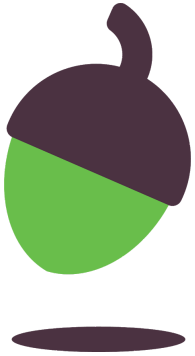
Mathematics

Primary: EYFS, Key Stage 1, Key Stage 2

Curriculum plan 2020-21



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1. Curriculum Principles

As mathematics teachers we want our pupils to reach fluency in what we are teaching them. In mathematics, fluency requires a deep understanding of concepts and the ability to apply them flexibly and with automaticity. The mathematics curriculum uses multiple representations to help make connections across concepts to help build a deep conceptual understanding. By making consistent use of the same core representations we will scaffold pupils' thinking to help them understand abstract mathematical concepts. The curriculum will also include intelligent practice that is designed to help pupils develop automaticity in their mathematics.

We also aim for our pupils to be able to use the precise language of mathematics, that is distinct from everyday language. The curriculum will do this by explicitly teaching mathematical vocabulary and introducing core sentence structures with which to communicate, express, connect, reason with and apply mathematical structures and ideas. Finally, we also aim for our pupils to be able to think mathematically. The tasks and activities used in the curriculum teach pupils the components of mathematical thinking: to sort and classify, compare and contrast, specialise and generalise, to make conjectures and to prove them.

Below are the set of principles we have used to build this curriculum, with these ambitions for our pupils in mind:

Coherence and flexibility

We strive to support schools by offering a maths curriculum that can fit alongside a range of existing structures. However, complete flexibility over unit ordering is impossible due to the cumulative nature of mathematics and the importance of prior knowledge.

We have grouped lessons into units: coherent sequences of 5 or more lessons. Although each lesson can be accessed individually, explicit connections are made to earlier lessons and later lessons in the same unit. This is because the connections between mathematical concepts are so vital to deepening understanding.

Knowledge organisation

The units in the maths curriculum are grouped as appropriate for each key stage, with a suggested route organised within year groups.

Knowledge selection

Our mathematics lessons cover the full scope of the National Curriculum. We have given more time (both in number of lessons and number of units) to those concepts within the National Curriculum that the evidence tells us are foundational to success in maths.

Inclusive and ambitious

We know the difference it makes when children believe they “can do” maths. We are guided by the principles of the National Curriculum to ensure that every pupil, regardless of starting point, develops their fluency, reasoning and problem solving. Our activities are scaffolded so all children can succeed. Children are offered frequent opportunities to be and feel successful as pupils of maths.

We develop conceptual understanding by always building new understanding on what pupils already know, by representing concepts in different ways, and by making connections between concepts. The mathematics curriculum makes consistent use of the same core representations across year groups to help pupils connect prior learning to new learning. These representations are selected to make key mathematical structures and ideas accessible to all pupils, no matter what their starting points.

To support every child to communicate mathematically, pupils are introduced to core sentence structures with which to express, connect, reason with and apply mathematical structures and ideas.

Pupil engagement

You learn maths by thinking about maths. Our lessons include mathematical tasks which have multiple solutions. Mathematical thinking is woven into the units using scaffolds and prompts such as ‘what is the same and what’s different?’, ‘is it sometimes, always or never true?’ and ‘which could be the odd one out?’. Throughout the curriculum, all pupils have opportunities to sort and classify, compare and contrast, specialise and generalise, to make conjectures and to prove them.

Motivation through education

We believe that mathematics is inherently interesting and that all children are entitled to a genuine experience of mathematics. The tasks and activities that pupils engage with harness innate ways of thinking and develop the habits of mind that are drawn upon when being mathematical. Problem solving is at the heart of every lesson with opportunities to investigate, explore and reason.

2. Subject structure overview

To develop deep conceptual understanding requires building on what has been previously understood. Constructing the curriculum with this principle in mind results in careful sequencing within a topic, a year group and across key stages to create a coherent progression for pupils. The curriculum plans here clearly indicate the prior knowledge required to help ensure this coherence is maintained when units are used in a different sequencing of the curriculum plan. For example, before learning about addition and subtraction within 10 in Year 1, pupils will need to have learned how to say, read and count numbers to 10.

	Reception		
	Unit title and description	**Length of unit**	**Prior knowledge required**
R.1	**Early Mathematical experiences** Opportunities for classifying, matching, comparing and ordering.	15	
R.2	**Pattern and Early Number** Opportunities to ensure that every child has been introduced to the key concepts about pattern and early number (within three) in order for them to apply their learning in purposeful play.	10	
R.3	**Numbers within 6** Learning to count reliably within 6 and explore different representations of these numbers.	10	R.2: ● count up to 3 objects ● represent numbers up to 3
R.4	**Addition and subtraction within 6** Exploring the combination and partitioning structures of addition and subtraction within 6.	5	R.3: ● count up to 6 objects ● represent numbers up to 6
R.8	**Numbers within 10** Developing understanding of numbers within six and introducing pupils to numbers within 10.	10	R.6: ● count up to 6 objects ● represent numbers to 6

R.9	**Addition and subtraction within 10** Exploring the augmentation and reduction structures of addition for numbers within 10.	5	R.8: • count up to 10 objects • represent numbers up to 10
R.10	**Numbers within 15** Learning to count reliably within 15, building on their knowledge about numbers within 10	10	R.8: • count up to 10 objects • represent number to 10
R.11	**Grouping and Sharing** Exploring grouping and sharing and recognising the relationship between the two concepts.	10	R.10: • count up to 15 objects
R.12	**Numbers within 20** Learning to count reliably within 20 and building on their knowledge about numbers within 15.	10	R.10: • count up to 15 objects
R.13	**Doubling and halving** Opportunity to apply their knowledge of addition and grouping and sharing. They explore double and half and recognise the relationship between the two concepts	5	R.11: • grouping and sharing R.10: • addition and subtraction within 10
R.15	**Addition and subtraction within 20** Pupils explore the different addition and subtraction structures they have encountered and use these to help solve problems	10	R.10: • count and represent numbers to 20 • addition and subtraction within 10
R.16	**Money** Pupils explore the values of the coins and use different combinations of coins to make a certain amount.	5	R.15: • addition and subtraction within 20
R.18	**Depth of numbers within 20** Opportunity to apply understanding of numbers to 20 to problems.	10	R.12 and R.15: • count and represent numbers to 20 • addition and subtraction within 20
R.19	**Numbers beyond 20**	5	R.12 and R.15:

	Explore numbers within 50 and apply their understanding of counting within 10, counting on and counting back as well as one more and one less.		• count and represent numbers to 20 • addition and subtraction within 20
Ratio and proportion			
R.13	**Doubling and halving** Opportunity to apply their knowledge of addition and grouping and sharing. They explore double and half and recognise the relationship between the two concepts	5	R.11: • grouping and sharing R.10: • addition and subtraction within 10
Measurement			
R.5	**Measures** Introduces pupils to capacity, size and length. Giving opportunities to measure, weigh and compare two or more objects.	5	
R.7	**Calendar and Time** Building understanding about time, using everyday language to talk about events and their duration.	5	
R.16	**Money** Pupils explore the values of the coins and using different combinations of coins to make a certain amount.	5	R.15: • addition and subtraction within 20
R.17	**Measures** Pupils compare the lengths, capacities and weights of different objects and use appropriate language to talk about each one.	10	R.5: • experience of measuring capacity, size and length
Geometry			
R.6	**Shape and sorting** Exploring the characteristics of shapes and objects and using mathematical language when describing them.	5	
R.14	**Shape and pattern** Exploring the properties of 2-D and 3-D shapes and using to copy, continue and create patterns.	5	
			Total: 150 (30 wks)

Linking to the National Curriculum guidance to support teaching mathematics at key stages 1 and 2

The Department for Education has published a priority curriculum that identifies the most important elements of mathematics and how to build progression in these from Y1 to Y6. These are identified in the curriculum map below so that teachers who are choosing to prioritise the curriculum in order to support recovery from the impact of COVID-19 can identify the priority areas.

Year 1				
	Unit title and description	**DfE ready-to-progress criteria**	**Length of unit**	**Prior knowledge required**
Number				
1.1	**Numbers to 10** Representing, comparing and ordering numbers to 10. Investigating the composition of numbers to 10.	1NPV–1	10	R:8: • Say, read and count numbers to 10
1.2	**Addition and subtraction within 10** Addition is taught as combination (aggregation) and subtraction as partitioning. Pupils are formally taught the symbols +, − and =, with which they write abstract equations, linking this to the part-whole model.	1NPV–1 1NF–1 1AS–1 1AS–2	10	1:1: • Representing numbers to ten • Experience with part-whole relationships
1.4	**Numbers to 20** Representing, comparing and ordering numbers to 20. Investigating the composition of numbers to 20.	1NPV–1 1AS–1	10	1.1: • Representing numbers to 10
1.5	**Addition and subtraction within 20** The ‘change’ additive structure is introduced through the use of 'First, then, now' contexts. Abstract equations are used to reflect these	1NF–1 1AS–2	10	1.2: • Adding and subtracting numbers to 10

	contexts, using concrete objects and pictorial representations to support them in developing conceptual understanding.			
1.7	**Exploring calculation strategies within 20** Deepening understanding of calculation strategies, such as deriving facts from known facts (related facts and derived teens facts) and the 'Make ten' strategy.	1NF–1 1AS–1 1AS–2	5	1.5: • Addition and subtraction to 20
1.8	**Numbers to 50** Pupils explore place value of numbers to 50 by grouping numbers into tens and ones, comparing numbers and exploring number patterns.		10	1.4: • Numbers to 20
1.9	**Addition and subtraction within 20 (comparison)** The comparison structure is introduced, and the number range is kept to 20 so that pupils can focus on understanding the language and relationships and how these can be recorded as equations.	1NF–1 1AS–1 1AS–2	10	1.7: • Various calculation strategies within 20
1.10	**Fractions** Learning to recognise, find and name a half and a quarter as one of two/four equal parts of an object, shape and quantity. Applying their knowledge of halves and quarters to directional instructions.		5	
1.11	**Measures (1): Length and mass** Pupils describe, compare, and solve practical problems involving length, height and mass/weight		10	
1.12	**Numbers 50 to 100 and beyond** Representing numbers to 100 using objects and pictorial representations, including a number line and Dienes.	1NPV–1	10	1.6: • Place value to 50
1.13	**Addition and subtraction (applying strategies)**	1NF–1 1AS–1	10	1.5:

	Applying understanding of number to add and subtract 1-digit and 2-digit numbers using a range of strategies.			• Addition and subtraction strategies to 20 1.12: • Representing numbers to 100.
1.14	**Money** Naming coins and notes and representing their values. Applying knowledge of addition and subtraction to money problems.		10	1.4 and 1.5: Addition and subtraction of 1-digit and 2-digit numbers
1.15	**Multiplication and division** Pupils are introduced to multiplication and division through grouping and sharing. Representing multiplication abstractly using repeated addition.	1NF–2	10	1.2: • Addition and subtraction of single-digit numbers 1.10: • Halves and quarters
1.16	**Measures (2): Capacity and volume** Measuring and comparing capacity and volume using standard and non-standard units of measure.		10	1.11: Length and mass
Ratio and proportion				
1.10	**Fractions** Learning to recognise, find and name a half and a quarter as one of two/four equal parts of an object, shape and quantity. Applying their knowledge of halves and quarters to directional instructions.		5	
Measurement				
1.6	**Time** Telling the time to the hour and half hour. Describing position, direction and movement, including whole, half and quarter, with reference to the clock face.		10	
1.11	**Measures (1): Length and mass**		10	

	Pupils describe, compare, and solve practical problems involving length, height and mass/weight			
1.14	**Money** Naming coins and notes and representing their values. Applying knowledge of addition and subtraction to money problems.		10	1.4 and 1.5: Addition and subtraction of 1-digit and 2-digit numbers
1.16	**Measures (2): Capacity and volume** Measuring and comparing capacity and volume using standard and non-standard units of measure.		10	1.11: Length and mass
Geometry				
1.3	**Shape and patterns** Exploring shapes in different orientations and sizes and describing and classifying them. Describing position, direction and movement, including quarter turns.	1G–1 1G–2	10	
			Total: 150 (30 weeks)	

Year 2				
	Unit title and description	**DfE ready-to-progress criteria**	**Length of unit**	**Prior knowledge required**
Number				
2.1	**Numbers within 100** Place value of 2-digit numbers by exploring how to partition, compare and order numbers within 100.	2NPV–1 2NPV–2	15 - 20	1.12: • representing numbers to 100
2.2	**Addition and subtraction of 2-digit numbers** Using known facts to derive new facts. Adding and subtracting tens and ones. Adding three 1-digit numbers.	2NF–1 2AS–1 2AS–2 2AS–3	15	2.1: • place value to 100
2.3	**Addition and subtraction word problems** Applying understanding of place value, number bonds, mental addition and subtraction strategies. Representing addition and subtraction word problems using bar models.	2AS–3	10	2.1: • place value to 100 2.2: • addition and subtraction of 2-digit numbers
2.4	**Measures: Length** Comparing, estimating and measuring length using non-standard and standard measures. Solving measure problems.		10	2.3: • addition and subtraction of 2 – digit numbers • representing problems using bar models
2.5	**Graphs** Representing and interpreting data using tables, tally charts, pictograms and block diagrams.		5	2.2: • addition and subtraction of 1-digit and 2-digit numbers

2.6	**Multiplication and division: 2, 5 and 10** Representing multiplication and division concepts through part whole models, bar models, arrays and number lines. Writing multiplication and division equations, solving word problems and making connections between multiplication and division as inverse operations.	2MD–1 2MD–2	15-20	1.10: • halves and doubles 1.15: • bar models and arrays • sharing and grouping
2.7	**Time** Explore how many hours are in one day and how many minutes are in one hour. Comparing and sequencing events and intervals of time to the nearest five minutes. Telling the time to quarter to and past the hour.		10	1.6: • telling the time to the hour and half past the hour 1.10 • halves and quarters
2.8	**Fractions** The focus of this unit is on recognising, finding, naming and writing fractions of a line, shape, object and quantity. (halves, quarters and thirds)		10	1.10 • halves and quarters
2.9	**Addition and subtraction of 2-digit numbers (regrouping and adjusting)** Applying number bonds to 20 knowledge and the Make ten, round and adjust and near doubles strategies.	2NF–1 2AS–3 2AS–4	15	2.2: • addition and subtraction strategies
2.10	**Money** Exploring coins and notes and their associated values. Applying understanding of numbers up to 100 and addition and subtraction in the context of money problems.		10	1.14: • identify coins and notes 2.9: • addition and subtraction of 1-digit and 2-digit numbers
2.12	**Numbers within 1000** Introduces 3-digit numbers. Exploring the components of 3-digit numbers and using the < and > signs to compare them.		5	2.1: • place value of numbers to 100.

2.13	**Measures: Capacity and volume** Introduces temperature and develops understanding of capacity and volume.		10	2.2: • addition and subtraction to 100 2.12 • understanding of numbers to 1000
2.14	**Measures: Mass** Estimating and measuring mass using non-standard and standard units.		5	2.2: • addition and subtraction to 100 2.6: • counting in 2s, 5s and 10s
2.15	**Exploring calculation strategies** Consolidates calculation strategies from across the year and introduces the column method for addition and subtraction.	2AS–3 2AS–4	10	2.9: • calculation strategies for addition and subtraction
2.16	**Multiplication and division: 3 and 4** Representing multiplication and division concepts through part whole models, bar models, arrays and number lines. Writing multiplication and division equations, solving word problems and making connections between multiplication and division as inverse operations	2MD–2	15	2.6: • Multiplication and division using 2s, 5s and 10s
Ratio and proportion				
2.8	**Fractions** The focus of this unit is on recognising, finding, naming and writing fractions of a line, shape, object and quantity. (halves, quarters and thirds)		10	1.10 halves and quarters
Measurement				
2.4	**Measures: Length**		10	2.3:

	Comparing, estimating and measuring length using non-standard and standard measures. Solving measure problems.			• addition and subtraction of 2 – digit numbers • representing problems using bar models
2.7	**Time** Explore how many hours are in one day and how many minutes are in one hour. Comparing and sequencing events and intervals of time to the nearest five minutes. Telling the time to quarter to and past the hour.		10	1.6: • telling the time to the hour and half past the hour 1.10: • halves and quarters
2.10	**Money** Exploring coins and notes and their associated values. Applying understanding of numbers up to 100 and addition and subtraction in the context of money problems.		10	1.14: • identify coins and notes 2.9: • addition and subtraction of 1-digit and 2-digit numbers
2.13	**Measures: Capacity and volume** Introduces temperature and develops understanding of capacity and volume.		10	2.2: • addition and subtraction to 100 2.12 • understanding of numbers to 1000
2.14	**Measures: Mass** Estimating and measuring mass using non-standard and standard units.		5	2.2: • addition and subtraction to 100 2.6: • counting in 2s, 5s and 10s

Geometry				
2.11	**Faces, shapes and patterns; lines and turns** Explore and describe the properties of 2-D and 3-D shapes including right angles and lines of symmetry within 2-D shapes. Developing understanding of rotations and turns in terms of quarter, half and three-quarter turns, both clockwise and anti-clockwise.	2G–1	15	1.3: • properties of shape 1.10: • halves and quarters
Statistics				
2.5	**Graphs** Representing and interpreting data using tables, tally charts, pictograms and block diagrams.		5	2.2: • addition and subtraction of 1-digit and 2-digit numbers
			Total: up to 185 (37 weeks)	

Year 3				
	Unit title and description	**DfE ready-to-progress criteria**	**Length of unit**	**Prior knowledge required**
Number				
3.1	**Number sense and exploring calculation strategies** Solve number and practical problems, including estimation and checking; add and subtract money to give change in pounds and pence.	3NF-1 3NPV-4	15 - 20	2.1: • represent numbers to 100
3.2	**Place value** Identify, represent and estimate numbers in different contexts, recognise and use place value of 3-digit numbers in calculations.	3NPV-4	10	3.1: • represent 2-digit numbers
3.3	**Graphs** Interpret and present data using charts and tables. Solve one and two-step problems using presented information.	3NPV-4	5	3.1: • count in steps of 2, 5 and 10
3.4	**Addition and subtraction** Calculate mentally and using formal written methods; solve problems using number facts and place value.	3NF-1 3AS-1 3AS-2 3AS-3	15	3.2: • represent 3-digit numbers
3.5	**Length and perimeter** Measure, compare, add/ subtract lengths; solve problems using appropriate tools and units.	3NPV-4	10	2.11: • properties of 2-D shapes 3.4: • addition and subtraction of 2-digit numbers • doubling facts

3.6	**Multiplication and division** Deepen understanding of multiplication and division and apply this to solve problems.	3NF-2	15	2.6: ● division as sharing and division as grouping ● multiplication facts for 2, 5 and 10
3.7	**Deriving multiplication and division facts** Calculate mathematical statements including for 2-digit numbers by 1-digit numbers; progress from mental to formal written methods.	3MD-1	15	2.6: ● 'equal parts' and 'times greater' bar models 3.2: ● partition numbers into tens and ones
3.8	**Time** Tell, record, write and compare the time, including using Roman numerals, 12hr clocks, a.m. and p.m.; compare durations.		10	2.6: ● count in 5s up to 60 2.7: tell the time to the nearest 5 minutes
3.9	**Fractions** Recognise, use, compare, order simple fractions; understand fractions as parts of a whole; add/subtracts fractions of same denominator.	3F-1 3F-2 3F-3 3F-4	15	2.6: ● recall multiplication facts for 2, 5 and 10
3.11	**Measures** Measure, compare, add/ subtract and solve problems, using appropriate tools and units.	3NPV-4	15	3.2: ● represent 3-digit numbers
3.12	**Securing multiplication and division** Recall and use multiplication/ division facts for 6 & 8 times tables; count in multiples of 6 & 8; calculate mathematical statements.	3MD-1 3NF-2	5	3.6: ● recall multiplication facts for the 3 & 4 times tables ● use arrays to represent multiplication ● understand the relationship between

				multiplication and division
3.13	**Exploring calculation strategies and place value** Add/subtract numbers mentally; find 10, 100, 1000 more than a given number; order and compare beyond 1000; round any number to nearest 10, 100, 1000.		10	3.4: • addition strategies such as partitioning, near doubles, round and adjust 3.6: • recall multiplication facts for the 2, 3 , 4, 5 & 10 times tables 3.12: • multiplication facts for the 6 & 8 times tables
Ratio and proportion				
3.9	**Fractions** Recognise, use, compare, order simple fractions; understand fractions as parts of a whole; add/subtracts fractions of same denominator.	3F-1 3F-2 3F-3 3F-4	15	2.6: recall multiplication facts for 2, 5 and 10
Measurement				
3.5	**Length and perimeter** Measure, compare, add/ subtract lengths; solve problems using appropriate tools and units.	3NPV-4	10	2.11: • properties of 2-D shapes 3.4: • addition and subtraction of 2-digit numbers doubling facts

3.8	**Time** Tell, record, write and compare the time, including using Roman numerals, 12hr clocks, a.m. and p.m; compare durations.		10	2.6: • count in 5s up to 60 2.7: tell the time to the nearest 5 minutes
3.11	**Measures** Measure, compare, add/ subtract and solve problems, using appropriate tools and units.	3NPV-4	15	3.2: • represent 3-digit numbers
Geometry				
3.10	**Angles and shape** Identify right-angles, recognising them as quarters of a turn; identify parallel and perpendicular lines; draw/make and measure 2-D and 3-D shapes.	3G-1 3G-2	15	
Statistics				
3.3	**Graphs** Interpret and present data using charts and tables. Solve one and two-step problems using presented information.	3NPV-4	5	3.1: • count in steps of 2, 5 and 10
			Total: up 10 160 (32 weeks)	

Year 4				
Unit title and description		**DfE ready-to-progress criteria**	**Length of unit**	**Prior knowledge required**
Number				
4.1	**Reasoning with 4-digit numbers** Place value of numbers with up to 4 digits including finding 10, 100 or 100 more or less and rounding numbers.	4NPV–1 4NPV–2 4NPV–3 4NPV–4	10	3.2: • place value of up to 3-digit numbers
4.2	**Addition and subtraction** Explore both mental strategies and formal written methods of addition and subtraction. Solving addition and subtraction problems.		15-20	3.4: • bar models
4.3	**Multiplication and division** Developing pupils understanding of both mental and written multiplication and division strategies including the formal methods for shot division and short multiplication.	4NF–3 4MD–1 4MD–2 4MD–3	20	3.6: • mental strategies for multiplication and division
4.5	**Securing multiplication facts** Opportunity for pupils to consolidate their knowledge and conceptual understanding of times tables up to 12 x 12 with specific focus on the 7- and 9-times table.	4NF–1 4NF–1	5	3.12: • 2,3,4,5,6,8 times tables.
4.6	**Fractions** Find equivalent fractions, introduces mixed numbers and improper fractions, add and subtract fractions, calculate fractions of quantities and finally solve problems involving fractions	4F–1 4F–2 4F–3	20	3.9: • use and compare simple fractions add/subtract fractions
4.7	**Time** Consolidates the use of the 12-hour clock and introduces the 24-hour clock; solving problems in the context of time.		5	3.8: • tell the time using 12 hour clock and am and pm

4.8	**Decimals** Understanding the value of tenths and hundredth using a variety of representations; comparing and ordering decimals; rounding decimals and calculating using decimals.		15	
4.9	**Area and perimeter** Exploring perimeter including perimeter of composite rectilinear shapes in mixed units. Introduces area and finding the area of shapes by counting squares, making connections between this and earlier work on arrays and multiplication.		10	4.3: ● arrays
4.10	**Solving measure and money problems** Applying understanding to a variety of problems.		15-20	3.11: ● metric units of measure
4.12	**Position and Direction** Reading and writing coordinates; reading and plotting coordinates of polygons, translation of points.	4G–1	5	
4.13	**Reasoning with patterns and sequences** Exploring Roman numerals to 100, negative numbers and number patterns.		10	
Ratio and proportion				
4.6	**Fractions** Find equivalent fractions, introduces mixed numbers and improper fractions, add and subtract fractions, calculate fractions of quantities and finally solve problems involving fractions	4F–1 4F–2 4F–3	20	3.9: ● use and compare simple fractions ● add/subtract fractions
4.8	**Decimals** Understanding the value of tenths and hundredth using a variety of representations; comparing and ordering decimals; rounding decimals and calculating using decimals.		15	

Measurement				
4.7	**Time** Consolidates the use of the 12-hour clock and introduces the 24-hour clock; solving problems in the context of time.		5	3.8: • Tell the time using 12 hour clock and am and pm
4.9	**Area and perimeter** Exploring perimeter including perimeter of composite rectilinear shapes in mixed units. Introduces area and finding the area of shapes by counting squares, making connections between this and earlier work on arrays and multiplication.		10	4.3: • Representing integers using arrays
4.10	**Solving measure and money problems** Applying understanding to a variety of problems.		15-20	3.11: metric units of measure
Geometry				
4.11	**2-D Shape and Symmetry** Identifying angles within shapes; sorting and classifying shapes, exploring symmetry	4G–2 4G–3	10	3.10: identifying right angles, acute angles and obtuse angles.
4.12	**Position and Direction** Reading and writing coordinates; reading and plotting coordinates of polygons, translation of points	4G–1	5	
4.14	**3D Shape** Exploring the properties of 3D shapes and solving shape problems.		5	
Statistics				
4.4	**Interpreting and presenting data** Representing data using pictograms and bar charts; exploring time graphs		10	3.1: scales and keys associated with different ways of presenting data
			Total: 175 (35 weeks)	

Year 5				
	Unit title and description	**DfE ready-to-progress criteria**	**Length of unit**	**Prior knowledge required**
Number				
5.1	**Reasoning with large whole numbers** extending their understanding of the number system and place value to include 5-digit and 6-digit numbers		15	4.1: • place value to 1000
5.2	**Problem solving with integer addition and subtraction** Explore both mental calculation strategies and the formal written layout for addition and subtraction		10	4.2: • mental and written methods for addition and subtraction
5.4	**Multiplication and division** Exploring factors, multiples, square numbers, prime numbers and composite numbers. Exploring a range of calculation strategies to multiply and divide with increasingly large numbers, including the formal written layout.	5NF–1 5MD–2 5MD–3 5MD–4	15	4.5: • multiplication fact up to 12 x 12 • language of factors and multiples
5.5	**2-D shape, perimeter and area** Calculating perimeter and area of rectilinear and non-rectilinear shapes.	5G–2	10	4.9: finding the perimeter and area of rectangles
5.6	**Fractions and decimals** Connections are made between fractions and decimals. Numbers with up to three decimal places are introduced.	5NPV1 5NPV–2 5NPV–3 5NPV–4	15	
5.8	**Fractions, decimals and percentages** Introduces percentage for the first time and come to understand that percentages, decimals and	5NPV–1	15	5.6: fraction and decimal equivalences

	fractions are different ways of expressing proportions.			
5.10	**Converting units of measure** Converting between units of time, length and mass. Solving conversion problems.	5NPV–5	15	4.10: units of time, length and mass
5.11	**Calculating with whole numbers and decimals** The calculation strategies explored throughout the year are reviewed and extended into calculating with decimal numbers.	5NPV–1 5NF–2	15	5.2: • addition and subtraction calculation strategies 5.4: • multiplication and division calculation strategies 5.6: • place value of decimal numbers
5.13	**Volume** Understanding cube numbers. Estimating the volume of solids. Connecting the volume of solids with the volume of liquids and gasses		5	4.10: • measuring capacity and volume in ml and l 5.5: calculating area
5.14	**Problem solving with whole numbers and decimals** Negative numbers and interpreting remainders after division. Pupils then apply knowledge and understanding to solve problems and reason about patterns and properties of number		10	5.11: • calculating with whole numbers and decimals
Ratio and proportion				
5.6	**Fractions and decimals** Connections are made between fractions and decimals. Numbers with up to three decimal places are introduced.	5NPV1 5NPV–2 5NPV–3 5NPV–4	15	

5.8	**Fractions, decimals and percentages** Introduces percentage for the first time and come to understand that percentages, decimals and fractions are different ways of expressing proportions.	5NPV–1	15	5.6: fraction and decimal equivalences
Measurement				
5.10	**Converting units of measure** Converting between units of time, length and mass. Solving conversion problems.	5NPV–5	15	4.10: units of time, length and mass
5.13	**Volume** Understanding cube numbers. Estimating the volume of solids. Connecting the volume of solids with the volume of liquids and gasses.		5	4.10: • measuring capacity and volume in ml and l 5.5: calculating area
Geometry				
5.5	**2-D shape, perimeter and area** Calculating perimeter and area of rectilinear and non-rectilinear shapes.	5G–2	10	4.9: finding the perimeter and area of rectangles
5.7	**Angles** Identifying and comparing acute, obtuse and reflex angles. Understanding how to use a protractor to measure and draw angles in degrees.		15	4.11: identifying acute, obtuse and right angles
5.9	**Transformations** Consolidating translations and coordinates. Translating polygons across zero. Reflections and translations		15	4.12: reading, writing and plotting coordinates
5.12	**2-D and 3-D shape** Reasoning about the properties of 2-D and 3-D shapes, including identifying 3-D shapes from 2-D representations and classifying different triangles and quadrilaterals as well as other geometric shapes according to their properties.		10	4.11: sorting and classifying 2D shapes

Statistics				
5.3	**Line graphs and timetables** Interpret information in tables and line graphs and solve comparison, sum and difference problems. Read and interpret timetables		10	
			Total: 175 (35 weeks)	

Year 6				
	Unit title and description	**DfE ready-to-progress criteria**	**Length of unit**	**Prior knowledge required**
Number				
6.1	**Integers & Decimals** Read, write, order and compare numbers to ten million. Apply a range of strategies for addition and subtraction to solve multi-step problems.	6NPV-1 6NPV-2 6NPV-3	10	5.1: ● secure with place value of up to 5-digit numbers
6.2	**Multiplication and division** Multiply larger integers and decimal numbers with up to 2 decimal places using a range of strategies, including the formal written algorithms for long and short multiplication. Divide integers by 1-digit and 2-digit numbers using a range of strategies, representing remainders appropriately.	6NPV-4	20	6.1: ● fluency with numbers to ten million 5.11: ● secure in a range of multiplication and division strategies
6.3	**Calculation problems** Apply a range of strategies to solve multi-step problems, considering the agreed order of operations. Express missing number problems algebraically and solve equations with unknown values.	6AS/MD-1 6AS/MD-2	10	6.1: ● fluency with numbers to ten million 6.2: ● multiplication and division
6.4	**Fractions** Deepen understanding of equivalence, in order to simplify, compare and order fractions, including those greater than one. Add and subtract fractions.	6F-1 6F-2 6F-3	10	5.6: ● understand equivalent fractions

6.7	**Fractions** Multiply and divide fractions. Deepen understanding of the links between fractions, multiplication and division.		5	5.8: ● multiply a fraction by an integer and find a fraction of an amount 6.4: understand equivalent fractions
6.8	**Decimals and measures** Use, read, write and convert between standard units, including length, mass, volume and time. Calculate the area of shapes including parallelograms and triangles. Calculate the volume of cubes and cuboids.		20	6.6: ● knowledge of 2-D and 3-D shape
Ratio and proportion				
6.4	**Fractions** Deepen understanding of equivalence, in order to simplify, compare and order fractions, including those greater than one. Add and subtract fractions.	6F-1 6F-2 6F-3	10	5.6: ● understand equivalent fractions
6.7	**Fractions** Multiply and divide fractions. Deepen understanding of the links between fractions, multiplication and division.		5	5.8: ● multiply a fraction by an integer and find a fraction of an amount 6.4: understand equivalent fractions
6.9	**Percentages and statistics** Recall equivalences between fractions, decimals and percentages. Solve problems involving the calculation of percentages. Interpret and construct pie and line graphs and interpret the mean as an average.		10	6.6: ● knowledge of circles

6.10	**Proportion problems** Solve problems involving unequal sharing, scale factor and the relative size of two quantities.	6AS/MD-3 6AS/MD-4	10	6.2 and 6.3: ● calculation 6.4, 6.7, 6.8 and 6.9: reasoning with fractions, decimals and percentages
Measurement				
6.8	**Decimals and measures** Use, read, write and convert between standard units, including length, mass, volume and time. Calculate the area of shapes including parallelograms and triangles. Calculate the volume of cubes and cuboids.		20	6.6: ● knowledge of 2-D and 3-D shape
Geometry				
6.5	**Missing angles and lengths** Compare and classify a range of geometric shapes, using angle facts to find unknown angles in triangles, quadrilaterals and regular polygons.	6G-1	10	
6.6	**Coordinates and shape** Describe positions on a full coordinate grid, exploring negative numbers in context. Apply an understanding of the properties of shapes to find missing coordinates and translate and reflect shapes. Recognise the properties of 3-D shapes and know the properties of circles.	6G-1	5	6.5: ● properties of angles and polygons 5.9: co-ordinates in 4 quadrants, translation and reflection
Statistics				
6.9	**Percentages and statistics** Recall equivalences between fractions, decimals and percentages. Solve problems involving the calculation of percentages. Interpret and construct pie and line graphs and interpret the mean as an average.		10	6.6: ● knowledge of circles

3. Suggested sequence

The following tables show our suggested sequence of the curriculum for each term in reception to year 6. This sequencing ensures that knowledge and skills are built up according to the progression within each strand while also giving opportunities for pupils to engage with a variety of mathematics within each year group. The sequencing within each strand in the previous section shows how units can be taken out of this suggested sequence and the prior knowledge required indicates dependencies between the different strands.

Autumn								Lesson totals							Lesson totals
Recepti-on	Unit 1: Early Mathematical experiences			Unit 2: Pattern and Early Number				25	Unit 3: Numbers within 6		Unit 4: Addition and subtraction within 6	Unit 5: Measures	Unit 6: Shape and sorting	Unit 7: Calendar and Time	30
Year 1	Unit 1: Numbers to 10		Unit 2: Addition and subtraction within 10		Unit 3: Shape and patterns			30	Unit 4: Numbers to 20		Unit 5: Addition and subtraction within 20				20
Year 2	Unit 1: Number within 100				Unit 2: Addition and subtraction of 2-digit numbers			30	Unit 3: Addition and subtraction word problems		Unit 4: Measures: Length		Unit 5: Graphs	Unit 6: Multiplication and division: 2, 5	30

										and 10	
Year 3	Unit 1: Number sense and exploring calculation strategies		Unit 2: Place Value		25	Unit 3: Graphs	Unit 4: Addition and subtraction		Unit 5: Length and perimeter		30
Year 4	Unit 1: Reasoning with 4-digit numbers	Unit 2: Addition and subtraction			25	Unit 3: Multiplication and division			Unit 4: Interpreting and presenting data		30
Year 5	Unit 1: Reasoning with large whole numbers		Unit 2: Problem solving with integer addition and subtraction	Unit 3: Line graphs and timetables	35	Unit 4: Multiplication and division		Unit 5: Perimeter and area	Extra unit: Year 4 2-D shape learning		25
Year 6	Unit 1: Integers & Decimals	Unit 2: Multiplication and division			25	Unit 3: Calculation problems	Unit 4: Fractions		Unit 5: Missing angles and lengths		30

Spring							Lesson totals							Lesson totals
Recep-tion	Unit 8: Numbers within 10		Unit 9: Addition and subtraction within 10	Unit 10: Numbers within 15			25	Unit 11: Grouping and Sharing		Unit 12: Numbers within 20		Unit 13: Doubling and halving		25
Year 1	Unit 6: Time		Unit 7: Exploring calculation strategies within 20	Unit 8: Numbers to 50			25	Unit 9: Addition and subtraction within 20 (comparison)		Unit 10: Fractions	Unit 11: Measures (1): Length and mass			25
Year 2	Unit 6: Multiplication and division: 2, 5 and 10			Unit 7: Time		Unit 8: Fractions	30	Unit 8: Fractions	Unit 9: Addition and subtraction of 2-digit numbers (regrouping and adjusting)			Unit 10: Money		30
Year 3	Unit 6: Multiplication and division			Unit 7: Deriving multiplication and division facts			30	Unit 8: Time		Unit 9: Fractions				25
Year 4	Unit 5: Securing multiplication facts	Unit 6: Fractions				Unit 7: Time	30	Unit 8: Decimals			Unit 9: Area and perimeter			25
Year 5	Unit 6: Fractions and decimals			Unit 7: Angles			30	Unit 8: Fractions, decimals and percentages			Unit 9: Transformations			30
Year 6	Unit 6: Coordinates and shape	Unit 7: Fractions	Unit 8: Decimals and measures				30	Unit 9: Percentages and statistics		Unit 10: Proportion problems				20

Summer							Lesson totals							Lesson totals
Recepti-on	Unit 14: Shape and patter n	Unit 15: Addition and subtraction within 20		Unit 16: Money			20	Unit 17: Measures		Unit 18: Depth of numbers within 20		Unit 19: Numb ers beyon d 20		25
Year 1	Unit 12: Numbers 50 to 100 and beyond		Unit 13: Addition and subtraction (applying strategies)		Unit 14: Money		30	Unit 15: Multiplication and division		Unit 16: Measures (2): Capacity and volume				20
Year 2	Unit 11: Faces, shapes and patterns; lines and turns			Unit 12: Numb ers within 1000	Unit 13: Measures: Capacity and volume		30	Unit 14: Measu res: Mass	Unit 15: Exploring calculation strategies		Unit 16: Multiplication and division: 3 and 4			30
Year 3	Unit 10: Angles and Shape			Unit 11: Measures			30	Unit 12: Securi ng multip licatio n and divisio n	Unit 13: Exploring calculation strategies and place value					15
Year 4	Unit 10: Solving measure and money problems				Unit 11: 2-D Shape and Symmetry		30	Unit 11: 2-D shape and symmetry		Unit 12: Positio n and Directi on	Unit 13: Reasoning with patterns and sequences		Unit 14: 3D Shape	30
Year 5	Unit 10: Converting units of measure			Unit 11: Calculating with whole numbers and decimals			30	Unit 12: 2-D and 3-D shape		Unit 13: Volum e	Unit 14: Problem solving			25
Year 6	Revision units							Revision units						