

Autumn 1

Number and Place Value

Prior Learning to Activate:

- Place value to 1,000,000
- Reading, writing, ordering and comparing numbers
- Rounding to powers of 10
- Number lines and estimating
- Multiplying/dividing by 10, 100 and 1,000
- Negative numbers in context

Skills focus:

- Read, write, order and compare numbers to 10 million
- Identify the value of each digit
- Use number lines to locate and estimate numbers
- Round whole numbers to a required degree of accuracy
- Understand negative numbers and intervals across zero
- Recognise the relationship between digits when multiplying/dividing by powers of 10
- Apply place-value understanding to problem solving

Key vocabulary:

place value, digit, numeral, million, hundred-thousand, partition, compare, order, round, estimate, interval, power of

Sentence stems:

The value of the digit ___ is...
 ___ is greater than ___ because...
 I rounded ___ to ___ because...

Four Operations

Prior Learning to Activate:

- Year 5 written methods
- Times tables and division facts
- Factors and multiples
- Prime numbers
- Mental calculation strategies
- Inverse operations
- Estimation

Skills focus:

- Add and subtract increasingly large numbers
- Multiply up to 4-digit numbers by 2-digit numbers
- Use short and long division
- Interpret remainders
- Use mental strategies efficiently
- Apply inverse operations
- Solve multi-step problems

Key vocabulary:

operation, calculation, inverse, estimate, efficient, factor, multiple, prime, composite, product, sum, difference, quotient, dividend, divisor, remainder

Sentence stems:

I estimated ___, so I expect the answer to be...
 The inverse of ___ is...
 The remainder represents...

Possible resources:

Place value charts
 Place value counters
 Dienes
 Number cards
 Number lines

Possible misconceptions:

- Confusing digit value and place value
- Misreading numbers with 0s
- Difficulty with numbers beyond one million

Possible resources:

Place value counters
 Base 10
 Multiplication grids
 Bar models / Part whole models
 Times table resources

Possible misconceptions:

- Misaligning digits
- Losing place value when exchanging
- Treating remainders incorrectly.
- Assuming the longest method is always the best choice
- Forgetting to include zero placeholders

Strengthening:

- Revisit numbers to 1 million
- Use concrete materials
- Build and partition numbers before recording

Deepening:

- Solve multi-condition place-value problems
- Investigate patterns
- Create numbers satisfying given conditions

Strengthening:

- Use place value grids consistently
- Start with part-completed calculations
- Use worked examples with smaller numbers
- Guided group modelling with concrete materials

Deepening:

- Compare methods for efficiency
- Find and explain errors
- Determine whether an answer is possible
- Solve using more than one method

SATs Application:

Missing-digit questions
 Ordering and comparing
 Number-line reasoning
 Multi-condition questions
 Rounding and estimation

SATs Application:

Arithmetic
 Multi-step reasoning
 Missing-number problems
 Problems requiring operation selection
 Calculation checking

Ready to Progress Link:

6NPV–1 Understand the relationship between powers of 10 from 1 hundredth to 10 million, and use this to make a given number 10, 100, 1,000, 1 tenth, 1 hundredth or 1 thousandth times the size (multiply and divide by 10, 100 and 1,000).
 6NPV–2 Recognise the place value of each digit in numbers up to 10 million, including decimal fractions, and compose and decompose numbers up to 10 million using standard and non-standard partitioning.
 6NPV–3 Reason about the location of any number up to 10 million, including decimal fractions, in the linear number system, and round numbers, as appropriate, including in contexts.
 6NPV–4 Divide powers of 10, from 1 hundredth to 10 million, into 2, 4, 5 and 10 equal parts, and read scales/number lines with labelled intervals divided into 2, 4, 5 and 10 equal parts.

Ready to Progress Link:

6AS/MD–1 Understand that 2 numbers can be related additively or multiplicatively, and quantify additive and multiplicative relationships (multiplicative relationships restricted to multiplication by a whole number).
 6AS/MD–2 Use a given additive or multiplicative calculation to derive or complete a related calculation, using arithmetic properties, inverse relationships, and place-value understanding.

Autumn 2

Fractions

Prior Learning to Activate:

- Equivalent fractions
- Simplifying fractions
- Comparing and ordering fractions
- Fractions of amounts
- Adding/subtracting fractions
- Mixed numbers
- Fraction/decimal equivalence

Skills focus:

- Simplify fractions
- Find equivalent fractions
- Compare and order fractions
- Convert between mixed and improper fractions
- Add and subtract fractions with different denominators
- Multiply fractions
- Divide fractions by whole numbers
- Find fractions of quantities

Key vocabulary:

numerator, denominator, equivalent, simplify, common denominator, proper fraction, improper fraction, mixed number, reciprocal, integer, factor, multiple

Sentence stems:

These fractions are equivalent because...
I need a common denominator because...
___ is greater than ___ because...

Fraction Problem Solving

Prior Learning to Activate:

- All previous fraction knowledge, alongside:
- Bar models
 - Four operations
 - Reading mathematical problems
 - Identifying relevant information

Skills focus:

- Represent fraction problems
- Select appropriate operations
- Solve multi-step problems
- Combine fraction knowledge with other areas of mathematics
- Check and justify answers

Key vocabulary:

whole, part, fraction of, remaining, total, difference, equivalent, represent, calculate, justify, proportion

Sentence stems:

The whole represents...
I know that ___ is the fraction of...
The first step is...
I represented the problem using...
I know my answer is reasonable because...
Another way to solve this is...

Possible resources:

Fraction walls/strips
Bar models
Number lines
Paper folding
Counters

Possible misconceptions:

- Adding denominators when adding fractions.
- Assuming a larger denominator = larger fraction
- Confusing numerator and denominator
- ☒-Converting mixed/improper fractions incorrectly
- ☒-Treating multiplication/division of fractions like addition/subtraction

Possible resources:

Bar models
Fraction walls
Number lines
Counters
SATs-style problems

Possible misconceptions:

- Choosing an operation based on vocabulary rather than meaning
- Failing to identify the whole
- Treating fractions as isolated calculations
- Not interpreting the answer in context
- Completing only the first step of a multi-step problem

Strengthening:

- Start with smaller denominators
- Use concrete and visual representations to show method
- Use guided examples

Deepening:

- Prove equivalence
- Find missing fractions
- Compare methods
- Identify and correct errors

Strengthening:

- Highlight relevant information
- Draw bar models
- Reduce number of steps
- Use smaller numbers
- Guided modelling and questioning

Deepening:

- Reverse problems
- Find multiple solutions
- Missing information problems
- Prove an answer
- Create a problem from a given answer

SATs Application:

Fraction of an amount
Fraction comparison
Multi-step problems
Mixed/improper fractions
Fraction/decimal/percentage relationships

SATs Application:

Multi-step fraction reasoning
Unfamiliar contexts
Fraction/decimal/percentage problems

Ready to Progress Link:

- 6F–1 Recognise when fractions can be simplified, and use common factors to simplify fractions.
6F–2 Express fractions in a common denomination and use this to compare fractions that are similar in value.
6F–3 Compare fractions with different denominators, including fractions greater than 1, using reasoning, and choose between reasoning and common denomination as a comparison strategy.
6NPV–4 Divide powers of 10, from 1 hundredth to 10 million, into 2, 4, 5 and 10 equal parts, and read scales/number lines with labelled intervals divided into 2, 4, 5 and 10 equal parts.

Ready to Progress Link:

Spring 1					
Decimals		Percentages		Algebra	
Prior Learning to Activate: -Decimal place value -Tenths/hundredths/thousandths -Adding and subtracting decimals -Multiplying and dividing by powers of 10 -Fraction and decimal equivalence		Prior Learning to Activate: -Fractions of amounts -Equivalent fractions -Decimal equivalents -Multiplication and division -Understanding 100 as a whole		Prior Learning to Activate: -Number sequences -Missing-number problems -Function machines -Inverse operations -Mathematical relationships	
Skills focus: -Understand decimal place value to three decimal places -Compare/order decimals -Add/subtract decimals -Multiply/divide decimals -Multiply/divide by powers of 10 -Connect decimals with fractions and percentages Key vocabulary: decimal, decimal point, tenths, hundredths, thousandths, equivalent, place value, integer, power of 10 Sentence stems: The digit ____ has a value of... ____ is greater because... These decimals are equivalent because... Multiplying by 100 means... I know my answer is reasonable because...		Skills focus: -Understand percentages as parts per hundred -Convert between fractions, decimals and percentages -Find percentages of amounts -Solve percentage problems -Apply percentages to real-life contexts Key vocabulary: percentage, percent, per cent, equivalent, proportion, whole, part, increase, decrease Sentence stems: ____% is equivalent to ____ because... The whole represents 100%, so... To find ____% of ____, I... I know this is correct because... I can represent this percentage as...		Skills focus: -Use simple formulae -Express missing numbers using algebraic notation -Generate and describe sequences -Find unknown values -Solve simple equations -Recognise relationships between quantities Key vocabulary: algebra, expression, equation, variable, unknown, formula, sequence, term, function, input, output, value Sentence stems: The unknown represents... The rule is... I know the equation is true because... If the input increases by ____... The relationship between ____ and ____ is...	
Possible resources: Place value charts Decimal counters Number lines Base 10 Money	Possible misconceptions: -Thinking 0.5 is smaller than 0.35 because $5 < 35$ -Misaligning decimal points -Adding zeros incorrectly -Confusing digit value -Thinking multiplying by 10 simply "adds a zero"	Possible resources: 100 square Bar models Fraction walls Place value charts Counters Money	Possible misconceptions: -Thinking percentage is "out of 10" -Confusing percentage with decimal notation ☒ -Finding the percentage increase rather than the new amount ☒ -Assuming all percentages require the same calculation	Possible resources: Function machines Numicon Counters Bar models Balance scales Number machines	Possible misconceptions: -Thinking "=" means the answer comes next -Treating a letter as a fixed number in every problem -Confusing expression /equation -Not identifying the rule -Applying operations in the wrong order
Strengthening: -Money as familiar context -Explicitly and consistently model place value grids with concrete resources -Use smaller numbers -Show number alignment	Deepening: -Solve missing digits -Ordering without calculating -Solve decimal riddles -Prove equivalence -Identify misconceptions	Strengthening: -Use familiar percentages first, e.g. 50%, 10%, 5%, 1% -Link directly to fractions -Use bar models to show equivalence	Deepening: -Solve inverse problems to find the whole from a percentage -Compare percentages -Find missing values -Use multiple methods -Solve reasoning problems	Strengthening: -Model and practice function machines -Use concrete balance models for understanding -Missing number problems -Follow visual patterns	Deepening: -Make generalisations -Create own equations -Find all possibilities -Answer always, sometimes, never questions -Reverse-engineer sequences
SATs Application: Money Measurement Ordering and comparing Decimal arithmetic Fraction/decimal conversion Multi-step problems		SATs Application: Money and discount Data Fractions/decimals/percentages Percentage of amounts Multi-step percentage problems		SATs Application: Missing numbers Sequences Function machines Simple algebraic reasoning Pattern problems	
Ready to Progress Link: 6NPV–1 Understand the relationship between powers of 10 from 1 hundredth to 10 million, and use this to make a given number 10, 100, 1,000, 1 tenth, 1 hundredth or 1 thousandth times the size (multiply and divide by 10, 100 and 1,000).		Ready to Progress Link:		Ready to Progress Link: 6AS/MD–4 Solve problems with 2 unknowns.	

Spring 1					
Ratio and Proportion		Measurement		Geometry	
Prior Learning to Activate: -Fractions -Multiplication/division -Scaling -Fractions of amounts -Multiplicative reasoning		Prior Learning to Activate: -Metric units -Decimal place value -Perimeter and area -Volume -Multiplication/division -Year 5 unit conversions		Prior Learning to Activate: -Properties of 2D/3D shapes -Angles -Triangles and quadrilaterals -Parallel and perpendicular lines -Coordinate4s -Symmetry	
Skills focus: -Understand ratio notation -Compare quantities using ratios -Simplify ratios -Scale quantities -Use ratio tables -Solve proportion problems Key vocabulary: ratio, proportion, scale, equivalent ratio, part, whole, relationship, multiplicative, share Sentence stems: For every ___, there are ____... The ratio of ___ to ___ is... I scaled the ratio by... These ratios are equivalent because... The whole is divided into ___ parts...		Skills focus: -Convert metric units -Convert miles and kilometres -Calculate perimeter -Calculate area -Calculate volume -Solve problems involving measures Key vocabulary: metric, imperial, kilometre, metre, centimetre, millimetre, kilogram, gram, litre, millilitre, perimeter, area, volume, capacity Sentence stems: I need to convert ___ into ___ because... ___ is equivalent to ____... The perimeter/are/volume is... I chose this unit because...		Skills focus: -Classify shapes -Find missing angles -Understand angles on a straight line -Understand angles around a point -Recognise vertically opposite angles -Understand properties of triangles/quadrilaterals/polygons -Explore radius and diameter -Use geometric reasoning Key vocabulary: polygon, regular, irregular, parallel, perpendicular, acute, obtuse, reflex, vertical, radius, diameter, circumference, symmetry Sentence stems: I know this shape is a ___ because... The missing angle must be ___ because... These angles are equal because... I can classify these shapes according to...	
Possible resources: Ration tables Counters Bar models Double number lines Cuisenaire rods	Possible misconceptions: -Treating ratio as additive rather than multiplicative -Reversing the order of a ratio -Assuming equivalent ratios must have the same numbers -Confusing ratio with fraction -Sharing quantities equally when the ratio is unequal	Possible resources: Measuring equipment Rulers Trundle wheels Cubes Capacity containers Formula cards	Possible misconceptions: -Confusing area and perimeter -Using the wrong conversion -Assuming all conversions use the same multiplier -Confusing volume and capacity -Forgetting units	Possible resources: Geoboards 2D/3D shapes Rulers Protractors Compasses Mirrors Isometric paper Dotted paper	Possible misconceptions: -Assuming diagrams are drawn to scale -Confusing regular and irregular polygons -Incorrectly identifying vertically opposite angles -Assuming all triangles have equal angles -Confusing radius and diameter
Strengthening: -Use double number lines consistently -Start with small quantities -Use ratio tables and bar models when modelling -Identify whole and parts	Deepening: -Solve missing values -Multiple equivalent ratios -Scaling unfamiliar quantities -Compare ratios -Solve reverse problems -Apply real-life contexts	Strengthening: -Focus on practical measurement -Use conversion tables -Count cubes/squares before using units -Model worked examples -Start with smaller shapes	Deepening: -Solve missing dimensions -Work with compound shapes -Estimate before calculating -Reason about appropriate units -Find all possible dimensions	Strengthening: -Use physical shapes -Colour code angles -Use drawn examples and angle manipulatives -Start with known angle facts	Deepening: -Prove angle relationships -Always/sometimes/never -Find all possible shapes -Create shapes satisfying conditions and explain -Solve missing-angle problems
SATs Application: Recipes Maps and scale Scaling Ratio tables Multi-step proportional reasoning		SATs Application: Area/perimeter Volume Unit conversion Measurement word problems Multi-step problems involving decimals		SATs Application: Missing angles Shape properties Classification Geometry reasoning Multi-step diagram problems	
Ready to Progress Link: 6AS/MD–3 Solve problems involving ratio relationships.		Ready to Progress Link: 6NPV–4 Divide powers of 10, from 1 hundredth to 10 million, into 2, 4, 5 and 10 equal parts, and read scales/number lines with labelled intervals divided into 2, 4, 5 and 10 equal parts.		Ready to Progress Link: 6G–1 Draw, compose, and decompose shapes according to given properties, including dimensions, angles and area, and solve related problems.	

Summer 1

Statistics

Prior Learning to Activate:

- Tables
- Bar charts
- Line graphs
- Fractions and percentages
- Mean as average
- Reading scales

Skills focus:

- Interpret and construct tables
- Interpret line graphs
- Interpret pie charts
- Calculate the mean
- Solve problems using data
- Compare data representations

Key vocabulary:

data, statistics, table, frequency, scale, interval, mean, average, pie chart, line graph, represent, interpret

Sentence stems:

The graph shows...
The most/least common value is...
The mean is...
I know this because...
The scale increases by...
This representation is useful because...

Mixed Problem Solving and Consolidation

Prior Learning to Activate:

All Year 6 content, with deliberate retrieval of key Year 5 knowledge where gaps remain.

Skills focus:

- Identify relevant information
- Select appropriate mathematics
- Choose efficient strategies
- Combine mathematical concepts
- Represent problems
- Explain and justify
- Check and evaluate answers

Key vocabulary:

represent, interpret, strategy, efficient, justify, prove, estimate, calculate, reason, evaluate, explain

Sentence stems:

I noticed that...
The important information is...
I chose this method because...
I represented the problem using...
I know my answer is reasonable because...
I can prove this by...

Possible resources:

Graph paper
Data sets
Measuring equipment
Spreadsheet/table resources
Real-life data
Classroom surveys

Possible misconceptions:

- Misreading scales
- Confusing mean with median/mode
- Assuming the tallest visual element represents the largest difference
- Forgetting to include all data when calculating mean
- Reading between intervals incorrectly

Possible resources:

SATs-style problems
Whiteboards
Manipulatives
Bar models
Mixed retrieval questions

Possible misconceptions:

- Choosing an operation from key words
- Difficulty combining concepts
- Poor representation of problems
- Failure to check answers
- Giving an answer without interpreting it in context

Strengthening:

- Use small data sets with clearly labelled scales and physical data
- Start with tables before graphs
- Model calculation of mean

Deepening:

- Find missing data
- Work backwards from a mean
- Compare representations
- Identify misleading graphs
- Create data satisfying conditions

Strengthening:

- Highlight relevant information
- Chunk multi-step problems
- Identify the first step
- Provide representations
- Use smaller numbers

Deepening:

- Use multiple methods
- Prove and generalise
- Find all possibilities
- Reverse problems and create problems
- Use unfamiliar contexts

SATs Application:

Tables
Line graphs
Pie charts
Mean
Multi-step data interpretation
Combining data with fractions/percentages

SATs Application:

Application and reasoning of all known SATs topics

Ready to Progress Link:

6NPV-4 Divide powers of 10, from 1 hundredth to 10 million, into 2, 4, 5 and 10 equal parts, and read scales/number lines with labelled intervals divided into 2, 4, 5 and 10 equal parts.

Ready to Progress Link:

Summer 2	
Post-SATs Mathematical Thinking and Transition	
Prior Learning to Activate: The complete Year 6 curriculum	
Skills focus: -Apply mathematics independently -Solve open-ended problems -Investigate patterns -Generalise -Prove -Develop mathematical communication -Select efficient strategies -Apply mathematics to real-life situations -Develop readiness for secondary mathematics Key vocabulary: investigate, conjecture, prove, generalise, justify, pattern, relationship, strategy, efficient, solution, possibility Sentence stems: I notice that... I predict that... I think this will always happen because... I can prove this by... The pattern continues because... I found ____ possibilities because... A different strategy would be... I can generalise this by saying...	
Possible resources: Rich mathematical tasks Mathematical games Puzzles Real-life data Financial mathematics Practical investigations Transition activities	Possible misconceptions: -Expecting every problem to have one method -Believing an answer is enough without justification -Difficulty persevering with open-ended tasks -Choosing a familiar method rather than an efficient one -Difficulty explaining generalisations
Strengthening: -Structured investigations -Worked examples -Prompt questions -Guided discovery -Smaller numbers	Deepening: -Open-ended investigations -Find multiple solutions -Prove and generalise -Hold a mathematical argument -Independent strategy selection
SATs Application:	
Ready to Progress Link:	