3. Compare amounts of money
4. Estimate with money
5. Calculate with money
6. Solve problems with money

Measurement: Time

End Goals

- read, write and convert time between analogue and digital 12- and 24-hour clocks
- solve problems involving converting from hours to minutes, minutes to seconds, years to months, weeks to days

Small Steps

1. Years, months, weeks and days
2. Hours, minutes and seconds
3. Convert between analogue and digital times
4. Convert to the 24-hour clock
5. Convert from the 24-hour clock

Geometry- Shape

End Goals

- compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes
- identify acute and obtuse angles and compare and order angles up to 2 right angles by size
- identify lines of symmetry in 2-D shapes presented in different orientations
- complete a simple symmetric figure with respect to a specific line of symmetry

Small Steps

1. Understand angles as turns
2. Identify angles
3. Compare and order angles
4. Triangles
5. Quadrilaterals
6. Polygons
7. Lines of symmetry
8. Complete a symmetric figure

Statistics

End Goals

- interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs
- solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs

Small Steps

1. Interpret charts
2. Comparison, sum and difference
3. Interpret line graphs
4. Draw line graphs

Geometry: Position & Direction

End Goals

- describe positions on a 2-D grid as coordinates in the first quadrant
- describe movements between positions as translations of a given unit to the left/right and up/down
- plot specified points and draw sides to complete a given polygon

Small Steps

1. Describe position using coordinates
2. Plot coordinates
3. Draw 2-D shapes on a grid
4. Translate on a grid
5. Describe translation on a grid

Year 5 Autumn Term Small Steps and End Goals

Autumn Term

Number: Place Value

End goals

- read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit
- count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000
- round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 100,000
- solve number problems and practical problems that involve all of the above
- read Roman numerals to 1,000 (M) and recognise years written in Roman numerals

Small Steps

1. Roman numerals to 1,000
2. Numbers to 10,000
3. Numbers to 100,000
4. Numbers to 1,000,000
5. Read and write numbers to 1,000,000
6. Powers of 10
7. 10/100/1,000/10,000/100,000 more or less
8. Partition numbers to 1,000,000
9. Number line to 1,000,000
10. Compare and order numbers to 100,000
11. Compare and order numbers to 1,000,000
12. Round to the nearest 10, 100 or 1,000
13. Round within 100,000
14. Round within 1,000,000

Number: Addition & Subtraction

End goals

- add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)
- add and subtract numbers mentally with increasingly large numbers
- use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy
- solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why

Small Steps

1. Mental strategies
2. Add whole numbers with more than four digits
3. Subtract whole numbers with more than four digits
4. Round to check answers
5. Inverse operations (addition and subtraction)
6. Multi-step addition and subtraction problems
7. Compare calculations
8. Find missing numbers

Number: Multiplication & Division A

End goals

- identify multiples and factors, including finding all factor pairs of a number, and common factors of 2 numbers
- know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers
- establish whether a number up to 100 is prime and recall prime numbers up to 19
- multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers
- multiply and divide numbers mentally, drawing upon known facts
- divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context

Small Steps

1. Multiples
2. Common multiples
3. Factors
4. Common factors
5. Prime numbers
6. Square numbers
7. Cube numbers
8. Multiply by 10, 100 and 1,000
9. Divide by 10, 100 and 1,000
10. Multiples of 10, 100 and 1,000

Number: Fractions A

End Goals

- compare and order fractions whose denominators are all multiples of the same number
- identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths
- recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number

  [for example, $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$]
- add and subtract fractions with the same denominator, and denominators that are multiples of the same number

Small Steps

1. Find fractions equivalent to a unit fraction
2. Find fractions equivalent to a non-unit fraction
3. Recognise equivalent fractions
4. Convert improper fractions to mixed numbers
5. Convert mixed numbers to improper fractions
6. Compare fractions less than 1
7. Order fractions less than 1
8. Compare and order fractions greater than 1
9. Add and subtract fractions with the same denominator
10. Add fractions within 1
11. Add fractions with total greater than 1
12. Add to a mixed number
13. Add two mixed numbers
14. Subtract fractions
15. Subtract from a mixed number
16. Subtract from a mixed number - breaking the whole
17. Subtract two mixed numbers

Year 5 Spring Term Small Steps and End Goals

Spring Term

Number: Multiplication & Division B	Number: Fractions B	Number: Decimals & Percentages	Measurement: Perimeter	Statistics
End goals • multiply and divide whole numbers and those involving decimals by 10, 100 and 1,000 • recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3}) • solve problems involving multiplication and division, including using their knowledge of factors and multiples, squares and cubes • solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign • solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates	**End goals** • multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams	**End Goals** • find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths	**End goals** • measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres • find the area of rectilinear shapes by counting squares	**End Goals** • solve comparison, sum and difference problems using information presented in a line graph • complete, read and interpret information in tables, including timetables
Small Steps 1. Multiply up to a 4-digit number by a 1-digit number 2. Multiply a 2-digit number by a 2-digit number (area model) 3. Multiply a 2-digit number by a 2-digit number 4. Multiply a 3-digit number by a 2-digit number 5. Multiply a 4-digit number by a 2-digit number 6. Solve problems with multiplication 7. Short division 8. Divide a 4-digit number by a 1-digit number 9. Divide with remainders. 10. Efficient division. 11. Solve problems with multiplication and division.	**Small Steps** 1. Multiply a unit fraction by an integer. 2. Multiply a non-unit fraction but an integer. 3. Multiply a mixed number by an integer. 4. Calculate a fraction of a quantity. 5. Fraction of an amount. 6. Find the whole. 7. Use fractions as operators.	**Small Steps** 1. Decimals up to 2 decimal places 2. Equivalent fractions and decimals (tenths) 3. Equivalent fractions and decimals (hundredths) Equivalent fractions and decimals 4. Thousandths as fractions 5. Thousandths as decimals Thousandths on a place value chart 6. Order and compare decimals (same number of decimal places) 7. Order and compare any decimals with up to 3 decimal places 8. Round to the nearest whole number Round to 1 decimal place 9. Understand percentages as fractions 10. Percentages as decimals 11. Equivalent fractions, decimals and percentages	**Small Steps** 1. Perimeter of rectangles 2. Perimeter of rectilinear shapes. 3. Perimeter of polygons. 4. Area of rectangles. 5. Area of compound shapes. 6. Estimate area.	**Small Steps** 1. Draw line graphs 2. Read and interpret line graphs. 3. Read and interpret tables. 4. Two-way tables. 5. Read and interpret timetables.

Year 5 Summer Term Small Steps and End Goals

Summer Term

Geometry: Shape

End goals

- identify 3-D shapes, including cubes and other cuboids, from 2-D representations
- know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles
- draw given angles, and measure them in degrees (°)

Identify:

- angles at a point and 1 whole turn (total 360°)
- angles at a point on a straight line and half a turn (total 180°)
- other multiples of 90°
- use the properties of rectangles to deduce related facts and find missing lengths and angles
- distinguish between regular and irregular polygons based on reasoning about equal sides and angles

Small Steps

1. Understand and use degrees
2. Classify angles
3. Estimate angles
4. Measure angles up to 100°
5. Draw lines and angles accurately
6. Calculate angles around a point
7. Calculate angles on a straight line
8. Lengths and angles in shapes
9. Regular and irregular polygons
10. 3-D shapes

Geometry: Position & Direction

End goals

- identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed

Small Steps

- Read and plot coordinates.
- Problem solving with coordinates.
- Translation.
- Translation with coordinates.
- Lines of symmetry.
- Reflection in horizontal and vertical lines.

Number: Decimals

End Goals

- round decimals with 1 decimal place to the nearest whole number
- compare numbers with the same number of decimal places up to 2 decimal places
- solve simple measure and money problems involving fractions and decimals to 2 decimal places

Small Step

1. Use known facts to add and subtract decimals within 1
2. Complements to 1
3. Add and subtract decimals across 1
4. Add decimals with the same number of decimal places
5. Subtract decimals with the same number of decimal places
6. Add decimals with different numbers of decimal places
7. Subtract decimals with different numbers of decimal places
8. Efficient strategies for adding and subtracting decimals
9. Decimal sequences Multiply by 10, 100 and 1,000
10. Divide by 10, 100 and 1,000
11. Multiply and divide decimals - missing values

Number: Negative Numbers

End goals

- interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through 0

Small Steps

1. Understand negative numbers.
2. Count through zero in 1s.
3. Count through zero in multiples.
4. Compare and order negative numbers.
5. Find the difference.

Measurement: Converting Units

End Goals

- read, write and convert time between analogue and digital 12- and 24-hour clocks
- solve problems involving converting from hours to minutes, minutes to seconds, years to months, weeks to days
- estimate, compare and calculate different measures, including money in pounds and pence
- convert between different units of measure [for example, kilometre to metre; hour to minute]

Small Steps

1. Kilograms and kilometres
2. Millimetres and millilitres
3. Convert units of length
4. Convert between metric and imperial units
5. Convert units of time
6. Calculate with timetables

Measurement: Volume

End Goals

Small Steps

1. Cubic centimetres Compare volume
2. Estimate volume Estimate capacity

Year 6 Autumn Term Small Steps and End Goals

Autumn Term

Number: Place Value	Number: Addition & Subtraction, Multiplication & Division	Measurement: Converting Units	Statistics	Geometry: Position and Direction
End goals • read, write, order and compare numbers up to 10 000 000 and determine the value of each digit • round any whole number to a required degree of accuracy • use negative numbers in context, and calculate intervals across zero • solve number and practical problems that involve all of the above.	**End goals** • multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication • divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context • divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context • perform mental calculations, including with mixed operations and large numbers • identify common factors, common multiples and prime numbers • use their knowledge of the order of operations to carry out calculations involving the four operations • solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why • solve problems involving addition, subtraction, multiplication and division • use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy	**End goals** • solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate • use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places • convert between miles and kilometres	**End goals** • interpret and construct pie charts and line graphs and use these to solve problems • calculate and interpret the mean as an average.	**End Goals** • describe positions on the full coordinate grid (all four quadrants) • draw and translate simple shapes on the coordinate plane, and reflect them in the axes
Small Steps • Numbers to 10,000 • Numbers to 100,000 • Numbers to 1,000,000 • Numbers to 10 million • Compare and order any number • Round numbers to 10, 100 and 1,000 • Round any number • Negative numbers	**Small Steps** • Add / subtract whole numbers with more than 4 digits • Use inverse operations (addition and subtraction) • Solve multi-step addition and subtraction problems Understand short multiplication written methods • Understand long multiplication written methods • Understand short division • Understand long division • Find factors of numbers • Find common factors and multiples • Find prime numbers to 100 • Find square and cube numbers • Use mental calculations and estimation • Reason from known facts	**Small Steps** • Understand metric units • Convert metric measures • Miles and kilometres • Use imperial measures	**Small Steps** • Read and interpret line graphs • Draw line graphs and use to solve problems • Name the parts of a circle • Read, interpret and draw pie charts • Calculate the mean	**Small Steps** • Identify co-ordinates in the first quadrant • Identify co-ordinates in all four quadrants • Translations • Reflections

Year 6 Spring Term Small Steps and End Goals

Spring Term

Number: Fractions A End Goals	Number: Fractions A End Goals	Number: Ratio End goals	Measurement: Area and perimeter End goals	Number: Decimals End Goals	Number: Algebra End Goals
• Use common factors to simplify fractions; use common multiples to express fractions in the same denomination. • Compare and order fractions, including fractions >1. • Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions.	• Multiply simple pairs of proper fractions, writing the answer in its simplest form (e.g. 1/4 × 1/2 = 1/8). • Divide proper fractions by whole numbers (e.g. 1/3 ÷ 2 = 1/6).	• Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts. • Solve problems involving similar shapes where the scale factor is known or can be found. • Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.	• Recognise that shapes with the same areas can have different perimeters and vice versa. • Recognise when it is possible to use formulae for area and volume of shapes. • Calculate the area of parallelograms and triangles. • Calculate, estimate and compare volume of cubes and cuboids using standard units, including cm3, m3 and extending to other units (mm3, km3).	• Identify the value of each digit in numbers given to 3 decimal places and multiply numbers by 10, 100 and 1,000 giving answers up to 3 decimal places. • Multiply one-digit numbers with up to 2 decimal places by whole numbers. • Use written division methods in cases where the answer has up to 2 decimal places. • Solve problems which require answers to be rounded to specified degrees of accuracy.	• Use simple formulae. • Generate and describe linear number sequences. • Express missing number problems algebraically. • Find pairs of numbers that satisfy an equation with two unknowns. • Enumerate possibilities of • combinations of two variables.
Small Steps	**Small Steps**	**Small Steps**	**Small Steps**	**Small Steps**	**Small Steps**
• Simplify fractions. • Fractions on a number line. • Compare & order (denominator). • Compare & order (numerator). • Add & subtract fractions (1). • Add & subtract fractions (2). • Adding fractions. • Subtracting fractions. • Mixed addition and subtraction.	• Multiply fractions by integers. • Multiply fractions by fractions. • Divide fractions by integers (1). • Divide fractions by integers (2). • Four rules with fractions. • Fraction of an amount. • Finding the whole.	• Use ratio language. • Ratio and fractions. • Introducing the ratio symbol. • Calculating ratio. • Using scale factors. • Calculating scale factors. • Ratio and proportion problems.	• Shapes - same area. • Area and perimeter. • Area of a triangle (1). • Area of a triangle (2). • Area of a triangle (3). • Area of a parallelogram. • Volume - counting cubes. • Volume of a cuboid	• Three decimal places. • Multiply by 10, 100 and 1,000. • Divide by 10, 100 and 1,000. • Multiply decimals by integers. • Divide decimals by integers. • Division to solve problems. • Decimals as fractions. • Fractions to decimals (1). • Fractions to decimals (2).	• Find a rule - 1 step. • Find a rule - 2 step. • Use an algebraic rule. • Substitution. • Formulae. • Word problems. • Solve simple one step equations. • Solve two step equations. • Find pairs of values. • Enumerate possibilities.

Year 6 Summer Term Small Steps and End Goals

Summer Term

Number: Fractions, Decimals and Percentages
End goals

- Solve problems involving the calculation of percentages [for example, of measures and such as 15% of 360] and the use of percentages for comparison.
- Recall and use equivalences between simple fractions, decimals and percentages including in different contexts.

Small Steps

- Fractions to percentages.
- Equivalent FDP.
- Percentage of an amount (1).
- Percentage of an amount (2).
- Percentages -missing values.
- Percentage increase and decrease.
- Order FDP.

Geometry: Shape
End goals

-Draw 2-D shapes using given dimensions and angles.
- Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals and regular polygons.
- Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.
- Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius.

Small Steps

- Measure with a protractor.
- Introduce angles.
- Calculate angles.
- Vertically opposite angles.
- Angles in a triangle.
- Angles in a triangle - special cases.
- Angles in a triangle - missing angles.
- Angles in special quadrilaterals.
- Angles in regular polygons.
- Draw shapes accurately.
- Nets of 3D shapes

Themed projects, Consolidation and problem Solving