MATHEMATICS CURRICULUM

Curriculum Intent

Mathematics is an important creative discipline that helps us to understand and change the World. We want all pupils at Lambourn to experience the beauty, power and enjoyment of mathematics and develop a sense of curiosity about the subject.

At Lambourn, we foster positive 'can do' attitudes, believe all children can achieve in mathematics, and teach for secure and deep understanding of mathematical concepts. We use mistakes and misconceptions as an essential part of learning and provide challenge through rich and sophisticated problems before acceleration through new content.

Curriculum Intent: Skills

We aim for all pupils to:

- Become fluent in the fundamentals of mathematics (see Year by Year Curriculum Maps) so that they develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- Solve problems by applying their mathematics to a variety of problems with increasing sophistication, including in unfamiliar contexts and to model real-life scenarios.
- Reason mathematically by following a line of enquiry and develop and present a justification, argument or proof using mathematical language.
- Have an appreciation of number and number operations, which enables mental calculations and written procedures to be performed efficiently, fluently and accurately.

Mathematics Lessons: Teach Up Mon/Tues/Weds/Thurs/Fri		Maths On Track: Keep Up Mon/Tues/Weds/Thurs/Fri
'Learning Together'	'Support & Challenge'	Deliberate Practice Sessions Arithmetic – Intervention - Practice

Mathematics Lessons

Each lesson focuses on a manageable step of new learning based on the NC statements.

Typical Lesson design:

Hook It: Introduction

Teach It: Live modelling of the new learning with explicit use of potential misunderstandings

Practise It: All children practise together
Support & Challenge

Do It: Up to 5 examples – 5 'What it is' or '3+2 'What it is/What it's also'
Challenge 1: Procedural Fluency

Secure It: 1 or 2 Misunderstandings (True/false, Spot the mistake)
Challenge 2: Conceptual Understanding
Deepen It: Apply understanding to solve new problems

Challenge 3: Mathematical Thinking
Review It: Lesson Recap: Key Concept Statement and Key Vocabulary

MathsOnTrack (MOT) Sessions

Day 1: Counting**,** Arithmetic, Calculation Strategies, Misconceptions
Day 2: Counting**,** Arithmetic, Calculation Strategies, Misconceptions
Day 3: Deliberate Practice: Past and Present
Day 4 Deliberate Practice: Past and Present
Day 5 Fact Friday

Teachers use AfL to inform Maths On Track Sessions and may use the suggestions for MOT Sessions flexibly to meet pupils needs.

Year One

Term 1

Maths Lessons: Intelligent Practice	Maths on Track: Deliberate Practice
Count to and across 100, forwards and backwards, beginning with 0 or 1 Count, read and write numbers to 100 in numerals, count in multiples of twos, fives and tens or from any given number 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 Given a number, identify one more and one less Read and write numbers from 1 to 20 in numerals and words. Represent and use number bonds and related subtraction facts within 20 Add and subtract one-digit and two-digit numbers to 20, including zero Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ? – 9. Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs Recognise and name common 2D and 3D shapes, including 2D shapes e.g. rectangles (including	Counting forwards Deliberate Practice: Past and Present 1 more up to 10 1 less up to 10 1 less up to 20 1 more up to 30 Count objects Know teens are ten and the rest Number Bonds of 5 + Remember It Number Bonds of 5 +/-

squares) circles and triangles, and 3D shapes e.g. cuboids, including cubes, pyramids and spheres	
Conceptual Vocabulary: **Place Value:** zero, one, two, three… to twenty, , tens. Ones, tens frame. Digit, number. Position. More, less, greater, larger, smaller. **Geometry: Properties of Shape:** 2D shape, sides, straight, rectangle, square, circle, triangle, equal. **Addition & Subtraction:** zero, one, two, three… to twenty, thirty, digit, plus, total, altogether, addend, subtract, take away, left, partition.	

Term 2

Maths Lessons: Intelligent Practice	Maths on Track: Deliberate Practice
Count to and across 100, forwards and backwards, beginning with 0 or 1, 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 Given a number, identify one more and one less Count, read and write numbers to 100 in numerals, count in multiples of twos, fives and tens or from any given number Represent and use number bonds and related subtraction facts within 20 Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ? – 9 Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs	Read and write numbers Count fluently from any number to and across 100 Deliberate Practice: Past and Present Number Bonds of 6 + Read and write numbers Number Bonds of 6 +/- Read and write numbers Number Bonds of 7 + Compare numbers Know 1 more than

Recognise and name common 2D and 3D shapes, including 2D shapes e.g. rectangles (including squares) circles and triangles, and 3D shapes e.g. cuboids, including cubes, pyramids and spheres	numbers Number Bonds of 7 +/- Number Bonds of 8 + Number Bonds of 8 +/- Order numbers and position them on a number line Know 1 less than numbers Number Bonds of 9 +
Conceptual Vocabulary: **Number and Place Value: up to 100:** zero, one, two, three… to twenty, thirty, forty, fifty, one hundred, tens, ones, digit, number, position, more, less, greater, larger, smaller. **Addition and Subtraction: Facts of 7 – 11:** zero, one, two, three… to ten, thirty, digit, plus, total, altogether, addend, subtract, take away, left, partition **Geometry: Properties of Shapes:** solid, 3-D shape, face, cuboid, rectangle, cube, square, triangle, triangular, flat, curved, sphere	

Term 3

Maths Lessons: Intelligent Practice	Maths on Track: Deliberate Practice
Represent and use number bonds and related subtraction facts within 20 Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ? – 9.	Know 1 less than numbers Deliberate Practice: Past and Present Number Bonds of 9 +

Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs Compare, describe and solve practical problems for lengths and heights, mass or weight, capacity/volume, time Measure and begin to record the following; lengths and heights, mass/weight, capacity and volume, time	Order numbers and position them on a number line Number Bonds of 9 +/- Count fluently back from any number Subtract a single digit number from a teens number Number Bonds of 10 + Subtract a single digit number from a teens number Number Bonds of 10 +/- Count fluently back from any number Number Bonds of 10 + Recall and use addition facts of 10 Recall and use subtraction facts of 10 Number Bonds of 10 +/-
Conceptual Vocabulary: **Addition and Subtraction:** partition whole part addition addend plus altogether subtraction take away left total.	

Measurement: Length: longer than shorter than longest shortest taller than shorter than tallest shortest centimetre

Term 4

Maths Lessons: Intelligent Practice	Maths on Track: Deliberate Practice
Represent and use number bonds and related subtraction facts within 20 Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ? – 9. Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity. Recognise, find and name a half as one of two equal parts of an object, shape or quantity Describe position, direction and movement, including whole, half, quarter and three-quarter turns	Recall and use addition facts of 10 Recall and use subtraction facts of 10 Deliberate Practice: Past and Present Number Bonds of 11 + Partition 20 Number Bonds of 11 +/- Number Bonds of 12 + Recall and use addition facts of 6 Add 10 to a number Recall and use addition facts of 7 Subtract 10 from a number

	Number Bonds of 12 +/-
Conceptual Vocabulary: **Addition and Subtraction:** partition whole part addition addend plus altogether subtraction take away left total **Fractions:** whole part equal divided shared **Geometry: Position and Direction:** between on top of above, below middle up, down left, right forwards, backwards position turn half quarter three-quarter	

Term 5

Maths Lessons: Intelligent Practice	Maths on Track: Deliberate Practice
Add and subtract one-digit and two-digit numbers to 20, including zero. Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times. Recognise and use language relating to dates, including days of the week, weeks, months and years. Sequence events in chronological order using language e.g. before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening Compare, describe and solve practical problems for lengths and heights, mass or weight, capacity/volume, time. Measure and begin to record the following; lengths and heights, mass/weight, capacity and volume, time	Recall and use addition facts of 7 Subtract 10 from a number Deliberate Practice: Past and Present Number Bonds of 13 +/- Use number facts to calculate others Recall and use addition facts of 8 Number Bonds of 14 +/- Recall and use addition facts of 9 Recall and use subtraction facts of 9

	Number Bonds of 15 +/-
Conceptual Vocabulary: **Addition and Subtraction:** partition whole part addition addend plus altogether subtraction take away left total **Measurement: Time:** Monday Tuesday Wednesday Thursday Friday Saturday Sunday January February March April May June July August September October November December hour minute o' clock half past earlier than later than quicker than faster than slower than longer than	

Term 6

Maths Lessons: Intelligent Practice	Maths on Track: Deliberate Practice
Compare, describe and solve practical problems for lengths and heights, mass or weight, capacity/volume, time. Measure and begin to record the following; lengths and heights, mass/weight, capacity and volume, time Recognise and know the value of different denominations of coins and notes 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.	Recall and use addition facts of 9 Recall and use subtraction facts of 9 Deliberate Practice: Past and Present Number Bonds of 15 +/- Recall and use all the subtraction facts of 10 Count in multiples of 2, 5 and 10 Number Bonds of 20 +/- Number Bonds of 20 +/

	Order numbers to 100
Conceptual Vocabulary: **Multiplication and Division:** double halve half equal group array row column **Measurement: Money:** coin pence worth value bronze silver note pound **Measurement: Mass and Capacity:** mass heavy heavier than kilogram light lighter than capacity empty full litre	

Year Two

Term 1

Maths Lessons: Intelligent Practice	Maths on Track: Deliberate Practice
Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward Recognise the place value of each digit in a two-digit number (tens, ones) Compare and order numbers from 0 up to 100; use and = signs Identify, represent and estimate numbers using different representations, including the number line Read and write numbers to at least 100 in numerals and in words Use place value and number facts to solve problems. Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 Solve problems with addition and subtraction: using concrete objects and pictorial representations, including those involving numbers, quantities and	ArithmeCheck 1 Deliberate Practice: Past and Present Number Bonds 6 + Know 1 more than numbers Know 1 less than numbers Number Bonds 6 +/- Number Bonds 7 + Add 10 to a number Subtract 10 from a number Number Bonds 7 +/- Number Bonds 8 +

measures, applying their increasing knowledge of mental and written methods Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: a two-digit number and ones a two-digit number and tens two two-digit numbers adding three one-digit numbers Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line. Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces.	Use number facts to calculate others Subtract a single digit number from a teens number Number Bonds 8 +/- Number Bonds 9 + Order numbers and position them on a number line Number Bonds 9 +/-
Conceptual Vocabulary: **Number and Place Value:** tens, exchange, regroup, ones, digit, column, zero, one, two, three… to twenty zero, ten, twenty… one hundred, position, between **Geometry: Properties of Shapes:** 2D shape, straight sides, pentagon, hexagon, octagon, symmetry, 3D, vertex, vertices, edge, face **Addition and Subtraction: Addition:** addends commutative sum total altogether tens ones digit column zero, one, two, three… to twenty zero, ten, twenty… one hundred, partition, regroup	

Term 2

Maths Lessons: Intelligent Practice	Maths on Track: Deliberate Practice
Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100	Add multiples of 10 to a 2-digit number

Solve problems with addition and subtraction: using concrete objects and pictorial representations, including those involving numbers, quantities and measures, applying their increasing knowledge of mental and written methods Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: a two-digit number and ones a two-digit number and tens two two-digit numbers adding three one-digit numbers Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems. Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot. Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication, division and equals signs Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts. Order and arrange combinations of mathematical objects in patterns and sequences Use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a	Partition a 2-digit number in different ways Deliberate Practice: Past and Present Number Bonds 10 + Number Bonds 10 +/- Number Bonds 10 +/- Add a single digit number to a 2-digit number using known facts Subtract single digit number from a 2-digit number using known facts Number Bonds 20 + Number Bonds 20 +/- Number Bonds 15 + Subtract multiples of 10 from a 2-digit number Subtract multiples of 10 from a 2-digit number Number Bonds 15 +/-

turn and in terms of right angles for quarter, half and three- quarter turns . Identify 2-D shapes on the surface of 3-D shapes(for example a circle on a cylinder and a triangle on a pyramid) Compare and sort common 2-D and 3-D shapes and everyday objects	
Conceptual Vocabulary: **Addition and Subtraction: Subtraction:** commutative, tens, ones, subtract, difference **Geometry: Properties of Shapes:** 3-D shape, cylinder, circle, circular, cone, flat, curved, 2-D shape, face, surface, straight, properties, edge Multiplication and Division: multiply, equal, groups, array, rectangular, columns, rows, product, commutative, divide, grouping, sharing **Geometry: Position and direction:** above, below, left, right, clockwise, anti-clockwise, quarter, half, three-quarter, right angle, sequence, pattern, rule, repeating	

Term 3

Maths Lessons: Intelligent Practice	Maths on Track: Deliberate Practice
Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward Compare and order lengths, mass, volume/capacity and record the results using >, < and = Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels. Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication, division and equals signs	Subtract multiples of 10 from a 2-digit number Deliberate Practice: Past and Present Multiplication Tables 2x4 Use rounding to add near multiples of ten Use rounding to subtract near multiples of ten

Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers. Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts	Multiplication 2x6 Multiplication Tables 2x8 Multiplication Tables 2x7 Compare and order numbers to 100 Recognise odd and even numbers Multiplication Tables 2x9
Conceptual Vocabulary: **Multiplication and Division: Multiplication Tables:** factor product multiple odd even divisible multiply equal groups array rectangular columns rows product commutative divide grouping sharing **Measurement: Length and Mass:** scale heavier than lighter than heaviest lightest gram kilogram longer than shorter than longest shortest taller than tallest centimetre metre	

Term 4

Maths Lessons: Intelligent Practice	Maths on Track: Deliberate Practice
Write simple fractions e.g. 1/2 of 6 = 3 and recognise the equivalence of two quarters and one half Recognise, find, name and write fractions 1/3 , 1/4 , 2/4 and 3/4 of a length, shape, set of objects or quantity. Find different combinations of coins that equal the same amounts of money. Compare and sequence intervals of time.	Partition the second number to subtract tens then ones Double Numbers Deliberate Practice: Past and Present Multiplication Tables 6 x 10

Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change. Know the number of minutes in an hour and the number of hours in a day. Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value 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.	Multiplication Tables 7 x 10 Multiplication 8 x 10 Partition the second number to add tens then ones Halve numbers Multiplication 9 x 10 Multiplication Tables 3 x 5 Multiplication Tables 4 x 5
Conceptual Vocabulary: **Fractions:** part whole equal denominator numerator third quarter three-quarters half equivalent **Measurement: Money:** part whole total sum spend change pence pounds coins notes **Measurement: Time:** quarter past quarter to past to minute hour day	

Term 5

Maths Lessons: Intelligent Practice	Maths on Track: Deliberate Practice
Interpret and construct simple pictograms, tally charts, block diagrams and simple tables Ask and answer questions about totalling and comparing categorical data. Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity Compare and order volume/capacity and record the results using >,< and =.	Use known facts to 10 to derive other facts Solve multiplication problems Deliberate Practice: Past and Present Multiplication Tables 5 x 5

Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels	Multiplication Tables 6 x 5 Multiplication 7 x 5 Find the difference between two numbers Use sharing to solve division problems Multiplication Tables 8 x 5 Multiplication 9 x 5
Conceptual Vocabulary: **Statistics:** table symbol tally represent pictogram block diagram **Measurement: Capacity and Temperature:** cale litre millilitre capacity temperature degrees Celsius thermometer	

Term 6

Maths Lessons: Intelligent Practice	Maths on Track: Deliberate Practice
Read, write, compare and order 2-digit numbers Find 10 more or less of a 2-digit number Recall and use addition and subtraction facts to 10 and know that addition is commutative Add two 2-digit numbers Subtract two 2-digit numbers Identify and describe the properties of 2-D and 3-D shapes, including the number of edges, vertices and faces	Remember This? Find the difference between two numbers Use sharing to solve division problems Deliberate Practice: Past and Present Multiplication Tables 2x3

Tell the time to quarter to/past and 5 minute intervals Calculate change and combine coins to make amounts Understand how multiplication and divison can be represented and know that multiplication is commutative 2.1 Explain about tens and ones in 2-digit numbers T Know and use multiplication and division facts for 2, 5 and 10 multiplication tables 2.9 Partition and recombine to add Read scales in divisions of 1, 2, 5 and 10 Recognise and find one half, one third and one quarter	Use known facts to 10 to derive other facts Use grouping to solve division problems MultiplicationTables 2x5 Use known facts to 10 to derive other facts Use grouping to solve division problems Multiplication Tables 2x11 Multiplication Tables 5 x 11 Explain about tens and ones in 2-digit numbers Partition and recombine to add Multiplication Tables 5 x 12 Multiplication Tables 10 x 11
Conceptual Vocabulary: **Place Value:** tens, exchange, regroup, ones, digit, column, zero, one, two, three… to twenty zero, ten, twenty… one hundred, position, between	

Addition and Subtraction: commutative, tens, ones, subtract, difference **Geometry and Measurement::** 3-D shape, cylinder, circle, circular, cone, flat, curved, 2-D shape, face, surface, straight, properties, edge multiply, equal, groups, array, rectangular, columns, rows, product, commutative, divide, grouping, sharing above, below, left, right, clockwise, anti-clockwise, quarter, half, three-quarter, right angle, sequence, pattern, rule, repeating part whole total sum spend change pence pounds coins notes quarter past quarter to past to minute hour day cale litre millilitre capacity temperature degrees Celsius thermometer **Multiplication and Division:** multiply equal groups array rectangular columns rows product commutative divide grouping sharing **Fractions:** part whole equal denominator numerator third quarter three-quarters half equivalent

Year Three

Term 1

Maths Lessons: Intelligent Practice	Maths on Track: Deliberate Practice
Count from 0 in multiples of 4, 8, 50 and 100; finding 10 or 100 more or less than a given number Recognise the place value of each digit in a three-digit number (hundreds, tens, ones) Compare and order numbers up to 1000 Identify, represent and estimate numbers using different representations Read and write numbers up to 1000 in numerals and in words Solve number problems and practical problems involving these ideas 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 Identify horizontal and vertical lines and pairs of perpendicular and parallel lines.	ArithmeCheck 2 Deliberate Practice: Past and Present Multiplication Tables 2x6, 2 x 7, 2x8, 10x7, 10x8, 5x6, 5x7, 5 x 8 Double numbers Halve numbers Recognise odd and even numbers Use known facts of 10 to derive other facts

Draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations; and describe them	Find the difference between two numbers Add multiples of ten to a 2-digit number Subtract multiples of ten from a 2-digit number
Conceptual Vocabulary: **Number and Place Value:** hundreds, tens, exchange, ones, digit, column, zero, one, two, three… to twenty, zero, ten, twenty… one hundred, position, decrease, increase, tenths, decimal point **Geometry: Properties of Shapes:** horizontal, vertical, parallel, perpendicular, equi-distant, polygon, triangle, quadrilateral, square, hexagon, pentagon, octagon, polyhedron, cuboid, cube, prism, pyramid, cylinder, cone, sphere, face, edge, vertex	

Term 2

Maths Lessons: Intelligent Practice	Maths on Track: Deliberate Practice
Add and subtract numbers mentally, including: * a three digit number and ones * a three-digit number and tens * a three-digit number and hundreds Estimate the answer to a calculation and use inverse operations to check answers Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, includingfor 2-digit numbers times 1-digit numbers, using mental progressing to formal written methods	Use rounding to add near multiples of ten Deliberate Practice: Past and Present Multiplication Tables 3x3, 3x4, 3 x 6, 3 x 7, 3 x 8, 3 x 9, 3 x 12 Use rounding to subtract near multiples of ten Add a single digit number to a 2-digit

Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables 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	number using known facts Subtract a single digit number from a 2-digit number using numbers facts Compare and order numbers up to 1000 & position them on a number line Find 10 and 100 more or less than any given number
Conceptual Vocabulary: **Multiplication and Division: Multiplication Tables:** factor, product, multiple, odd, even, divisible **Addition and subtraction: Mental Methods:** zero, regroup, ones, tens, hundreds, total, plus, sum, addend **Addition and subtraction: Mental Methods:** ones, tens, hundreds, subtract, difference, bridge, partition	

Term 3

Maths Lessons: Intelligent Practice	Maths on Track: Deliberate Practice
Compare and order unit fractions and fractions with the same denominators. Solve problems that involve all of the above. (Fractions) Recognise and show, using diagrams, equivalent fractions with small denominators Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators	Partition the second number to subtract tens then ones Deliberate Practice of this week's learning Multiplication Tables 4 x 4, 4 x 6, 4 x 7, 4 x 8, 4 x 9, 4 x 12

Add and subtract numbers with up to three digits, using the formal written methods of columnar addition and subtraction Estimate the answer to a calculation and use inverse operations to check answers Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction	Add numbers by partitioning and recombining Double 3- digit numbers Halve 3-digit numbers Deliberate Practice of this week's learning
Conceptual Vocabulary: **Fractions:** denominator numerator unit fraction non-unit fraction equivalent fifths sixths sevenths eighths ninths tenths **Addition and Subtraction: Written Methods:** ones tens hundreds regroup subtract minuend subtrahend exchange	

Term 4

Maths Lessons: Intelligent Practice	Maths on Track: Deliberate Practice
Write and tables calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for 2-digit numbers times 1-digit numbers, using mental progressing to formal written methods. Recall and use multiplication and division facts for the 3, 4 and 8 multiplication 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 objects Add and subtract amounts of money to give change, using both £ and p in practical contexts	Use rounding to add near multiples of ten Multiply numbers by 10 using place value Deliberate Practice of this week's learning Multiplication Tables 8 x 3, 8 x 4, 8 x 6, 8 x 7, 8 x 8, 8
Conceptual Vocabulary:	

Multiplication and Division: partition product regroup dividend divisor remainder **Measurement: Money:** part whole total sum spend change pence pounds coins notes

Term 5

Maths Lessons: Intelligent Practice	Maths on Track: Deliberate Practice
Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators. Add and subtract fractions with the same denominator within one whole Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators. Compare durations of events Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24- hour clocks Know the number of seconds in a minute and the number of days in each month, year and leap year 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, a.m./p.m., morning, afternoon, noon and midnight.	Partition 3-digit numbers in different ways Multiply by a multiple of 10 by using place value Deliberate Practice of this week's learning Multiplication Tables 3 x 5, 3 x 11, 8 x 5, 8 x 9, 8 x 12 Subtract numbers by finding the difference between them Divide by a multiple of 10 by using place value Deliberate Practice of this week's learning Factor, Factor Product
Conceptual Vocabulary:	

Fractions: Calculating: denominator numerator unit fraction non-unit fraction **Measurement: Time:** Roman numeral second minute day month year leap year January February March April May June July August September October November December analogue digital

Term 6

Maths Lessons: Intelligent Practice	Maths on Track: Deliberate Practice
Solve one-step and two-step questions using information presented in scaled bar charts and pictograms and tables Identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle Interpret and present data using bar charts, pictograms and tables. Recognise angles as a property of shape or a description of a turn Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/ capacity (l/ml) Measure the perimeter of simple 2-D shapes	Add 3-digit numbers using appropriate mental strategies Use partitioning and known facts to multiply 2-digit by 1-digit mentally Deliberate Practice of this week's learning Factor, Factor Product Subtract 3-digit numbers using appropriate mental strategies
Conceptual Vocabulary: **Measurement: Length, Mass and Capacity:** length metre centimetre millimetre unit perimeter mass gram kilogram capacity litre millilitre scale **Geometry: Properties of Shapes (Angles):** angle right angle turn quarter turn **Statistics:** pictogram symbol represents scale bar chart data table row column category	

Year Four

Term 1

Maths Lessons: Intelligent Practice	Maths on Track: Deliberate Practice
Count in multiples of 6, 7, 9, 25 and 1000. Find 1000 more or less than a given number. Recognise the place value of each digit in a four-digit number Read Roman numbers. numerals to 100 and know that, over time, the numeral system changed to include the concept of zero and place value Count backwards through zero to include negative numbers. Solve number and practical problems that involve all of the above and with increasingly large positive Find 1000 more or less than a given number. Round any number to the nearest 10, 100 or 1000. Identify, represent and estimate numbers using different representations. Order and compare numbers beyond 1000. Identify lines of symmetry in 2-D shapes presented in different orientations. Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes. Complete a simple symmetric figure with respect to a specific line of symmetry.	ArithmeCheck 3 Deliberate Practice Past and Present Multiplication Tables 3x7, 3 x 8, 4 x6, 4 x7, 4 x 8, 8 x 6, 8 x 7, 8 x 8 Compare and order numbers up to 1000 and position them on a number line Use place value to find 10 and 100 more or less than 3-digit numbers Use rounding to add near multiples of 10 Use rounding to subtract a near multiple of 10 Partition the second number to add 10s then 1s including bridging Partition the second number to subtract 10s then 1s including bridging

	Subtract numbers by finding the difference between them
Conceptual Vocabulary: **Number and Place Value:** hundreds, thousands, exchange, tens, ones, digit, columns, value, position, increase, decrease, round, multiple, negative, zero **Geometry: Properties of Shapes:** equilateral, isosceles, scalene, quadrilateral, parallel, parallelogram, rhombus, trapezium, kite, adjacent, classify, property, symmetry, reflection	

Term 2

Maths Lessons: Intelligent Practice	Maths on Track: Deliberate Practice
Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why Estimate and use inverse operations to check answers to a calculation Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers Recall multiplication and division facts for multiplication tables up to 12 × 12.	Multiply numbers by 10 using place value Deliberate Practice Past and Present Multiplication Tables 6 x 3, 6 x 4, 6 x 6, 6 x 7, 6 x 8, 6 x 9, 6 x 12 Divide whole numbers by 10 using place value Multiply numbers by a multiple of 10 using place value Divide whole numbers by a multiple of 10 using place value

	Use partitioning and known facts to multiply 2-digit by 1-digit numbers Double 3-digit numbers Halve 3-digit numbers
Conceptual Vocabulary: **Multiplication and Division: Multiplication Tables:** zero, factor, product, multiple, odd, even, divisible **Addition and Subtraction: Mental Methods Addition:** sum, thousands, hundreds, tens, ones, exchange, bridge **Addition and Subtraction: Mental Methods Subtraction:** thousands, hundreds, tens, ones, subtract, difference, bridge, partition	

Term 3

Maths Lessons: Intelligent Practice	Maths on Track: Deliberate Practice
Solve calculation. addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why Estimate appropriate. and use inverse operations to check answers to a calculation Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate Recognise and use factor pairs and commutativity in mental calculations Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers.	Round numbers to the nearest 10, 100 or 1000 Deliberate Practice Past and Present Multiplication Tables 7 x3, 7 x 4, 7 x 6, 7 x 7, 7 x 8, 7 x 9 Recall and use facts for the 6x table Order numbers beyond 1000

Recall multiplication and division facts for multiplication tables up to 12 × 12.	Recall and use facts for the 7x table
Conceptual Vocabulary: **Multiplication and Division: Multiplication Tables:** zero factor product multiple odd even divisible commutative **Addition and Subtraction: Written Methods Addition:** ones tens hundreds thousands regroup sum **Addition and Subtraction: Written Methods Subtraction:** ones tens hundreds thousands subtract minuend subtrahend exchange	

Term 4

Maths Lessons: Intelligent Practice	Maths on Track: Deliberate Practice
Multiply two-digit and three-digit numbers by a one-digit number using formal written layout. Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems, such as n objects are connected to m objects Identify acute and obtuse angles and compare and order angles up to two right angles by size	Choose appropriate methods to add Double and halve numbers Deliberate Practice Past and Present Multiplication Tables 9 x 6, 9 x 7, 9 x 8, 9 x 9, 12 x 12 Choose appropriate methods to subtract Choose appropriate methods to subtract Divide 3 digit numbers by 1 digit numbers
Conceptual Vocabulary:	

Multiplication and Division: multiplier product dividend divisor remainder quotient **Geometry: Properties of Shapes (Angles)** angle acute obtuse right angle

Term 5

Maths Lessons: Intelligent Practice	Maths on Track: Deliberate Practice
Add and subtract fractions with the same denominator. Compare numbers with the same number of decimal places up to two decimal places 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. Round decimals with one decimal place to the nearest whole number. Count up and down in hundredths; recognise that hundredths arise when dividing an object by a hundred and dividing tenths by ten. 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. Recognise and show, using diagrams, families of common equivalent fractions Recognise and write decimal equivalents to ¼ ½ ¾ Recognise and write decimal equivalents of any number of tenths or hundredths. Convert between different units of measure (e.g. kilometre to metre; hour to minute).	Use place value and known facts to multiply mentally Deliberate Practice Past and Present Multiplication Facts 12 x 8, 12 x 7, 12 x 11, 11 x 11, 11 x 12 Multiply 3 digit numbers by 1 digit numbers; efficient methods Order decimal numbers and position them on a number line Round numbers with one dp to the nearest whole number

Conceptual Vocabulary: **Decimals:** tenths hundredths digit column round whole number pounds pence**Fractions: Calculating:** denominator numerator unit fraction non-unit fraction equivalent multiplier

Term 6

Maths Lessons: Intelligent Practice	Maths on Track: Deliberate Practice
Solve simple measure and money problems involving fractions and decimals to two decimal places 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 Plot specified points and draw sides to complete a given polygon. Describe movements between positions as translations of a given unit to the left/ right and up/ down Describe positions on a 2-D grid as coordinates in the first quadrant. Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres Estimate, compare and calculate different measures, including money in pounds and pence Convert between different units of measure (e.g. kilometre to metre; hour to minute).	Order decimal numbers and position them on a number line Deliberate Practice Past and Present Multiplication Tables 7 x 5, 7 x 12, 9 x 4, 9 x 12, 12 x 6, 12 x 3 Round numbers with one dp to the nearest whole number Use number facts to add Divide whole numbers and decimals by 100 Find the difference between two numbers Round and adjust to add numbers

Read write and convert time between analogue and digital 12 and 24 hour clocks Find the area of rectilinear shapes by counting squares.	
Conceptual Vocabulary: **Addition and Subtraction: Decimals:** tenths hundredths regroup exchange efficient **Measurement: Time and Converting Units:** analogue digital 24-hour hour minute week day litre millilitre kilogram milligram **Measurement: Perimeter and Area:** perimeter area length width rectilinear **Geometry: Position and Direction:** coordinate quadrant polygon translation left right up down horizontal vertical **Statistics:** scale represent axes category	

Year Five

Term 1

Maths Lessons: Intelligent Practice	Maths on Track: Deliberate Practice
Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000 Solve number problems and practical problems that involve all of the above Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero Solve number problems and practical problems that involve all of the above Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000	ArithmeCheck Deliberate Practice Past and Present Multiplication Tables 6 x 6, 6 x 7, 7 x 7, 7 x 8, 8 x 6, 8 x 8, 12 x 6, 12 x 7 Order numbers beyond 1000 and position them on a number line Round numbers to the nearest 10, 100 or 1000

Read Roman numerals to 1000 and recognise years written in Roman numerals Read and write decimal numbers as fractions Read, write, order and compare numbers with up to three decimal places. Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents. Solve problems involving number up to three decimal places Round decimals with two decimal places to the nearest whole number and to one decimal place. Identify 3-D shapes, including cubes and other cuboids, from 2-D representations	Use number facts to add Use number facts to subtract Order decimal numbers and position them on a number line Round decimals with 1 decimal place to the nearest whole number Choose appropriate written or mental methods to add 4-digit numbers Choose appropriate written or mental methods to subtract numbers
Conceptual Vocabulary: **Number and Place Value:** hundred-thousands, ten-thousands, thousands, hundreds, tens, ones, exchange, digit, columns, value, position, increase, decrease, round, multiple, negative, positive, zero **Decimals:** thousandths, hundredths, tenths, ones, digit, column, round, decimal, place, **Geometry: Properties of Shapes:** net, square, rectangle, triangle, polygon, cube, cuboid, prism, pyramid	

Term 2

Maths Lessons: Intelligent Practice	Maths on Track: Deliberate Practice

Solve problems involving number up to three decimal places Add and subtract numbers mentally with increasingly large numbers Add and subtract whole numbers with more than 4 digits, including using formal written. 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 Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers. Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers factor pairs of a number, and common factors of two numbers. Multiply and divide whole numbers and those involving decimals by 10,100 and 1000. Establish whether a number up to 100 is prime and recall prime numbers up to 19. Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes Recognise and use square numbers and cube numbers, and the notation for squared and cubed	Double and halve numbers Deliberate Practice Past and Present Multiplication Tables 12 x 8, 12 x 11, 12 x 3, 3 x 3, 3 x 4, 3 x 6, 3 x 7 Use place value and known facts to multiply mentally Use place value and known facts to divide mentally Multiply 3-digit numbers by 1-digit numbers using efficient methods Divide 3-digit numbers by 1-digit numbers using efficient methods Compare and order numbers up to 1,000,000 Round numbers to the nearest 10, 100, 1000, 10,000 and 100,000
Conceptual Vocabulary: **Addition and Subtraction:** exchange, regroup, efficient	

Multiplication and Division: Powers of 10: tenths, hundredths, thousandths, column, digit, multiplier, dividend, divisor, _ times larger, – times smaller **Multiplication and Division: Properties of Number:** prime, composite, factor, multiple, integer, common factor, divisible, squared, cubed

Term 3

Maths Lessons: Intelligent Practice	Maths on Track: Deliberate Practice
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. 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 Multiply and divide numbers mentally drawing upon known facts. Solve equals sign problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates. Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign 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.	Compare and order decimals Deliberate Practice Past and Present Multiplication Tables 3 x 8, 3 x 9, 4 x 4, 4 x 6, 4 x 7 Round decimal numbers Multiply by 100, 100 and 1000 Divide by 100, 100 and 1000
Conceptual Vocabulary: **Multiplication and Division: Written Methods:** multiplier multiplicand product prime composite factor multiple integer common factor divisible squared cubed **Geometry: Position and Direction:** congruent translate translation reflect reflection parallel axes object image	

Term 4

Maths Lessons: Intelligent Practice	Maths on Track: Deliberate Practice
Read and write decimal numbers as fractions Solve problems which require knowing percentage and decimal equivalents of 1/2 , 1/4 , 1/5 , 2/5 , 4/5 and those fractions with a denominator of a multiple of 10 or 25 Recognise the per cent symbol and understand that per cent relates to “number of parts per hundred”, and write percentages as a fraction with denominator hundred, and as a decimal. Solve problems involving number up to three decimal places. Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths Compare and order fractions whose denominators are all multiples of the same number Convert between different units of metric measure Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints Use all four operations to solve problems involving measure (e.g. length, mass, volume, money) using decimal notation, including scaling.	Use place value or adjusting to add numbers mentally Deliberate Practice Past and Present Multiplication Tables 4 x 7, 4 x 8, 4 x 9 Double decimal and whole numbers Use place value or adjusting to subtract numbers mentally Halve decimal and whole numbers
Conceptual Vocabulary:	

Fractions, Decimals and Percentages: multiples denominator numerator unit fraction non-unit fraction equivalent tenths hundredths thousandths percentage **Measurement: Length, Mass and Capacity:** convert metres centimetres millimetres litres millilitres kilograms grams metric imperial perimeter rectilinear inch pint pounds (lbs)

Term 5

Maths Lessons: Intelligent Practice	Maths on Track: Deliberate Practice
Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements >1 as mixed numbers Add and subtract fractions with the same denominator and denominators that are multiples of the same number	Multiply numbers mentally using known facts and place value Deliberate practice past and present Multiplication Tables 6 x 6, 6 x 7, 6 x 8 Compare and order fractions Divide numbers mentally using known facts and place value Solve problems: Percentage and decimal equivalents
Conceptual Vocabulary: **Fractions: Calculating:** mixed number improper fraction numerator denominator equivalent common denominator multiple factor non-unit fraction unit fraction multiplier mixed number improper fraction numerator denominator equivalent common denominator multiple factor non-unit fraction unit fraction multiplier mixed number improper fraction numerator denominator	

equivalent common denominator multiple factor non-unit fraction unit fraction multiplier

Term 6

Maths Lessons: Intelligent Practice	Maths on Track: Deliberate Practice
Solve comparison, sum and difference problems using information presented in a line graph. Complete, read and interpret information in tables, including timetables Use the properties of a rectangle to deduce related facts and find missing lengths and angles. Distinguish between regular and irregular polygons based on reasoning about equal sides and angles Identify angles at a point and one whole turn, angles at a point on a straight line and ½ a turn, other multiples of 90 degrees Draw given angles and measure them in degrees. Know angles are measured in degrees; estimate and compare acute, obtuse and reflex angles Solve problems involving converting between units of time Calculate and compare the area of rectangles (including squares) and including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes. Estimate volume (e.g. using 1 cm blocks to build cuboids (including cubes)) and capacity	Divide numbers mentally using known facts and place value Deliberate Practice Past and Present Multiplication Tables 6 x 8, 6 x 9, 7 x 7, 7 x 8, 7 x 9 Solve problems: Percentage and decimal equivalents Add numbers with more than 4 digits using efficient methods Multiply numbers mentally using factors or partitioning Subtract numbers with more than 4 digits using efficient methods

	Divide numbers mentally using factors or partitioning
Conceptual Vocabulary: **Measurement: Area and Volume:** area volume capacity squared cubed **Geometry: Properties of Shapes:** angle acute obtuse reflex degrees (º) regular irregular polygon rectangle quadrilateral diagonal **Measurement: Time:** seconds minutes hours days weeks **Statistics:** scale represent axes category column row timetable duration	

Year Six

Term 1

Maths Lessons: Intelligent Practice	Maths on Track: Deliberate Practice
Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit Solve number problems and practical problems that involve all of the above. Use negative numbers in context, and calculate intervals across zero Round any whole number to a required degree of accuracy 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. 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	ArithmeCheck5 Deliberate Practice Past and Present Compare and order numbers up to 1,000,000 Compare and order decimal numbers Add numbers with more than 4 digit using efficient methods Round decimal numbers Subtract numbers with more than 4

Identify common factors, common multiples and prime numbers. Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication Perform mental calculations, including with mixed operations and large numbers. Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. 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 written division methods in cases where the answer has up to two decimal places. Multiply one-digit numbers with up to two decimal places by whole numbers Solve problems which require answers to be rounded to specified degrees of accuracy. Identify the value of each digit to 3 decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to 3 decimal places Draw and translate simple shapes on the coordinate plane, and reflect them in the axes. Describe positions on the full coordinate grid (all four quadrants).	digit using efficient methods Solve problems with negative numbers Round numbers ot the nearest 10, 100, 1000, 10,000 and 100,000 Multiplication facts: 8 x 8, 8 x 9, 9 x 9, 12 x 3, 12 x 4, 12 x 6
Conceptual Vocabulary:	

Number and Place Value: million, hundred thousands, ten thousands, thousands, hundreds, tens, ones, exchange, digit, columns, value, position, increase, decrease, round, multiple, negative, positive, zero **Decimals:** tenths, hundredths, thousandths, column, digit, multiplicand, multiplier, dividend, divisor, _ times larger, – times smaller **Multiplication and Division:** multiples, common, divisible, factors, prime, multiplier, multiplicand, product, divisor, dividend, quotient, remainder **Geometry: Properties of Shapes:** coordinates, axes, x-axis, y-axis, quadrant, negative, positive, origin, translate, reflect, object, image

Term 2

Maths Lessons: Intelligent Practice	Maths on Track: Deliberate Practice
Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts Associate a fraction with division and calculate decimal fraction equivalents for a simple fraction Compare and order fractions, including fractions >1 Use common factors to simplify fractions; use common multiples to express fractions in the same denomination Use their knowledge of the order of operations to carry out calculations involving the four operations 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	Add decimal numbers using efficient written or mental methods Deliberate Practice Past and Present Subtract decimal numbers using efficient written or mental methods Multiply numbers using efficient written or mental methods Divide numbers using efficient written or mental methods Add and subtract fractions

Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons Recognise, describe and build simple 3-D shapes, including making nets. Draw 2-D shapes using given dimensions and angles	Place value Round numbers Multiplication facts: 12 x 7, 12 x 8, 12 x 9, 12 x 11
Conceptual Vocabulary: **Fractions, Decimals and Percentages:** simplify, denominator, numerator, equivalent, improper, proper, common, multiple, factor, equivalent, percent **Geometry: Properties of Shapes (Angles):** degrees, vertex, vertically, opposite, equilateral, isosceles, scalene, quadrilateral, polygon, regular, interior, pentagon, hexagon, octagon **Geometry: Properties of Shapes:** symmetry, parallel, perpendicular, dimension, construct, prism, pyramid, polyhedron, face, edge, vertex, vertices, pentagonal, triangular, hexagonal, isometric, circumference, diameter, radius **Addition, Subtraction, Multiplication and Division:** addition, subtraction, multiplication, division, brackets, order of operations, indices, squared, cubed	

Term 3

Maths Lessons: Intelligent Practice	Maths on Track: Deliberate Practice
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 Divide proper fractions by whole numbers	Calculate duration of events Deliberate Practice Past and Present Negative numbers Count forwards/backwards and sequences Multiples, factors, primes and squares

	Add and subtract numbers with up to 2 significant figures Add and subtract numbers with more than 4-digits Multiply and divide whole numbers mentally using 12x12 facts and place value Multiply and divide whole numbers and decimals up to 2d.p. by powers of 10 Multiply and divide 2,3&4-digit numbers by 1&2-digit numbers Recognise and use equivalent fractions Recognise and use equivalencies between simple fractions, decimals and % Multiplication facts: 12 x 11, 12 x 12, 11 x 11
Conceptual Vocabulary: **Fractions: Calculating:** numerator denominator proper fraction product divisor equivalent numerator denominator proper fraction improper fraction	

mixed number common denominator factor numerator denominator proper fraction improper fraction mixed number common denominator sum factor

Term 4

Maths Lessons: Intelligent Practice	Maths on Track: Deliberate Practice
Generate and describe linear number sequences Express missing number problems algebraically. Use simple formulae Find pairs of numbers that satisfy an equation with two unknowns Enumerate possibilities of combinations of two variables. Solve problems involving calculation of percentages and the use of percentages for comparison. 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 Solve problems involving the calculation and conversion of units of measure, using decimal notation up to 3 decimal places where appropriate. Recognise that shapes with the same areas can have different perimeters and vice versa. Calculate the area of parallelograms and triangles	Recognise and use equivalent fractions Recognise and use equivalencies between fractions, decimals and percentages Address identified gaps / Practise solving routine and non-routine problems Find simple fractions and percentages of a quantity Shape Properties 3-D shapes and nets Constructions Add and Subtract Decimals Multiply 1-digit decimal number by single digit number

Convert between miles and kilometres 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. Recognise when it is possible to use formulae for area and volume of shapes. Calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed and cubic metres and extending to other units	Add and Subtract Fractions with same denominators including Mixed Numbers Add and Subtract Fractions, denominators that are multiples of same number Angle facts Co-ordinates Reflections and Translations
Conceptual Vocabulary: **Ratio and Proportion:** equivalent percentage scale factor dimension similar **Measurement: Converting Units:** convert miles kilometres metres centimetres millimetres litres millilitres kilograms grams **Measurement: Area and Volume:** triangle parallelogram area perimeter base perpendicular height volume cuboid cube squared cubic cubed **Algebra:** formula unknown variable linear sequence term	

Term 5

Maths Lessons: Intelligent Practice	Maths on Track: Deliberate Practice
Interpret and construct pie charts and line graphs and use these to solve problems. Calculate and interpret the mean as an average	Deliberate Practice: Past and Present Address identified gaps / Practise solving routine and non-routine problems

	Extra Problem solving
Conceptual Vocabulary: **Statistics:** line graph pie chart mean average data discrete **SAT's Targeted Revision & Problem Solving:**	

Term 6

Maths Lessons: Intelligent Practice **Securing learning - Moving on Up**	**Maths on Track: Deliberate Practice**
Read, write and order numbers up to 10,000,000 Calculate intervals across zero Multiply and divide numbers up to 4 digits by a 2-digit number choosing efficient methods and interpreting the remainders Simplify, compare and order fractions, including fractions > 1 Know and use simple fraction, decimal and percentage equivalents Add and subtract fractions with denominators that are not multiples of each other and mixed numbers Find percentages of an amount Describe and plot positions on a 2-D grid as coordinates in the four quadrants Know and use angle properties of straight lines, at a point and shapes Convert between different units of metric measure Calculate the area of rectangles and triangles and volumes of cuboids Find possible values in missing number problems involving one or two unknowns	Identify the value of each digit to 3dp Compare and order decimals Deliberate Practice: Past and Present Address identified gaps / Practise solving routine and non-routine problems Compare and order decimals Compare and order fractions Recall and use equivalence between simple fractions and decimals
Conceptual Vocabulary:	

Place Value: million, hundred thousands, ten thousands, thousands, hundreds, tens, ones, exchange, digit, columns, value, position, increase, decrease, round, multiple, negative, positive, zero
Multiplication and Division: multiples, common, divisible, factors, prime, multiplier, multiplicand, product, divisor, dividend, quotient, remainder
Fractions, Decimals and Percentages: simplify, denominator, numerator, equivalent, improper, proper, common, multiple, factor, equivalent, percent
Geometry: degrees, vertex, vertically, opposite, equilateral, isosceles, scalene, quadrilateral, polygon, regular, interior, pentagon, hexagon, octagon symmetry, parallel, perpendicular, dimension, construct, prism, pyramid, polyhedron, face, edge, vertex, vertices, pentagonal, triangular, hexagonal, isometric, circumference, diameter, radius
Measurement: convert miles kilometres metres centimetres millimetres litres millilitres kilograms grams triangle parallelogram area perimeter base perpendicular height volume cuboid cube squared cubic cubed
Algebra: formula unknown variable linear sequence term

By the end of key stage 3, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

Working mathematically

- Through the mathematics content, pupils should be taught to:
- Develop fluency
- consolidate their numerical and mathematical capability from key stage 2 and extend their understanding of the number system and place value to include decimals,
- fractions, powers and roots
- select and use appropriate calculation strategies to solve increasingly complex problems
- use algebra to generalise the structure of arithmetic, including to formulate mathematical relationships
- substitute values in expressions, rearrange and simplify expressions, and solve equations
- move freely between different numerical, algebraic, graphical and diagrammatic representations [for example, equivalent fractions, fractions and decimals, and equations and graphs]
- develop algebraic and graphical fluency, including understanding linear and simple quadratic functions

- use language and properties precisely to analyse numbers, algebraic expressions, 2-D and 3-D shapes, probability and statistics.

Reason mathematically

- extend their understanding of the number system; make connections between number relationships, and their algebraic and graphical representations
- extend and formalise their knowledge of ratio and proportion in working with measures and geometry, and in formulating proportional relations algebraically
- identify variables and express relations between variables algebraically and graphically
- make and test conjectures about patterns and relationships; look for proofs or counterexamples
- begin to reason deductively in geometry, number and algebra, including using geometrical constructions
- interpret when the structure of a numerical problem requires additive, multiplicative or proportional reasoning
- explore what can and cannot be inferred in statistical and probabilistic settings, and begin to express their arguments formally.

Solve problems

- develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems
- develop their use of formal mathematical knowledge to interpret and solve problems, including in financial mathematics
- begin to model situations mathematically and express the results using a range of formal mathematical representations
- select appropriate concepts, methods and techniques to apply to unfamiliar and nonroutine problems.

Subject content

Number

Pupils should be taught to:

- understand and use place value for decimals, measures and integers of any size
- order positive and negative integers, decimals and fractions; use the number line as a model for ordering of the real numbers; use the symbols =, ≠, <, >, ≤, ≥
- use the concepts and vocabulary of prime numbers, factors (or divisors), multiples, common factors, common multiples, highest common factor, lowest common multiple, prime factorisation, including using product notation and the unique factorization property
- use the four operations, including formal written methods, applied to integers, decimals,proper and improper fractions, and mixed numbers, all both positive and negative
- use conventional notation for the priority of operations, including brackets, powers, roots and reciprocals
- recognise and use relationships between operations including inverse operations
- use integer powers and associated real roots (square, cube and higher), recognize powers of 2, 3, 4, 5 and distinguish between exact representations of roots and their decimal approximations
- interpret and compare numbers in standard form A x 10n $1 \leq A < 10$, where n is a positive or negative integer or zero
- work interchangeably with terminating decimals and their corresponding fractions (such 3.5 and $\frac{7}{2}$ or 0.375 and $\frac{3}{8}$)
- define percentage as 'number of parts per hundred', interpret percentages and percentage changes as a fraction or a decimal, interpret these multiplicatively, express one quantity as a percentage of another, compare two quantities using percentages, and work with percentages greater than 100%
- interpret fractions and percentages as operators
- use standard units of mass, length, time, money and other measures, including with decimal quantities
- ound numbers and measures to an appropriate degree of accuracy [for example, to a number of decimal places or significant figures]
- use approximation through rounding to estimate answers and calculate possible resulting errors expressed using inequality notation $a < x \leq b$
- use a calculator and other technologies to calculate results accurately and then interpret them appropriately

- appreciate the infinite nature of the sets of integers, real and rational numbers.

Algebra

Pupils should be taught to:

- use and interpret algebraic notation, including:
  - ab in place of a × b
  - 3y in place of y + y + y and 3 × y
  - a^2 in place of a × a, a^3 in place of a × a × a
  - a^2b in place of a × a × b,
  - $\frac{a}{b}$ in place of a ÷ b
- coefficients written as fractions rather than as decimals
- brackets
- substitute numerical values into formulae and expressions, including scientific formulae
- understand and use the concepts and vocabulary of expressions, equations, inequalities, terms and factors
- simplify and manipulate algebraic expressions to maintain equivalence by:
  - collecting like terms
  - multiplying a single term over a bracket
  - taking out common factors
  - expanding products of two or more binomials
- understand and use standard mathematical formulae; rearrange formulae to change the subject
- model situations or procedures by translating them into algebraic expressions or formulae and by using graphs
- use algebraic methods to solve linear equations in one variable (including all forms that require rearrangement)
- work with coordinates in all four quadrants
- recognise, sketch and produce graphs of linear and quadratic functions of one variable with appropriate scaling, using equations in x and y and the Cartesian plane
- interpret mathematical relationships both algebraically and graphically
- reduce a given linear equation in two variables to the standard form y = mx + c; calculate and interpret gradients and intercepts of graphs of such linear equations numerically, graphically and algebraically

- use linear and quadratic graphs to estimate values of y for given values of x and vice versa and to find approximate solutions of simultaneous linear equations
- find approximate solutions to contextual problems from given graphs of a variety of functions, including piece-wise linear, exponential and reciprocal graphs
- generate terms of a sequence from either a term-to-term or a position-to-term rule
- recognise arithmetic sequences and find the nth term
- recognise geometric sequences and appreciate other sequences that arise.

Ratio, proportion and rates of change

Pupils should be taught to:

- change freely between related standard units [for example time, length, area, volume/capacity, mass]
- use scale factors, scale diagrams and maps
- express one quantity as a fraction of another, where the fraction is less than 1 and greater than 1
- use ratio notation, including reduction to simplest form
- divide a given quantity into two parts in a given part:part or part:whole ratio; express the division of a quantity into two parts as a ratio
- understand that a multiplicative relationship between two quantities can be expressed as a ratio or a fraction
- relate the language of ratios and the associated calculations to the arithmetic of fractions and to linear functions
- solve problems involving percentage change, including: percentage increase, decrease and original value problems and simple interest in financial mathematics
- solve problems involving direct and inverse proportion, including graphical and algebraic representations
- use compound units such as speed, unit pricing and density to solve problems.

Geometry and measures

Pupils should be taught to:

- derive and apply formulae to calculate and solve problems involving: perimeter and area of triangles, parallelograms, trapezia, volume of cuboids (including cubes) and other prisms (including cylinders)
- calculate and solve problems involving: perimeters of 2-D shapes (including circles), areas of circles and composite shapes
- draw and measure line segments and angles in geometric figures, including interpreting scale drawings
- derive and use the standard ruler and compass constructions (perpendicular bisector of a line segment, constructing a perpendicular to a given line from/at a given point, bisecting a given angle); recognise and use the perpendicular distance from a point to a line as the shortest distance to the line
- describe, sketch and draw using conventional terms and notations: points, lines, parallel lines, perpendicular lines, right angles, regular polygons, and other polygons that are reflectively and rotationally symmetric
- use the standard conventions for labelling the sides and angles of triangle ABC, and know and use the criteria for congruence of triangles
- derive and illustrate properties of triangles, quadrilaterals, circles, and other plane figures [for example, equal lengths and angles] using appropriate language and technologies
- identify properties of, and describe the results of, translations, rotations and reflections applied to given figures
- identify and construct congruent triangles, and construct similar shapes by enlargement, with and without coordinate grids
- apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles
- understand and use the relationship between parallel lines and alternate and corresponding angles
- derive and use the sum of angles in a triangle and use it to deduce the angle sum in any polygon, and to derive properties of regular polygons
- apply angle facts, triangle congruence, similarity and properties of quadrilaterals to derive results about angles and sides, including Pythagoras' Theorem, and use known results to obtain simple proofs
- use Pythagoras' Theorem and trigonometric ratios in similar triangles to solve problems involving right-angled triangles
- use the properties of faces, surfaces, edges and vertices of cubes, cuboids, prisms, cylinders, pyramids, cones and spheres to solve

problems in 3-D
- interpret mathematical relationships both algebraically and geometrically.

Probability

Pupils should be taught to:

- record, describe and analyse the frequency of outcomes of simple probability experiments involving randomness, fairness, equally and unequally likely outcomes, using appropriate language and the 0-1 probability scale
- understand that the probabilities of all possible outcomes sum to 1
- enumerate sets and unions/intersections of sets systematically, using tables, grids and Venn diagrams
- generate theoretical sample spaces for single and combined events with equally likely, mutually exclusive outcomes and use these to calculate theoretical probabilities.

Statistics

Pupils should be taught to:

- describe, interpret and compare observed distributions of a single variable through: appropriate graphical representation involving discrete, continuous and grouped data; and appropriate measures of central tendency (mean, mode, median) and spread (range, consideration of outliers)
- construct and interpret appropriate tables, charts, and diagrams, including frequency tables, bar charts, pie charts, and pictograms for categorical data, and vertical line (or bar) charts for ungrouped and grouped numerical data
- describe simple mathematical relationships between two variables (bivariate data) in observational and experimental contexts and illustrate using scatter graphs