UNIT	Maths topic	Learning objectives/expected outcomes	NC programmes of study
1	**Number and place value (1)**	• Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit • Use decimal notation for tenths, hundredths and thousandths • Partition, round and order decimals with up to three places, and position them on the number line • Use negative numbers in context, and calculate intervals across zero *I can read the value of each digit in a number or decimal* *I can round large numbers to the nearest multiple of 10, 100 or 1000* *I can round decimals to the nearest whole number and tenth* *I can put a set of decimal numbers in order* *I can put numbers that include negative numbers in order*	• read, write, order and compare numbers up to 10 000 000 and determine the value of each digit • round any whole number to a required degree of accuracy • use negative numbers in context, and calculate intervals across zero • solve number and practical problems that involve all of the above • identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places

2	**Addition and subtraction (1)**	• Find the difference between a positive and a negative number, or two negative numbers, in context • Perform mental calculations, including with mixed operations, decimals and large numbers • Use their knowledge of the order of operations to carry out calculations involving the four operations • Use efficient written methods to add and subtract four-digit numbers and decimals • Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use • Use estimation to check answers to calculations • Add and subtract fractions with different denominators *I can find the difference between positive and negative numbers* *I can add and subtract whole numbers and decimals in my head*	• perform mental calculations, including with mixed operations and large numbers • use their knowledge of the order of operations to carry out calculations involving the four operations • solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why • solve problems involving addition, subtraction, multiplication and division • use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy • add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions • solve problems which require answers to be rounded to specified degrees of accuracy • solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate

		I can use brackets in calculations *I can use efficient written methods to add and subtract whole numbers and decimal numbers* *I can round numbers to estimate answers to calculations* *I can use equivalent fractions to add and subtract fractions with different denominators*	
3	**Geometry (1)**	• Identify, visualise and describe properties of regular and irregular polygons • Use knowledge of properties to draw 2-D shapes accurately using given dimensions and angles • Measure and compare different angles using a protractor • Calculate angles of triangles and at a point on a straight line • Use coordinates in the first quadrant to draw, locate and complete shapes that meet given properties • Draw and translate shapes on a grid	• draw 2-D shapes using given dimensions and angles • recognise, describe and build simple 3-D shapes, including making nets • compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons • recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles • draw and translate simple shapes on the coordinate plane, and reflect them in the axes

		I can describe the properties of regular and irregular polygons *I can draw 2-D shapes accurately, with given dimensions and angles* *I can estimate and measure angles in shapes or where two lines meet* *I can draw angles less than 180° to within 5°* *I can draw where a shape will be after it has been reflected or translated and plot their coordinates* *I can calculate the angle sum of triangles*	
4	**Measures (1)**	• Select and use standard metric units of measure and convert between units, using decimals to two places (e.g. change 2.75 litres to 2750 ml, or vice versa) • Read and interpret scales on a range of measuring instruments • Measure and calculate the perimeter and area of composite rectilinear shapes • Recognise and calculate volume using 1cm^3 blocks to build cubes and cuboids and capacity	• solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate • use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places • recognise that shapes with the same areas can have different perimeters and vice versa • recognise when it is possible to use formulae for area and

		using water • Solve problems using timetables and 24-hour clock notation *I can record and convert measures between units including decimals* *I can interpret a reading between two unnumbered divisions on a scale when measuring* *I can solve problems involving calculating perimeter or area of shapes* *I can work out the volume of different cubes and cuboids made from centimetre cubes* *I can solve problems, using a timetable written in 24-hour clock notation*	volume of shapes • calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm^3) and cubic metres (m^3), and extending to other units such as mm^3 and km^3
5	**Multiplication and division (1)**	• Use knowledge of place value and multiplication facts to 12 × 12 to derive related multiplication and division facts • Solve problems involving multiplication and division with larger numbers by factorising • Multiply numbers up to four digits by a one- or two-digit number using an efficient written method	• multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication • divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context • divide numbers up to 4 digits by a two-digit whole number using the formal written method of short division

		• Divide numbers up to four digits by a one-digit number using an efficient written method of short division • Interpret remainders in division as whole number remainders, fractions, or by rounding, as appropriate for the context • Multiply proper fractions and mixed numbers by whole numbers • Use approximations, inverse operations and tests of divisibility to estimate and check results *I can use tables facts to work out other facts with decimals and large numbers* *I can factorise numbers to help with mental calculations* *I can use an efficient written method to multiply a three-digit number by a two-digit number* *I can use a short division method and can show the remainder in different ways* *I can multiply fractions and mixed numbers by whole numbers*	where appropriate, interpreting remainders according to the context • perform mental calculations, including with mixed operations and large numbers • use their knowledge of the order of operations to carry out calculations involving the four operations • solve problems involving addition, subtraction, multiplication and division • use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy • multiply one-digit numbers with up to two decimal places by whole numbers • use written division methods in cases where the answer has up to two decimal places • solve problems which require answers to be rounded to specified degrees of accuracy • solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate

		I can give a good estimate of an answer before I multiply or divide large numbers or decimals	
6	**Fractions, decimals and percentages (1)**	• Find fractions and percentages of numbers and quantities (e.g. 7/10 of 90, 20% of 30) • Use equivalent fractions to compare and order fractions • Recall and use equivalences between fractions, decimals and percentages • Recognise mixed numbers and improper fractions and convert from one form to the other • Solve simple problems involving direct proportion by scaling quantities up or down *I can explain how to find a fraction or percentage of a quantity* *I can use equivalent fractions to put fractions in order of size* *I can give a fraction such as 3/5 as a percentage* *I know that 5 2/3 is the same as 17/3*	• compare and order fractions, including fractions >1 • associate a fraction with division and calculate decimal fraction equivalents for a simple fraction • recall and use equivalences between simple fractions, decimals and percentages, including in different contexts • 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 the calculation of percentages such as 15% of 360 and the use of percentages for comparison • 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

		I can scale up or down to solve problems	
7	**Patterns and number (1)**	• Identify common factors and common multiples of numbers • Recognise that prime numbers have only two factors and identify prime numbers less than 100 • Express missing number problems algebraically • Use simple formulae expressed in words • Generate and describe linear number sequences and generalise to find a 'rule' • Find pairs of numbers that satisfy number sentences involving two unknowns • Read years written in Roman numerals *I can find common factors and common multiples of numbers* *I can show you all the prime numbers up to 100* *I can describe and explain sequences, patterns and*	• identify common factors, common multiples and prime numbers • express missing number problems algebraically • use simple formulae • generate and describe linear number sequences • find pairs of numbers that satisfy an equation with two unknowns • enumerate possibilities of combinations of two variables

		relationships *I can write and use simple expressions in words and formulae* *I can read years using Roman numerals*	
8	**Addition and subtraction (2)**	• Perform mental calculations, including with mixed operations, negative numbers, decimals and large numbers • Use their knowledge of the order of operations to carry out calculations involving the four operations • Use efficient written methods to add and subtract large numbers and decimals • Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why • Use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy • Add and subtract fractions with different denominators and mixed numbers *I can add and subtract whole numbers and*	• perform mental calculations, including with mixed operations and large numbers • use their knowledge of the order of operations to carry out calculations involving the four operations • solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why • solve problems involving addition, subtraction, multiplication and division • use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy • add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions • solve problems which require answers to be rounded to specified degrees of accuracy • solve problems involving the calculation and conversion of

		decimals in my head *I can explore the order of operations and use brackets* *I can use efficient written methods to add and subtract whole numbers and decimal numbers* *I can round numbers to estimate answers to calculations* *I can use equivalent fractions to add and subtract fractions with different denominators*	units of measure, using decimal notation up to three decimal places where appropriate
9	**Geometry (2)**	• Compare and classify geometric shapes based on their properties and sizes • Describe, identify and visualise parallel and perpendicular edges or faces; use these properties to classify 2-D shapes and 3-D solids • Estimate angles, and use a protractor to measure and draw them, on their own and in shapes • Calculate angles in a quadrilateral or around a point • Use coordinates in two quadrants to draw, locate and complete shapes that meet given properties	• draw 2-D shapes using given dimensions and angles • recognise, describe and build simple 3-D shapes, including making nets • compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons • recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles • draw and translate simple shapes on the coordinate plane, and reflect them in the axes

		• Draw, translate and reflect shapes on a grid *I can sort and classify 2-D and 3-D shapes based on their properties* *I can identify 3-D shapes with perpendicular or parallel edges or faces* *I can estimate angles, and use a protractor to measure and draw them* *I know that the angle sum of a triangle is 180° and the sum of angles around a point is 360°* *I can use coordinates when the x-coordinates are positive or negative* *I can reflect shapes on grids*	
10	**Measures (2)**	• Select and use standard metric units of measure and convert between units using decimals to three places • Measure and calculate using imperial units still in everyday use; know their approximate metric values • Recognise that shapes with the same areas	• solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate • use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places

		can have different perimeters and vice versa • Measure and calculate the area of triangles • Calculate the volume of cubes and cuboids using centimetre cubed (cm^3) *I can convert measures between units including decimals* *I know that 1 pint is just over half a litre, and that 1 litre is about 13/4 pints* *I know that shapes with the same areas can have different perimeters and vice versa* *I can calculate the area of triangles using my knowledge of areas of rectangles* *I can calculate the volume of different cubes and cuboids*	• convert between miles and kilometres • recognise that shapes with the same areas can have different perimeters and vice versa • recognise when it is possible to use formulae for area and volume of shapes • calculate the area of parallelograms and triangles • calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm^3) and cubic metres (m^3), and extending to other units such as mm^3 and km^3
11	**Multiplication and division (2)**	• Use knowledge of place value and multiplication facts to 12 × 12 to derive related multiplication and division facts • Use knowledge of the order of operations to carry out calculations involving the four operations	• multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication • divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context

		• Multiply numbers up to four digits by a two-digit whole number using an efficient written method • Divide numbers up to four digits by a two-digit whole number using an efficient written method • Interpret remainders in division as whole number remainders, fractions, or by rounding, as appropriate for the context • Calculate and interpret the mean as an average *I can use tables facts to work out related facts with decimal numbers and bigger numbers* *I can explore the order of operations and use brackets in calculations* *I can use an efficient written method to multiply numbers up to four-digits by a two-digit number* *I can use an efficient written division method to divide a four-digit number by a two-digit number* *I can show remainders in different ways when I divide numbers*	• divide numbers up to 4 digits by a two-digit whole number using the formal written method of short division where appropriate, interpreting remainders according to the context • perform mental calculations, including with mixed operations and large numbers • use their knowledge of the order of operations to carry out calculations involving the four operations • solve problems involving addition, subtraction, multiplication and division • use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy • multiply one-digit numbers with up to two decimal places by whole numbers • use written division methods in cases where the answer has up to two decimal places • solve problems which require answers to be rounded to specified degrees of accuracy • solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate • calculate and interpret the mean as an average

		I can work out the mean average of a set of numbers	
12	**Fractions, decimals and percentages (2)**	• Use common factors to simplify fractions and common multiples to show equivalent fractions • Compare and order fractions, including fractions greater than 1, by converting them to fractions with a common denominator • Calculate fractions and percentages of whole-numbers, money or measures (e.g. 3/5 of 45, 15% of £40) • Solve problems involving proportions of quantities • Use ratio to compare quantities, size and scale drawings *I can simplify fractions and put them in order of size* *I can find a percentage of an amount of money such as 15% of £30* *I can solve ratio and proportion problems*	• use common factors to simplify fractions; use common multiples to express fractions in the same denomination • compare and order fractions, including fractions >1 • associate a fraction with division and calculate decimal fraction equivalents for a simple fraction • recall and use equivalences between simple fractions, decimals and percentages, including in different contexts • 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 the calculation of percentages such as 15% of 360 and the use of percentages for comparison • 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

13	**Number and place value (2)**	• Read, write, order and compare numbers up to at least 10 000 000 and determine the value of each digit • Identify the value of each digit to three decimal places and use this to help order decimals • Multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places • Round any number to a required degree of accuracy *I can read and write numbers up to 10 000 000* *I can say the value of each digit in a number, including decimals up to thousandths* *I can put a set of decimal numbers in order* *I can round decimals to the nearest whole number, tenth and hundredth* *I can multiply or divide a whole number or decimal by 10, 100 and 1000* *I can use decimals to record measurements and money*	• read, write, order and compare numbers up to 10 000 000 and determine the value of each digit • round any whole number to a required degree of accuracy • use negative numbers in context, and calculate intervals across zero • solve number and practical problems that involve all of the above • identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places

14	**Geometry (3)**	• Recognise, describe and build 3-D shapes, including making nets • Find unknown angles in any triangles, quadrilaterals, and regular polygons • Find unknown angles where they meet at a point, are on a straight line, and are vertically opposite • Illustrate and name parts of circles, including radius, diameter and circumference • Use coordinates in all four quadrants to draw, locate and complete shapes that meet given properties • Visualise and draw on grids where a shape will be after reflection, after translation, or after rotation through 90° or 180° about its centre or one of its vertices *I can make nets of 3-D shapes to make models of the shapes* *I can work out missing angles on a straight line or*	• draw 2-D shapes using given dimensions and angles • recognise, describe and build simple 3-D shapes, including making nets • compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons • illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius • recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles • describe positions on the full coordinate grid (all four quadrants) • draw and translate simple shapes on the coordinate plane, and reflect them in the axes

		when they meet at a point *I know the parts of a circle, including diameter, radius and circumference* *I can use coordinates when the x-coordinate and the y-coordinate are positive or negative* *I can reflect, rotate and translate shapes on grids*	
15	**Patterns and number (2)**	• Identify common factors and common multiples of numbers • Recognise that prime numbers have only two factors and identify prime numbers less than 100 • Find the prime factors of two-digit numbers • Express missing number problems algebraically • Find pairs of numbers that satisfy number sentences involving two unknowns • Represent and interpret sequences, patterns and relationships and suggest and test hypotheses	• identify common factors, common multiples and prime numbers • express missing number problems algebraically • use simple formulae • generate and describe linear number sequences • find pairs of numbers that satisfy an equation with two unknowns • enumerate possibilities of combinations of two variables

		• Construct and use simple expressions and formulae in words then symbols *I can find the lowest common multiples of different numbers* *I can find the highest common factors of different numbers* *I can tell you all the prime numbers up to 100 and find the prime factors of other numbers* *I can describe and explain sequences, patterns and relationships* *I can suggest hypotheses and test them* *I can write and use simple expressions in words and formulae* *I can solve 'finding all possibilities' problems*	
16	**Measures (3)**	• Select and use standard metric units of measure and convert between units using decimals to three places • Measure and calculate using imperial units still in everyday use; know their approximate metric values	• solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate • use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal

		• Calculate the area of parallelograms • Calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm^3) and cubic metres (m^3) *I can convert measures between units including decimals* *I can compare readings from different scales* *I know that 1 mile is about 1.6 km, and that 1 km is about 5/8 of a mile* *I can calculate the area of parallelograms using my knowledge of areas of rectangles and triangles* *I can calculate and compare the volume of different cubes and cuboids*	places • convert between miles and kilometres • recognise that shapes with the same areas can have different perimeters and vice versa • recognise when it is possible to use formulae for area and volume of shapes • calculate the area of parallelograms and triangles • calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm^3) and cubic metres (m^3), and extending to other units such as mm^3 and km^3
17	**Multiplication and division (3)**	• Use knowledge of place value and multiplication facts to 12 × 12 to derive related multiplication and division facts involving decimals • Use knowledge of the order of operations to carry out calculations involving the four operations	• multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication • divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context

		• Multiply one-digit numbers with up to two decimal places by whole numbers • Multiply and divide numbers up to four digits by a two-digit whole number using an efficient written method • Use written division methods for money and measures where the answer has up to two decimal places • Multiply simple pairs of proper fractions, writing the answer in its simplest form (e.g. 1/4 x 1/2 = 1/8) • Divide proper fractions by whole numbers (e.g. 1/3 ÷ 2 = 1/6) *I can use tables facts to work out related facts with decimal numbers and bigger numbers* *I know the order of operations to use in calculations with brackets* *I can use efficient written methods to multiply and divide numbers* *I can divide money so that the answer has two decimal places*	• divide numbers up to 4 digits by a two-digit whole number using the formal written method of short division where appropriate, interpreting remainders according to the context • perform mental calculations, including with mixed operations and large numbers • use their knowledge of the order of operations to carry out calculations involving the four operations • solve problems involving addition, subtraction, multiplication and division • use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy • multiply simple pairs of proper fractions, writing the answer in its simplest form • divide proper fractions by whole numbers • multiply one-digit numbers with up to two decimal places by whole numbers • use written division methods in cases where the answer has up to two decimal places • solve problems which require answers to be rounded to specified degrees of accuracy

		I can use pictures and diagrams to help me explain multiplication of pairs of fractions and division of fractions by whole numbers	• solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate
18	**Fractions, decimals and percentages (3)**	• Associate a fraction with division to calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. 3/8) • Calculate fractions and percentages of whole-numbers, money or measures (e.g. 5/8 of 96, 65% of £260) • Express one quantity as a percentage of another • Use ratio to compare quantities, size and scale drawings, including notation a:b • Solve problems involving proportionality in contexts such as similar shapes and recipes *I can convert fractions to decimals* *I can find a fraction or percentage of an amount of money* *I can work out a quantity as a percentage of another*	• compare and order fractions, including fractions >1 • associate a fraction with division and calculate decimal fraction equivalents for a simple fraction • recall and use equivalences between simple fractions, decimals and percentages, including in different contexts • 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 the calculation of percentages such as 15% of 360 and the use of percentages for comparison • 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

		I can use ratio to compare quantities *I can solve problems involving proportions of amounts*	