The Mathematics Curriculum – Strategic Overview

Early Years Structure

Key stage 1 readiness skills

- To count confidently
- To show a deep understanding of numbers up to 10.
- To be able to identify relationships and patterns between numbers up to 10
- To develop spatial reasoning across all areas of mathematics including shape, space and measures.

Knowledge organisation

Working Fluently	**Reasoning mathematically**	**Solving Problems**
• Can I recall number knowledge accurately and quickly? • Am I accurate in my calculations?	• What patterns can I spot in the mathematics I'm working on? • What am I trying to find out about? Why do I want to know?	• What is the problem I'm trying to solve? • What will I do if I'm finding this problem difficult to solve?

Number					
Counting	Comparing Numbers	Identifying, representing and estimating numbers	Reading and Writing numbers	Understanding place value	Problem Solving
Addition and Subtraction					
Number bonds			Mental calculation		
Geometry: Properties of Shape			**Geometry: Position and direction**		
Identifying shapes and their properties	Comparing and classifying		Position, direction and movement	Pattern	
Measure					
Comparing and estimating	Measuring and calculating	Telling the time			

Key Stage 1 Structure

Disciplinary knowledge

In Mathematics, the disciplinary knowledge is broken into four distinct areas and should be used to work with numbers and solve increasingly complex problems in line with the expectations set out in the National Curriculum Programme of Study.

Working Fluently	**Reasoning mathematically**

- Can I recall number knowledge accurately and quickly?
- Am I accurate in my calculations?
- Can I use my accuracy to answer questions quickly enough?
- Which calculations to I need to practice to help improve my accuracy and speed?

- What patterns can I spot in the mathematics I'm working on?
- What rules do I need to use to aid my calculations?
- What am I trying to find out about? Why do I want to know?
- What questions could I ask about this new information?
- What mathematical language is needed in the work I'm doing?

Solving Problems	All underpinned by Checking and Evaluating
• What is the problem I'm trying to solve? Which mathematical information helps? • What do I need to do to solve the problem? • How will I know when I've found the solution? • What steps will I take to solve this problem? • What efficient method can I use? • What will I do if I'm finding this problem difficult to solve?	• Can I make an estimate before I complete a detailed calculation? • How will I know if my answer is correct? • Could I have used a different method that would have made this easier or quicker? • Which steps did I need to think most carefully about? • If I've made a mistake, can I spot where the errors are? • Can I reframe the problem in a way that makes it easier to solve? • Can I talk about my methods in completing a problem that is clear and concise?

Knowledge organisation

The National Curriculum Programmes of Study for Key Stage 1 are used to determine the minimum knowledge requirements in each area.

Number					
Counting	Comparing Numbers	Identifying, representing and estimating numbers	Reading and Writing numbers	Understanding place value	Problem Solving

Addition and Subtraction				
Number bonds	Mental calculation	Written methods	Inverse operations, estimating and checking	Problem Solving

Multiplication and Division				Fractions, decimals and percentages		
Multiplication and division facts	Mental calculation	Written calculation	Problem Solving	Counting in fractional steps	Recognising fractions	Equivalence of fractions

Geometry: Properties of Shape	Geometry: Position and direction

Identifying shapes and their properties	Comparing and classifying	Position, direction and movement	Pattern

Measure				Algebra		Statistics (Y2)
Comparing and estimating	Measuring and calculating	Telling the time	Converting measurements	Equations	Sequences	Interpreting, constructing and presenting

Lower Key Stage 2 Structure

Disciplinary knowledge

In Mathematics, the disciplinary knowledge is broken into four distinct areas and should be used to work with numbers and solve increasingly complex problems in line with the expectations set out in the National Curriculum Programme of Study.

A – Working Fluently	B – Reasoning mathematically
• Can I recall number knowledge accurately and quickly? • Am I accurate in my calculations? • Can I use my accuracy to answer questions quickly enough? • Which calculations to I need to practice to help improve my accuracy and speed?	• What patterns can I spot in the mathematics I'm working on? • What rules do I need to use to aid my calculations? • What am I trying to find out about? Why do I want to know? • What questions could I ask about this new information? • What mathematical language is needed in the work I'm doing?
Solving Problems	**All underpinned through Checking and Evaluating**
• What is the problem I'm trying to solve? Which mathematical information helps? • What do I need to do to solve the problem? • How will I know when I've found the solution? • What steps will I take to solve this problem? • What efficient method can I use? • What will I do if I'm finding this problem difficult to solve?	• Can I make an estimate before I complete a detailed calculation? • How will I know if my answer is correct? • Could I have used a different method that would have made this easier or quicker? • Which steps did I need to think most carefully about? • If I've made a mistake, can I spot where the errors are? • Can I reframe the problem in a way that makes it easier to solve? • Can I talk about my methods in completing a problem that is clear and concise?

Knowledge organisation

The National Curriculum Programmes of Study for Lower Key Stage 2 are used to determine the minimum knowledge requirements in each area.

Number

Counting	Comparing Numbers	Identifying, representing and estimating numbers	Reading and Writing numbers	Understanding place value	Rounding (Y4)	Problem Solving

Addition and Subtraction			
Mental calculation	Written methods	Inverse operations, estimating and checking	Problem Solving

Multiplication and Division				
Multiplication and division facts	Mental calculation	Written calculation	Properties of number: Factors	Inverse operations, estimating and checking

Fractions, decimals and percentages								
Counting in fractional steps	Recognising fractions	Comparing fractions	Comparing decimals	Rounding, including decimals	Equivalence, including FDP	Addition & Subtraction of fractions	Multiplication & division of decimals	Problem solving

Geometry: Properties of Shape				**Geometry: Position and direction**
Identifying shapes and their properties	Drawing and constructing	Comparing and classifying	Angles	Position, direction and movement

Measure				**Algebra**		**Statistics**	
Comparing and estimating	Measuring and calculating	Telling the time	Converting measurements	Equations	Formulae	Interpreting, constructing and presenting	Solving problems

Upper Key Stage 2 Structure

Disciplinary knowledge

In Mathematics, the disciplinary knowledge is broken into four distinct areas and should be used to work with numbers and solve increasingly complex problems in line with the expectations set out in the National Curriculum Programme of Study.

Working Fluently	Reasoning mathematically
• Can I recall number knowledge accurately and quickly?	• What patterns can I spot in the mathematics I'm working on?

- Am I accurate in my calculations?
- Can I use my accuracy to answer questions quickly enough?
- Which calculations to I need to practice to help improve my accuracy and speed?

- What rules do I need to use to aid my calculations?
- What am I trying to find out about? Why do I want to know?
- What questions could I ask about this new information?
- What mathematical language is needed in the work I'm doing?
- Why does the suggested always work?
- What prior knowledge do I need to use to support my thinking?
- How do I use generalisations to support my thinking?

Solving Problems	All underpinned through Checking and Evaluating
• What is the problem I'm trying to solve? Which mathematical information helps? • What do I need to do to solve the problem? • How will I know when I've found the solution? • What steps will I take to solve this problem? • What efficient method can I use? • What will I do if I'm finding this problem difficult to solve?	• Can I make an estimate before I complete a detailed calculation? • How will I know if my answer is correct? • Could I have used a different method that would have made this easier or quicker? • Which steps did I need to think most carefully about? • If I've made a mistake, can I spot where the errors are? • Can I reframe the problem in a way that makes it easier to solve? • Can I talk about my methods in completing a problem that is clear and concise?

Knowledge organisation

The National Curriculum Programmes of Study for Upper Key Stage 2 are used to determine the minimum knowledge requirements in each area.

Number						
Counting	Comparing Numbers	Identifying, representing and estimating numbers	Reading and Writing numbers	Understanding place value	Rounding	Problem Solving

Addition and Subtraction			
Mental calculation	Written methods	Inverse operations, estimating and checking	Problem Solving

Multiplication and Division					
Multiplication and division facts	Mental calculation	Written calculation	Properties of number: Multiples,	Order of operations	Inverse operations,

			factors, primes, squares and cubes		estimating and checking

Fractions, decimals and percentages							
Recognising fractions	Comparing fractions	Comparing decimals	Rounding, including decimals	Equivalence, including FDP	Addition & Subtraction of fractions	Multiplication & division of decimals	Problem solving

Ratio & Proportion (Y6)	**Geometry: Properties of Shape**				**Geometry: Position and direction**
Solving problems	Identifying shapes and their properties	Drawing and constructing	Comparing and classifying	Angles	Position, direction and movement

Measure			**Algebra**			**Statistics**	
Comparing and estimating	Measuring and calculating	Converting measurements	Equations	Formulae	Sequences	Interpreting, constructing and presenting	Solving problems