



Fir Tree Junior School
Curriculum Knowledge and Skills Progression
Maths

	Year 3	Year 4	Year 5	Year 6
Counting	Count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more than a given number	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	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 numbers, including through zero	Use negative numbers in context and calculate intervals across zero
Place Value	Recognise the place value of each digit in a three digit number Compare and order numbers up to 1000	Recognise the place value of each digit in a four digit number Order and compare numbers beyond 1000 Round any number to the nearest 10,100 or 1000	Read, write, order and compare numbers up to 1,000,000 and determine the value of each digit Round any number up to 1,000,000 to the nearest 10, 100, 1000,10,000 and 100,000	Read, write, order and compare numbers up to 10,000,000 and determine the value of each digit Round any number to a required degree of accuracy
Representing number	Identify, represent and estimate numbers using different representatives Read and write numbers up to 1000 in numerals and words	Identify, represent and estimate numbers using different representatives Read Roman numerals up to 100 (I to C) and know that over time the numeral system changes to include the concept of zero and place value	Read Roman numerals to 1000 (M) and recognise years written in Roman numerals Recognise and use square and cube numbers and the notation for squared (²) and cubed (³)	
Mental (+/-)	Add and subtract numbers mentally including HTU+U, HTU+T and HTU+H		Add and subtract numbers mentally with increasingly large numbers	Perform mental calculation, including with mixed operations and large numbers
Written (+/-)	Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction	Add and subtract numbers with up to four digits, using formal written methods of columnar addition and subtraction where appropriate	Add and subtract whole numbers with more than four digits, including using formal written methods	
Problems (+/-)	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	Estimate and use inverse operations to check answers to a calculation Solve addition and subtraction two step problems in contexts, deciding which operations to use and why	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 context, deciding which operations to use and why	Solve addition and subtraction multi step problems in context, deciding with operations and methods to use and why
Number facts (x/÷)	Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables	Recall multiplication and division facts for multiplication tables up to 12x12	Identify multiples and factors including finding all factor pairs of a number and common factors of two numbers	Identify common factors, common multiples and prime number



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			Know and use the vocabulary of prime numbers, prime factors and composite number (non- prime) Establish whether a number up to 100 is prime and recall prime numbers up to 19	
Mental (x/÷)	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 methods	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 and divide numbers mentally drawing upon known facts Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000	Perform mental calculations, including with mixed operations and large numbers
Written (x/÷)	Progress to formal written the calculations above	Multiply two-digit and three-digit numbers by a one-digit number using formal written layout	Multiply numbers up to 4 digits by a one or two digit number using a formal written method including long multiplication for a two digit number 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 multi-digit numbers up to four digits by a two digit whole number using the formal written method of long multiplication Divide numbers up to four digits by a two digit whole number using the formal written method of long division, interpret remainders as whole number remainders, fractions or by rounding as appropriate for the context Divide numbers by up to four digits by a two digit number using the formal written method of short division where appropriate, interpreting remainders as appropriate for the context
Problems (x/÷)	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	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	Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes Solve problems involving addition, subtraction, multiplication division and a combination of this, including understanding the meaning of the = sign Solve problems involving multiplication and division, including scaling by simple	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 the problem, an appropriate degree of accuracy



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			fractions and problems involving simple rates	
Recognising 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	Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten	Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements greater than 1 as a mixed number	
Comparing fractions	Compare and order unit fractions, and fractions with the same denominators Recognise and show, using diagrams, equivalent fractions with small denominators	Compare and order unit fractions, and fractions with the same denominators Recognise and show, using diagrams, equivalent fractions with small denominators	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	Use common factors to simplify fractions Use common multiples to express fractions in the same denomination Compare and order fractions, including fractions > 1
Finding fractions of quantities	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 involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number		
Calculating with fractions	Add and subtract fractions with the same denominator within one whole [for example, $5/7 + 1/7 = 6/7$]	Add and subtract fractions with the same denominator	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	Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions Multiply simple pairs of proper fractions, writing the answer in its simplest form Divide proper fractions by whole numbers
Equivalence Fractions and decimals		Recognise and write decimal equivalents of any number of tenths or hundredths Recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{3}{4}$ 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	Read and write decimal numbers as fractions	Associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction Identify the value of each digit in numbers given to three decimal places



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Ordering decimals		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	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	
Calculating with decimals				Multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places Multiply one-digit number with up to two decimal places by whole numbers Use written division methods in cases where the answer has up to two decimal places
Percentages			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 involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison
Fraction problems	Solve problems using all fraction knowledge	Solve simple measure and money problems involving fractions and decimals to two decimal places	Solve problems involving number up to three decimal places Solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25	Solve problems which require answers to be rounded to specified degrees of accuracy Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.
Ratio and proportion				Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts Solve problems involving similar shapes where the scale factor is known or can be found



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				Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.
Algebra				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.
Measures	Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)	Convert between different units of measure Estimate, compare and calculate different measures, including money in pounds and pence	Convert between different units of metric measure Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints Estimate volume 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 Convert between miles and kilometres
Mensuration	Measure the perimeter of simple 2-D shapes	Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres Find the area of rectilinear shapes by counting squares	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 (cm ²) and square metres (m ²) 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 metres (m ³), and extending to other units.
Money	Add and subtract amounts of money to give change, using both £ and p in practical contexts		Use all four operations to solve problems involving measure [for	



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			example, length, mass, volume, money] using decimal notation, including scaling	
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	Convert between different units of measure (e.g. Hours to minutes) 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	Solve problems involving converting between units of time	
Shape vocabulary	Identify horizontal and vertical lines and pairs of perpendicular and parallel lines			Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius
Properties of 2d shapes	Draw 2-D shapes	Compare and classify geometric shapes, including quadrilaterals and triangles, based on properties and sizes 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.	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.	Draw 2-D shapes using given dimensions and angles Compare and classify geometric shapes based on their properties and sizes
Properties of 3d shapes	Make 3-D shapes using modelling materials Recognise 3-D shapes in different orientations and describe them		Identify 3-D shapes, including cubes and other cuboids, from 2-D representations	Recognise, describe and build simple 3-D shapes, including making nets 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, 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 and 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, and find missing angles



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	Identify whether angles are greater or less than right angle		turn (total 360°); at a point on a straight line and $\frac{1}{2}$ a turn (total 180°) Identify other multiples of 90°	
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	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	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.
Interpreting data	Interpret and present data using bar charts, pictograms and tables	Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs	Complete, read and interpret information in tables, including timetables	Interpret and construct pie charts and line graphs Calculate and interpret the mean as an average
Extract information from data	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	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	Use pie charts and line graphs to solve problems