ST. STEPHEN'S JUNIOR SCHOOL

WE MODEL WHAT WE VALUE

Maths Curriculum – Intent

At St Stephen's Junior School, year groups follow the White Rose schemes of work, adopting a mastery approach to Mathematics with the belief that everyone can do Maths! Children are taught together as a whole class with the focus being on breadth and depth – not speed and acceleration. The three main aims of the National Curriculum are for all children to be fluent, to reason and to problem solve; therefore, expect to see an element of fluency and reasoning/problem solving in every lesson with regular opportunities for 'Maths Talk'. Teachers will also use the concrete, pictorial and abstract approach to ensure children develop secure conceptual understanding. We recognise the importance of Times Tables and how they are fundamental to mathematical fluency. Therefore, we use Times Tables Rockstars throughout the school to engage children with this aspect of Maths.

Maths Curriculum - Progression in learning

General overview as to how we expect to see progression:

Our maths curriculum follows the White Rose scheme of learning which uses the concrete, pictorial, abstract approach to introduce and develop children's understanding of mathematical concepts. Mathematical topics are taught in blocks with a clear progression within each block, initially consolidating prior learning before developing and deepening understanding within that strand of mathematics. Details of progression within each strand can be found below.

NUMBER

Place Value

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
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 2s, 5s and 10s. Given a number, identify 1 more or 1 less. Read and write numbers from 1 to 20 in numerals and words.	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). Identify, represent and estimate numbers using different representations, including the number line. Compare and order numbers from 0 up to 100; use <, > and = signs. Read and write numbers to at least 100 in numerals and in words. Use place value and number facts to solve problems.	Count from 0 in multiples of 4, 8, 50 and 100 Find 10 or 100 more or less than a given number Read and write numbers up to 1000 in numerals and words Compare and order numbers up to 1000 Recognise the place value of each digit in a 3 digit number Read Roman Numerals for 1 – 12 (for telling the time) Identify, represent & estimate numbers up to 1000 using different representations	Count backwards through 0 to include negative numbers Count in multiples of 6, 7, 9, 25 and 1000 Find 1000 more or less than a given number Read, write, compare and order numbers beyond 1000 Recognise the place value of each digit in a 4 digit number Read Roman Numerals to 100 (in a historical context) Round any number to the nearest 10, 100 or 1000 Identify, represent & estimate numbers beyond 1000 using different representations	Interpret negative numbers in context & count forwards and backwards with both positive and negative numbers Count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000 Read, write, compare and order numbers to at least 1,000,000 & determine the value of each digit Read Roman Numerals to 1000 & recognise years written in Roman numerals Round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 100,000	Use negative numbers & calculate intervals across 0 Read, write, compare and order numbers to at least 10,000,000 & determine the value of each digit Round any whole number to a required degree of accuracy

Addition & Subtraction					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
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-digits numbers to 20, including 0	Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100. 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. Add three one-digit numbers. Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot.	Add & subtract numbers mentally, including: 3 digit + ones 3 digit + tens 3 digit + hundreds Use a numberline to support mental subtraction by counting on Add & subtract numbers with **up to 3 digits** using expanded method then progressing onto compacted column method Estimate answers & use the inverse to check	Add & subtract numbers with **up to 4 digits** using column method Use a numberline to support mental subtraction by counting on Estimate answers & use the inverse to check	Add & subtract numbers mentally with increasingly large numbers Add & subtract whole numbers with **more than 4 digits** using column method Use rounding to check answers	Perform mental calculations – must be more complex with mixed operations and larger numbers Add and subtract several numbers using column method, where appropriate Use estimation to check
Addition & Subtraction: Problem Solving					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Solve one-step problems that involve addition and subtraction, using concrete objects,	Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and	Solve problems, including missing number problems, using number facts and place value and more	Solve **two step** problems – children need to be able to identify which	Solve **multi-step** problems deciding which operations and	Solve **multi-step** problems deciding which operations

pictorial representations and missing number problems such as 7 = ? – 9	solve missing number problems.	complex addition and subtraction	operation and method to use & explain why	methods to use and why	and methods to use and why Use knowledge of the order of operations to carry out calculations (& explore brackets)
Multiplication & Division					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
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 multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers. Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs. Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.	Count from 0 in multiples of 4, 8, 50 & 100 Recall multiplication and division facts for 3, 4 & 8 Write & calculate X and ÷ statements for the tables they know Use mental methods to calculate 2 digit X 1 digit and 2 digit ÷ 1 digit. Progress onto grid method for multiplication. Estimate answers & check using the inverse	Count in multiples of 6, 7, 9, 25 & 1000 Recall multiplication and division facts for up to 12 X 12 Multiply and divide mentally, including multiplying by 0 and 1, dividing by 1 & multiplying together three numbers Multiply 2 digit and 3 digit numbers by 1 digit number using short multiplication Divide 2 digit and 3 digit numbers by 1 digit number using short division	Apply all multiplication tables and division facts regularly. Count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000 Multiple & divide numbers mentally drawing upon known facts Multiply & divide whole numbers and those involving decimals by 10, 100 and 1000 Multiply numbers up to 4digits by a 1 digit	Continue to use all the multiplication tables and division facts in order to maintain fluency. Perform more complex mental calculations, including with mixed operations and larger numbers Multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places Multiply multi digit numbers up to 4 digits by a 2 digit number using long multiplication.

			Estimate answers & check using the inverse	number using short multiplication Multiply numbers up to 4digits by a 2 digit number using long multiplication Divide numbers up to 4 digits by a 1 digit number using short division. Interpret remainders appropriately	Divide numbers up to 4 digits by a 1 digit using short division where appropriate. Divide numbers up to 4 digits by a 2 digit number using long division. Interpret remainders appropriately. Estimate answers & check using the inverse
Multiples, Factors, Primes, Square & Cube Numbers					
			Recognise and use factor pairs and commutativity in mental calculations	Identify multiples & factors Know and use the vocabulary of prime numbers, prime factors & composite numbers Establish whether a number up to 100 is prime and recall	Identify common factors, common multiples and prime numbers.

				prime numbers up to 19 Recognise and use square & cube numbers and their notions	
Multiplication & Division: Problem Solving					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
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	Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts	Solve problems including missing number, positive integer scaling and correspondence – children need to be able to decide which operation to use	Solve problems including using the distributive law, integer scaling problems and harder correspondence problems - children need to be able to decide which operation to use and explain why	Solve problems using their knowledge of factors & multiples, squares and cubes. Solve problems involving the four operations and the meaning of the equals sign. Solve problems including scaling by simple fractions and problems involving simple rates.	Solve problems involving the four operations. Use knowledge of the order of operations to carry out calculations (& explore brackets) <u>Ratio & Proportion</u> Solve problems involving the relative sizes of two quantities where missing values can be found using multiplication and division facts Solve problems involving unequal sharing and grouping using

					knowledge of multiples
Fractions (including decimals & percentages)					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Recognise, find and name a half as 1 of 2 equal parts of an object, shape or quantity. Recognise, find and name a quarter as 1 of 4 equal parts of an object, shape or quantity.	Recognise, find, name and write fractions 1/2, 1/3, 1/4, 2/4, 3/4 of a length, shape, set of objects or quantity. Write simple fractions for example, 1/2 of 6 = 3 and recognise the equivalence of 2/4 and 1⁄2.	Count up and down in tenths Understand that tenths are objects or quantities divided into ten equal parts Recognise, find and write fractions of a set of objects Recognise and use fractions as numbers Compare and order unit fractions & fractions with the same denominators Recognise and show, using diagrams, equivalent fractions with small denominators Add and subtract fractions with the same denominator within one whole	Count up and down in hundredths Understand that hundredths are objects or quantities divided into hundred equal parts (& dividing tenths by 10) Compare numbers with the same number of decimal places (up to two decimal places) Round decimals with one decimal place to the nearest whole number Recognise and show, using diagrams, families of common equivalent fractions Recognise and write decimal equivalents of any number of tenths or hundredths	Recognise and use thousandths and relate them to tenths, hundredths & decimal equivalents Compare and order fractions whose denominators are all multiples of the same number Read, write, order and compare numbers with up to three decimal places Round decimals with two decimal places to the nearest whole number & to one decimal place Identify, name and write equivalent fractions including tenths and hundredths	Compare and order fractions, including fractions > 1 Identify the value of each digit in numbers given to three decimal places Round answers to specified degree of accuracy Use common factors to simplify fractions & use common multiples to express fractions in the same denomination Associate a fraction with division & calculate decimal fraction equivalents for a simple fraction Recall and use equivalences between simple fractions, decimals & percentages

			Recognise and write decimal equivalents to ¼ ½ ¾ Add and subtract fractions with the same denominator Find the effect of dividing 1 or 2 digit numbers by 10 or 100	Read and write decimals numbers as fractions Recognise & understand the percent symbol Add and subtract fractions with the same denominator and multiples of the same number Recognise mixed numbers and improper fractions and convert between them Multiply proper fractions and mixed numbers by whole numbers	Add and subtract fractions with different denominators & mixed numbers Multiply simple pairs of proper fraction, writing the answer in its simplest form Multiply 1 digit numbers with up to two decimal places by whole numbers Divide proper fractions by whole numbers
Fractions (including decimals & percentages): Problem Solving					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		Solve problems that involve all of the above	Solve problems involving increasingly harder fractions Solve simple measure and money problems involving fractions and decimals to two decimal places	Solve problems involving numbers up to three decimal places Solve problems which require knowing percentages and decimal equivalents	<u>Ratio & proportion</u> Solve problems involving the calculation of percentages Solve problems involving unequal

				of ½ ¼ 1/5 2/5 4/5 and those with a denominator of a multiple of 10 or 25	sharing and grouping using knowledge of fractions
Algebra					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
					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					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<u>Money</u> Recognise and know the value of different denominations of coins and notes	<u>Money</u> Recognise and use symbols for pounds (£) and pence (p); combine	<u>Money</u> Add and subtract amounts of money to give change, using both £ and p <u>Length & Perimeter</u>	<u>Money</u> Estimate, compare & calculate different measures, including money in pounds and pence	<u>Perimeter & Area</u> Measure & calculate the perimeter of composite rectilinear shapes in cm and m	<u>Perimeter, Area & Volume</u> Recognise that shapes with the same areas can have different

<u>Length and Perimeter</u> Measure and begin to record lengths and heights <u>Mass & Capacity</u> Compare and describe mass (heavy/light, heavier than, lighter than) and volume/capacity (full/empty, half full, more than, less than) <u>Time</u> Sequence events in chronological order using time language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening] 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	amounts to make a particular value Find different combinations of coins that equal the same amounts of money. <u>Length and perimeter</u> Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); <u>Mass and Capacity</u> Compare and order lengths, mass, volume/capacity and record the results using >, < and =. <u>Time</u> 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.	Measure, compare, add & subtract lengths (m, cm, mm) Measure the perimeter of simple 2D shapes <u>Mass & Capacity</u> Measure, compare, add & subtract mass (kg, g) and volume/capacity (l, ml) <u>Time</u> Tell and write the time from an analogue clock (including those with Roman numerals) and 12 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, am/pm, morning, afternoon, noon & midnight Know the number of seconds in a minute & the	Use decimal notation to record metric measures, including money <u>Length & Perimeter</u> Measure & calculate the perimeter of a rectilinear figure (including squares) in cm and m Convert between different units of measure (e.g. km to m) <u>Area</u> Find the area of rectilinear shapes by counting squares <u>Time</u> Read, write and convert time between analogue and digital 12 and 24 hour clocks Convert between different units of measure (e.g. hour to minute)	Calculate and compare the area of rectangles (including squares) & estimate the area of irregular shapes <u>Volume</u> Estimate volume and capacity <u>Converting units</u> Convert between different units of metric measure Understand & use approximate equivalences between metric units & common imperial units such as inches, pounds & pints	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 <u>Converting units</u> Convert between miles and km Use, read, write and convert between standard units, using decimal notation up to three decimal places

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	number of days in each month, year & leap year Compare durations of events			
Measurement: Solving Problems					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change.		Solve problems involving converting from hours to minutes, minutes to seconds, years to months and weeks to days Solve simple measure and money problems	Solve problems involving converting between units of time Use all four operations to solve problems involving measure, using decimal notation, including scaling	Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places
GEOMETRY					
Properties of Shape					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Recognise and name common 2-D and 3-D shapes, including: 2-D shapes [for example, rectangles (including squares), circles and triangles]	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,	Draw 2D shapes & make 3D shapes using modelling materials Recognise 3D shapes in different orientations and describe them	Identify lines of symmetry in 2D shapes presented in different orientations Complete a simple symmetric figure with respect to a specific line of symmetry	Identify 3D shapes, including cubes and other cuboids, from 2D representations Use the properties of rectangles to deduce related facts and find missing lengths and angles	Recognise, describe & build simple 3D shapes, including making nets Illustrate and name parts of circles, including radius, diameter & circumference

3-D shapes [for example, cuboids (including cubes), pyramids and spheres].	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.		Compare & classify geometric shapes, including quadrilaterals (parallelogram, rhombus, trapezium) and triangles (isosceles, equilateral, scalene), based on their properties and sizes Decide if a polygon is regular or irregular	Distinguish between regular and irregular polygons based on reasoning about equal sides and angles	Know that the diameter is twice the radius Draw 2D shapes using given dimensions and angles Compare and classify geometric shapes based on their properties and sizes & find unknown angles in any triangles, quadrilaterals and regular polygons
Angles					
		Recognise angles as a property of shape or a description of a turn Identify right angles & identify whether angles are greater than or less than a right angle Recognise that two right angles make a half turn, three make three quarters of a turn and four a complete turn	Identify acute and obtuse angles Compare and order angles up to two right angles by size	Know angles are measured in degrees Estimate and compare acute, obtuse and reflex angles Draw given angles and measure them in degrees Identify: angles at a point and one whole	Recognise angles where they meet at a point, are on a straight line, or are vertically opposite. Find missing angles.

		Identify horizontal and vertical lines & pairs of perpendicular and parallel lines		turn, angles at a point on a straight line and ½ a turn & other multiples of 90 degrees	
Position & Direction					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Describe position, direction and movement, including whole, half, quarter and three-quarter turns.	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).	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)	Describe positions on a 2D grid as co-ordinates 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 (use ICT to support co-ordinate plotting)	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 changes (use ICT to support geometry)	Describe positions on the full co-ordinate grid (all four quadrants) Draw and translate simple shapes on the co-ordinate plane and reflect them in the axes
STATISTICS					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6

	Interpret and construct simple pictograms, tally charts, block diagrams and simple tables.	Interpret and present data using bar charts, pictograms & tables Understand and use simple scales with increasing accuracy	Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs Use a greater range of scales in their representations	Complete, read and interpret information in tables, including timetables Begin to make decisions about which representations of data are most appropriate and why	Interpret and construct pie charts and line graphs Calculate and interpret the mean as an average & know when is it appropriate to find to mean of a data set
Statistics: Solving Problems					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity.	Solve one step and two step questions (e.g. how many more, how many fewer) using information presented in scaled bar charts, pictograms & tables	Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs	Solve comparison, sum and difference problems using information presented in a line graph	Solve problems using information presented in pie charts and line graphs