White Rose Mathematics- National Curriculum Objectives with Y5/6 Mixed Age

	Autumn	Spring	Summer

Year 1	**Block 1 Number: Place Value (within 10)**
	• Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number
	• Count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens
	• Identify and represent numbers using objects and pictorial representations including the number line, and use the language : equal to, more than, less than, most, least
	• Read and write numbers to 100 in numerals
	• Read and write numbers to 20 in numerals and words
	• Given a number, identify one more and one less
	
	Block 2 Number: Addition and Subtraction (within 10)
	• Read, write and interpret mathematical statements involving addition, subtraction and equals signs
	• 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
	
	Block 3 Geometry: Shape
	• Recognise and name common 2D and 3D shapes
	
	Block 4 Number: Place Value (within 20)
	• Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number
	• Count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens
	• Identify and represent numbers using objects and pictorial representations including the number line, and use the language : equal to, more than, less than, most, least
	• Read and write numbers to 100 in numerals
	• Read and write numbers to 20 in numerals and words
	• Given a number, identify one more and one less
		Block 1 Addition and Subtraction (within 20)
		• Read, write and interpret mathematical statements involving addition, subtraction and equals signs
		• 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
		Block 2 Number: Place Value (within 50)
		• Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number
		• Count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens
		• Identify and represent numbers using objects and pictorial representations including the number line, and use the language : equal to, more than, less than, most, least
		• Read and write numbers to 100 in numerals
		• Read and write numbers to 20 in numerals and words
		• Given a number, identify one more and one less
		
		Block 3 Measurement (Length and height)
		• Compare, describe and solve practical problems for: lengths and heights
		• Measure and begin to record
		  ○ lengths and heights
		
		Block 4 Measurement (Weight and volume)
		• Compare, describe and solve practical problems for:
		  ○ mass/weight
		  ○ capacity and volume
		• Measure and begin to record
		  ○ mass/weight
		  ○ capacity and volume
			Block 1 Number: multiplication and division
			• 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
			
			Block 2 Number: Fractions
			• Recognise, find and name a half as one of two equal parts of an object, shape or quantity
			• Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.
			
			Block 3 Geometry: Position and direction
			• Describe position, direction and movement, including whole, half, quarter and three-quarter turns
			
			Block 4 Number: Place Value (within 100)
			• Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number
			• Count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens
			• Identify and represent numbers using objects and pictorial representations including the number line, and use the language : equal to, more than, less than, most, least
			• Read and write numbers to 100 in numerals
			• Read and write numbers to 20 in numerals and words
			• Given a number, identify one more and one less
			
			Block 5 Measurement (money)
			• Recognise and know the value of different denominations of coins and notes
			
			Block 6 Measurement (time)
			• Compare, describe and solve practical problems for:
			  ○ time
			• Measure and begin to record
			  ○ time
			• Recognise and use language relating to dates, including days of the week, weeks, months and years
			• Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.

White Rose Mathematics- National Curriculum Objectives with Y5/6 Mixed Age

	Autumn	Spring	Summer
Year 2	**Block 1 Number: Place value** • Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward • Read and write numbers to at least 100 in numerals and in words • Identify, represent and estimate numbers using different representations, including the number line • 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 • Use place value and number facts to solve problems. **Block 2 Number: addition and subtraction** • Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 • Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot • Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems. • 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 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 **Block 3 Measurement: Money** • Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value • Find different combinations of coins that equal the same amounts of money • Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change **Block 4 Number: Multiplication and division** • Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers • 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	**Block 1 Number: Multiplication and division** • Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers • 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. **Block 2 Statistics** • Interpret and construct simple pictograms, tally charts, block diagrams and simple tables • Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity • Ask and answer questions about totalling and comparing categorical data **Block 3 Geometry: Properties of shape** • 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 • 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 • 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 turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anticlockwise). **Block 4 Number: fractions** • Recognise, find, name and write fractions 1/3 , 1/4 , 2/4 and 3/4 of a length, shape, set of objects or quantity • Write simple fractions for example, ½ of 6 = 3 and recognise the equivalence of 2/4 and ½	**Block 1 Measurement: Length and weight** • Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); to the nearest appropriate unit, using rulers • Compare and order lengths, mass, and record the results using >, < and = **Block 2 Geometry: Position and direction** • 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 turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anticlockwise). **Block 3-** *Problem solving and efficient methods* **Block 4 Measurement: time** • Compare and sequence intervals of time • 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 • Know the number of minutes in an hour and the number of hours in a day. **Block 5 Measurement: time, capacity and temperature** • Choose and use appropriate standard units to estimate and measure temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels • Compare and order volume/capacity and record the results using >, < and =

	materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.		

White Rose Mathematics- National Curriculum Objectives with Y5/6 Mixed Age

	Autumn	Spring	Summer
Year 3	**Block 1 Number: Place value** • Count from 0 in multiples of 4, 8, 50 and 100; find 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 **Block 2 Number: addition and subtraction** • Add and subtract numbers mentally, including: o a three-digit number and ones o a three-digit number and tens o a three-digit number and hundreds • Add and subtract numbers with up to three digits, using 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. **Block 3 Number: Multiplication and division** • Count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number • recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables • Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods	**Block 1 Number: Multiplication and division** • Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods • 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. **Block 2 Measurement: Money** • Add and subtract amounts of money to give change, using both £ and p in practical contexts **Block 3 Statistics** • Interpret and present data using bar charts, pictograms and tables • Solve one-step and two-step questions [for example, 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables. **Block 4 Measurement: Length and perimeter** • Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml) • Measure the perimeter of simple 2-D shapes **Block 5 Number: fractions** • 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 • Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators • Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators • Solve problems that involve all of the above.	**Block 1 Number: fractions** • Recognise and show, using diagrams, equivalent fractions with small denominators • Add and subtract fractions with the same denominator within one whole [for example, 5/7 + 1/7 = 6/7] • Compare and order unit fractions, and fractions with the same denominators • Solve problems that involve all of the above. **Block 2 Measurement: Time** • Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks • 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 • Know the number of seconds in a minute and the number of days in each month, year and leap year • Compare durations of events [for example to calculate the time taken by particular events or tasks]. **Block 3 Geometry: Properties of shape** • Draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them • Recognise angles as a property of shape or a description of a turn • 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 • Identify horizontal and vertical lines and pairs of perpendicular and parallel lines **Block 4 Measurement: mass and capacity** • Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)

White Rose Mathematics- National Curriculum Objectives with Y5/6 Mixed Age

	Autumn	Spring	Summer
Year 4	**Block 1 Number: Place value** • Count in multiples of 6, 7, 9, 25 and 1000 • Find 1000 more or less than a given number • Count backwards through zero to include negative numbers • Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones) • Order and compare numbers beyond 1000 • Identify, represent and estimate numbers using different representations • Round any number to the nearest 10, 100 or 1000 • Solve number and practical problems that involve all of the above and with increasingly large positive numbers • Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value. **Block 2 Number: addition and subtraction** • Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate • Estimate and use inverse operations to check answers to a calculation • Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why. **Block 3 Measurement: length and perimeter** • Convert between different units of measure [for example, kilometre to metre; hour to minute] • Estimate, compare and calculate different measures, including money in pounds and pence • Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres • Find the area of rectilinear shapes by counting squares **Block 4 Number: Multiplication and division** • Recall multiplication and division facts for multiplication tables up to 12 × 12 • 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 • Recognise and use factor pairs and commutativity in mental calculations	**Block 1 Number: Multiplication and division** • Recall multiplication and division facts for multiplication tables up to 12 × 12 • 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 • Recognise and use factor pairs and commutativity in mental calculations • Multiply two-digit and three-digit numbers by a one-digit number using formal written layout • 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 **Block 2 Measurement: Area** • Convert between different units of measure [for example, kilometre to metre; hour to minute] • Estimate, compare and calculate different measures, including money in pounds and pence • Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres • Find the area of rectilinear shapes by counting squares **Block 3 Number: fractions** • Recognise and show, using diagrams, families of common equivalent fractions • Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten. • 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 • Add and subtract fractions with the same denominator • *Solve simple measure and money problems involving fractions and decimals to two decimal places* **Block 4 Number: decimals** • Recognise and write decimal equivalents of any number of tenths or hundredths • Recognise and write decimal equivalents to 1/4 , 1/2 , ¾ • 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 • *Solve simple measure and money problems involving fractions and decimals to two decimal places*	**Block 1 Number: decimals** • Recognise and write decimal equivalents of any number of tenths or hundredths • Recognise and write decimal equivalents to 1/4 , 1/2 , ¾ • Round decimals with one decimal place to the nearest whole number • Compare numbers with the same number of decimal places up to two decimal places • *Solve simple measure and money problems involving fractions and decimals to two decimal places* **Block 2 Measurement: Money** • Estimate, compare and calculate different measures, including money in pounds and pence **Block 3 Measurement: Time** • Convert between different units of measure [for example, kilometre to metre; hour to minute] • Estimate, compare and calculate different measures, including money in pounds and pence • Read, write and convert time between analogue and digital 12- and 24-hour clocks • Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days. **Block 4 Statistics** • 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 **Block 5 Geometry: Properties of shape** • Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes • Identify acute and obtuse angles and compare and order angles up to two right angles by size • Identify lines of symmetry in 2-D shapes presented in different orientations • Complete a simple symmetric figure with respect to a specific line of symmetry. **Block 6 Geometry: position and direction** • Describe positions on a 2-D grid as coordinates in the first quadrant • Describe movements between positions as translations of a given unit to the left/right and up/down • Plot specified points and draw sides to complete a given polygon.

White Rose Mathematics- National Curriculum Objectives with Y5/6 Mixed Age

Autumn

Year 5	Year 6
Number: Place Value	
• Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit • Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 • Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero 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 • Read Roman numerals to 1000 (M) and recognise years written in Roman numerals	• 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.
Number: Four operations	
Number: Addition and subtraction • Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) • Add and subtract numbers mentally with increasingly large numbers • 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 • Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign **Number: Multiplication and division** • Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers • Know and use the vocabulary of prime numbers, prime factors and composite (nonprime) numbers • Establish whether a number up to 100 is prime and recall prime numbers up to 19 • 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 • Multiply and divide numbers mentally drawing upon known facts • 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 whole numbers and those involving decimals by 10, 100 and 1000 • Recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3}) • Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes • Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple ratios	• 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 • 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 number using the formal written method of short division where appropriate, interpreting remainders according to the context • Solve problems involving addition, subtraction, multiplication and division • Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
Number: Fractions	
• Compare and order fractions whose denominators are all multiples of the same number • Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths • Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, 2/5 + 4/5 = 6/5 = 1 1/5] • Add and subtract fractions with the same denominator and denominators that are multiples of the same number • Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams	• Use common factors to simplify fractions; use common multiples to express fractions in the same denomination • Compare and order fractions, including fractions > 1 • 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 [for example, 1/4 × 1/2 = 1/8] • Divide proper fractions by whole numbers [for example, 1/3 ÷ 2 = 1/6]

White Rose Mathematics- National Curriculum Objectives with Y5/6 Mixed Age

Spring

Number: Fractions	Number: Ratio
• Compare and order fractions whose denominators are all multiples of the same number • Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths • Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, 2/5 + 4/5 = 6/5 = 1 1/5] • Add and subtract fractions with the same denominator and denominators that are multiples of the same number • Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams	• 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 [for example, of measures, and 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
Number: Decimals and Percentages	
Decimals and percentages • Read and write decimal numbers as fractions [for example, 0.71 = 100 71] • Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents • Round decimals with two decimal places to the nearest whole number and to one decimal place • Read, write, order and compare numbers with up to three decimal places • 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 100, and as a decimal • 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 **Multiplication and division** • 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 • Multiply and divide numbers mentally drawing upon known facts • 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 whole numbers and those involving decimals by 10, 100 and 1000 • Solve problems involving decimals up to 3 decimal places	• Identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places • 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 • Associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, 3/8] • 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 example, 0.375] for a simple fraction [for example, 3/8] • Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.
Number: Decimals	**Number: Algebra**
• Solve problems involving decimals up to 3 decimal places	• Use simple formulae • Generate and describe linear number sequences • Express missing number problems algebraically • Find pairs of numbers that satisfy an equation with two unknowns Enumerate possibilities of combinations of two variables
Measurement: Converting units	
• Convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre) • *Use, read and convert between standard units, converting measurements of time from a smaller unit of measure to a larger unit, and vice versa (Y6 Measurement)* • 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 [for example, length, mass, volume, money] using decimal notation, including scaling. • Solve problems involving converting between units of time	• 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 • Convert between miles and kilometres
Measurement: Perimeter, area and volume	
Perimeter and area • Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres • Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm2) and square metres (m2) and estimate the area of irregular shapes	• 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 cubic centimetres (cm^3) and cubic

White Rose Mathematics- National Curriculum Objectives with Y5/6 Mixed Age

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- Estimate volume [for example, using 1 cm3 blocks to build cuboids (including cubes)] and capacity [for example, using water]

Measurement: Volume

- Convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)
- 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 [for example, length, mass, volume, money] using decimal notation, including scaling.
- Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres
- Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm2) and square metres (m2) and estimate the area of irregular shapes
- Estimate volume [for example, using 1 cm3 blocks to build cuboids (including cubes)] and capacity [for example, using water]

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metres (m^3), and extending to other units [for example, mm^3 and km^3].

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<tr><td colspan="2">Statistics</td></tr>
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- Solve comparison, sum and difference problems using information presented in a line graph
- Complete, read and interpret information in tables, including timetables

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- Interpret and construct pie charts and line graphs and use these to solve problems
- Calculate and interpret the mean as an average.

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White Rose Mathematics- National Curriculum Objectives with Y5/6 Mixed Age

Summer

<table>
<tr><th colspan="2">Geometry: Properties of shape</th></tr>
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- Identify 3-D shapes, including cubes and other cuboids, from 2-D representations
- Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles
- Draw given angles, and measure them in degrees (^{o})
- Identify:
  - angles at a point and one whole turn (total 360^o)
  - angles at a point on a straight line and 2 1 a turn (total 180^o) other multiples of 90^o
- Use the properties of rectangles to deduce related facts and find missing lengths and angles
- Distinguish between regular and irregular polygons based on reasoning about equal sides and angles.

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- 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.

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<tr><th colspan="2">Geometry: Position and Direction</th></tr>
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- 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.

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- Identify common factors, common multiples and prime numbers
- Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy
- 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.

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<tr><th colspan="2">Investigations and Consolidation</th></tr>
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Number: Addition and subtraction

- Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)
- Add and subtract numbers mentally with increasingly large numbers
- 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
- Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign

Number: Multiplication and division

- Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers
- Know and use the vocabulary of prime numbers, prime factors and composite (nonprime) numbers
- Establish whether a number up to 100 is prime and recall prime numbers up to 19
- Recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3})

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- 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
- 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 number using the formal written method of short division where appropriate, interpreting remainders according to the context
- Solve problems involving addition, subtraction, multiplication and division
- Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why

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Fractions

- Add and subtract fractions with the same denominator and denominators that are multiples of the same number
- Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams

Decimals and percentages

- Read and write decimal numbers as fractions [for example, 0.71 = 100 71]
- Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents
- Round decimals with two decimal places to the nearest whole number and to one decimal place
- Read, write, order and compare numbers with up to three decimal places
- 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 100, and as a decimal
- 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
- Solve problems involving decimals up to 3 decimal places

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Ratio

- 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 [for example, of measures, and 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

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Converting Units

- Convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)

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- Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate

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White Rose Mathematics- National Curriculum Objectives with Y5/6 Mixed Age

• *Use, read and convert between standard units, converting measurements of time from a smaller unit of measure to a larger unit, and vice versa (Y6 Measurement)* • 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 [for example, length, mass, volume, money] using decimal notation, including scaling. • Solve problems involving converting between units of time	• 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 • Convert between miles and kilometres