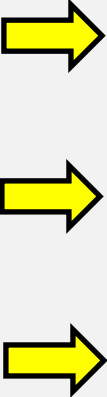


Greenfields Academy (Secondary) - Long Term Planning – MATHS & NUMERACY

Academic Year Overview 2020/21 – YEAR/CLASS/GROUP

Term	Autumn		Spring		Summer	
	1	2	3	4	5	6
TRANSITION FROM.... 	Ratio and Scale	Working in the Cartesian plane	Brackets equations and inequalities	Fractions and percentages	Angles in parallel lines and polygons	The data handling cycle
	Multiplicative change	Representing Data	Sequences	Standard index form	Area of trapezia and circles	The data handling cycle (in depth)
	Multiplying and dividing fractions	Tables and Probability	Indices	Number sense	Line symmetry and reflection	Measures of location.
Weekly Sequence	KEY: N – New Learning & Knowledge, KQ – Key Question, WSF – Whole School Focus (eg. Computing Week, Language Day)					

<p>1</p>	<p>N – Make connections between number relationships and their algebraic and graphical representations. KQ – What is the purpose of ratio? What does 1:1 mean? Can there be more than two amounts in a ratio? WSF –</p>	<p>N – Move freely between different numerical, algebraic, graphical and diagrammatic representations. KQ – Why do the order of numbers matter in coordinates? Why is the line $x=0$ different from the x-axis? WSF –</p>	<p>N – Identify variables and express variables algebraically. KQ – What is the difference between a term and an expression? Why is it not true that two minuses make a plus? WSF –</p>	<p>N – Work with terminating decimals and their corresponding fractions. KQ – why is 0.3 the same as 30% and not 3%? Why is decreasing by 46% the same as finding 56%? Can you represent using bar models? WSF –</p>	<p>N – Understanding and use the relationships between parallel lines and alternate and corresponding angles. KQ – How do you know if two or more lines are parallel? How do you identify a pair of corresponding angles or a pair of alternate angles? Can you have co-interior angles in a pair of lines which are not parallel? WSF –</p>	<p>N – Describe, interpret and compare observed distributions of single variables. KQ – What is the hypothesis? Why do you need one? Why would a multiple choice questionnaire be easier to answer? WSF –</p>
<p>2</p>	<p>N – Understand that a multiplicative relationship between two quantities can be expressed as a ratio or fraction. KQ – What is the total number of parts? Why are factors useful when simplifying ratio? What is the same and differences between ratios and fractions? What does gradient measure? WSF –</p>	<p>N – Develop algebraic and graphical fluency, understanding linear functions. KQ – Is the graph $y=x$ the same as $x=y$? How can you recognise a line of the form $y=kx$? WSF –</p>	<p>N – Begin to model situations mathematically and express the results using a range of formal representations. KQ – What does expand mean when working with brackets? Is it useful to have 1 as a common factor? WSF –</p>	<p>N – Interpret percentages and percentage changes as a fraction or decimal. KQ – is it possible to convert fortieths to hundredths? How do we use a calculator to convert a fraction to a decimal? What is the difference between profit and loss? WSF –</p>	<p>N – Derive and use the sum of angles in a triangle and use it to deduce the angle sum in any polygon. KQ – What tells us if a line is parallel? Which quadrilaterals are regular and which are not? What makes a trapezium an isosceles trapezium? WSF –</p>	<p>N – Use appropriate graphical representations KQ – How are line chart and bar charts the same? How are they different? What questions could you ask about a bar chart? WSF –</p>
<p>3</p>	<p>N – Interpret when the structure of a numerical problem requires additive, multiplicative or proportional reasoning.</p>	<p>N – Make connections between number relationships and their algebraic and graphical representations.</p>	<p>N – Substitute numerical values into formulae and expressions. KQ – How do we write '1x'? Do you have to</p>	<p>N – Use integer powers and associated real roots KQ – Is there a simpler way to write 1000×10000? What is 1GB</p>	<p>N – Derive and apply formulae to calculate and solve problems. KQ – Are the parallel sides of a trapezium always</p>	<p>N – Construct and interpret appropriate tables, charts and diagrams.</p>

	<p>KQ – Do all conversion graphs start at the origin? How is the conversion of dollars to pounds different to pounds to dollars? WSF –</p>	<p>KQ – Why do direct proportion graphs always start at (0,0)? What is the gradient of the line $y=a+x$? what is the same and different about linear graphs and linear sequences? WSF –</p>	<p>expand brackets to solve an equation? WSF –</p>	<p>written in standard form? How many different ways can you write 0.001? Are negative powers of 10 always negative numbers? WSF –</p>	<p>horizontal? How would you find a missing length? What is the radius and circumference of the circle? WSF –</p>	<p>KQ – What type of data would you represent in a pie chart? Does a line graph have to start at 0? How can you show the axis has not started at 0? WSF –</p>
4	<p>N – Solve problems involving direct and inverse proportion, including graphical and algebraic representations. KQ – What do you notice about the angles in a pairs of shapes? How does a scale factor compare to a ratio? WSF –</p>	<p>N – Construct and interpret appropriate tables, charts and diagrams. KQ – Does it matter if the data points are not in size order? How can you tell if a correlation is negative or positive? Why might it be a risk to make a prediction outside the range if data? WSF –</p>	<p>N – Use algebraic methods to solve linear equations. KQ – Can an equation have more than one variable? What does integer mean? How does this change the question? WSF –</p>	<p>N – Interpret and compare numbers in standard form. KQ – What do you look at when comparing numbers written in standard form? What do we do if the total isn't in standard form? How can we write a division as a fraction? WSF –</p>	<p>N – Calculate and solve problems involving perimeter and area. KQ – How do you round a number to 1 significant figure? Why is it useful to estimate the area first? Which standard shapes can you find in the compound shape? WSF –</p>	<p>N – Use pictograms for categorical data and bar charts for grouped and ungrouped numerical data. KQ – In which situation is a pie chart/bar chart/line graph the most useful? Why? Why is it useful to tally data to find the frequencies? WSF –</p>
5	<p>N – Select and use appropriate calculation strategies. KQ – How is addition related to multiplication? How is finding the fraction of an amount the same as multiplying by a fraction? WSF –</p>	<p>N – Describe mathematical relationships between two variables in observational and experimental contexts. KQ – what does non-linear mean? Why do we need to know about different types of data? How can we work out how to group data? WSF –</p>	<p>N – Recognise arithmetic sequences and find the nth term KQ – What information do you need to give to describe a sequence? Is it possible for n to take non integer values? WSF –</p>	<p>N – Round numbers and measure to an appropriate degree of accuracy KQ – How many figures does 3.456 have after the decimal point? Why is it a good idea to estimate before a calculation? What is the difference between debit and credit? WSF –</p>	<p>N – Describe and sketch points, parallel and perpendicular lines, right angles and polygons. KQ – Do all regular polygons have lines of symmetry? After a reflection, does the shape always have a line of symmetry? WSF –</p>	<p>N – Describe, compare and interpret observed distributions of a single variable. KQ – How can you work out the range? What does the range tell you about a set of data? Is it an average? Is the data symmetrical or not? How does this compare to other distributions? WSF –</p>

