TBSHS Year 7 Mathematics – Summer Term

Progression Pathway	Content and Concepts (depth of understanding and application)	Skills Mastery
7 – 9	Pupils working on this path way will have shown they are able to complete the prior skills and are expected to be able to: • Find original values following a percentage reduction or increase (reverse percentage problems) • Understand the difference between simple and compound interest • Understand and apply the formula for repeated percentage change. • Understand and apply the link between ratios of lengths, and ratio of areas and volumes (i.e. the link between different scale factors and similarity) • Understand and the concept of "constant of proportionality" and variation to problems involving direct linear, quadratic and cubic proportion and inverse proportion. • Understand the shape of graphs for non-linear variation • Calculate both positive and negative fractional indices of the form a/b and can apply the three laws of indices with these indices • Determine the prime factorisation of more than two numbers and use this to find HCF, LCM and square and cube roots • Understand the hierarchy of operations in a calculation and can apply this to problems involving fraction and decimal numbers, fractional indices of the form a/b and negative powers • Determine the upper and lower bound of a calculation with numbers rounded to 3 significant figures	Pupils use developed knowledge with confidence and skill, combined with careful planning, to ensure accurate working with fully justified answers. They are able to confidently assess and adapt different methods to solve more challenging problems. Pupils consider the significance of errors in methods, and working out, and actively try to minimise these. They are able to confidently self-assess all work and propose solutions to solve any errors identified.
6 – 8	Pupils working on this path way will have shown they are able to complete the prior skills and are expected to be able to: • Increase and decrease amounts by a given percentage • Solve problems involving percentage profit and loss • Solve problems involving direct and inverse proportion (not involving the constant of proportionality) • Understand the link between straight line graphs through the origin and direct proportion, and make the link between gradient and ratio • Convert between recurring decimals, fractions and percentages • Round any decimal number to 3 sig. fig. and use this to estimate answers • Find the upper and lower bound of a calculation by rounding to 1 sig. fig. • Calculate with any rational or decimal number and solve problems with them • Know and apply common function buttons on a calculator and use them to check calculations	Pupils use developed knowledge with confidence and skill, combined with careful planning, to ensure accurate working with fully justified answers. They are able to confidently assess and adapt different methods to solve more challenging problems. When solving problems pupils consider the significance of errors in their methods, and working out, and actively try to minimise these. They are able to confidently self-assess all work and propose solutions to solve any errors identified.
5 – 7	Pupils working on this path way will have shown they are able to complete the prior skills and are expected to be able to: • Understand the equivalence of fractions, decimals and percentages, and so order numbers when presented as a mix of fractions, decimals and percentages • Express one amount as a percentage or a fraction of another • Understand the link between scale factors and ratios (e.g. maps) • Work with ratios of more than 2 quantities (e.g. 1:2:3) • Understand and apply the unitary method for ratio and proportion problems including value for money and recipe problems. • Solve more complex problems involving ratio, requiring multiple steps (e.g. combining mixtures involving different ratios) • Calculate negative whole number indices and apply the three laws of indices • Know prime numbers up to 100 and carry out prime factorisation of two numbers • Use prime factorisation of two numbers to find HCF and LCM of those numbers • Understand the hierarchy of operations in a calculation and apply this to problems involving fractions, decimal numbers and negative powers • Round any decimal numbers to 1 sig. fig. and use this to estimate calculations • Find the bounds of a number rounded to a given number of decimal places • Calculate with rational or decimal numbers and can solve problems with them • Know and use the power and root button on a calculator	Pupils are able to work independently on topics involving multi-step approaches. They can confidently identify errors in their own work, and that of peers, and suggest a possible solution to improve. They are able to link some steps in methods to wider theories.
4 – 6	Pupils working on this path way will have shown they are able to complete the prior skills and are expected to be able to: • Understand that proportion is a measure of part of the whole and is expressed as a fraction, decimal or percentage. • Understand the link between ratios and fractions/ proportion • Cancel ratios down to their simplest form • Share amounts in a given ratio • Find percentages and fractions of amounts, including by use of a calculator • Compare quantities using ratios, fractions and percentages • Use and interpret pie charts using the language of ratio, proportion, fraction and percentage • Calculate positive whole number indices and apply the three laws of indices to simplify expressions • Know prime numbers to 50 and determine the prime factorisation of two numbers • Understand the hierarchy of operations in a calculation and can apply this to problems involving simple fraction and decimal numbers • Round any decimal numbers to the nearest whole number, nearest 10, 100, 1000 and 1 or 2 decimal places. Apply this knowledge to estimate the answer to calculations • Solve word problems involving simple rational or decimal numbers	Takes independent responsibility for working through problems. Is able to recall and explain how basic steps combine to solve problems. Still requires some support, on occasion, and can reflect to identify some of their own errors.

	• Efficiently use a calculator to evaluate or check calculations	
3 – 5	Pupils working on this path way will have shown they are able to complete the prior skills and are expected to be able to: • Represent two related quantities as a ratio • Know that percentage describes proportion in terms of how many 1/100ths • Recognise approximate proportions of a whole and can use fractions or percentages to describe these • Convert between simple fractions, decimals and percentages (e.g. ½, 50%, 0.5, and 1/10 , 10% and 0.1) • Find simple percentages of an amount (e.g. 50%, 10%) • Add and subtract percentages • Calculate positive integer indices, know the squares up to 15^2 and their corresponding roots and cubes of 4, 5, 10 and their corresponding cube roots • Apply knowledge of factors and multiples to find HCF and LCM in simple examples • Understand the hierarchy of operations and use it to evaluate calculations • Round positive decimal numbers to the nearest whole number, nearest 10, 100, 1000 and 1 decimal place use this to estimate the answer to calculations • Calculate with simple rational or decimal numbers	Pupils can solve problems as part of a group and complete multi-stage problems. They still require some scaffolding to support their understanding and application of core methods. They are able to identify some possible errors in their work and possible challenges.
2 – 4	Pupils working on this path way will have shown they are able to complete the prior skills and are expected to be able to: • Use decimal notation, including 100ths • Use simple fractions, including 1/100 th's • Know the squares for numbers from 1-10 and their corresponding square roots and cube numbers for 1, 2, 3 and their corresponding cube roots • Understand and be able to find factors and a multiples • Understand the hierarchy of operations and evaluate calculations with brackets and two operations • Round positive numbers to the nearest whole number, nearest 10, 100, 1000 use this to estimate the answer to calculations • Calculate with whole numbers and can solve word problems integers • Find a fraction of an amount and use a calculator to evaluate or check calculations	Pupils can solve problems when the steps are clearly broken down into their core components and explained in full to them with additional scaffolding. They are able to complete simple tasks but often require support to link methods and theories to practical questions.
1 – 3	Pupils working on this path way will have shown they are able to complete the prior skills and are expected to be able to: • Order numbers up to 100. • Describe proportion in terms of bigger and smaller • Know the squares for numbers from 1-5 and their corresponding square roots. • Find multiples of numbers up to two digits • Understand the hierarchy of operation and evaluate problems with two operations • Round positive whole numbers to the nearest 10 and estimate answers • Calculate with simple whole numbers and use a calculator to evaluate calculations. • Identify fractions and decimals from diagrams	Pupils can understand basic concepts that are the foundation to simple methods. They are starting to work independently or following written instructions. They still need significant support and scaffolding to complete multi-stage techniques and problem solving.