TBSHS Year 7 Mathematics - Autumn Term

Progression Pathway	Content and Concepts (depth of understanding and application)	Skills Development
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: • Understand how different counting systems work using different base values • Calculate and solve problems using different counting systems • Confidently identify upper and lower bounds • Complete calculations and solve problems involving upper and lower bounds • Understand, and can apply, alternative methods of multiplication • Make and justify generalisations about multiplication and division • Apply their knowledge to solve Shikaku puzzles • Understand how shapes tessellate and which shapes can or can't tessellate and why • Draw tessellations of triangles and quadrilaterals • Investigate and complete different types of tangrams • Apply knowledge of angles and intersecting parallel lines to solve real world problems involving bearings	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: • Complete calculations involving Standard Form – multiplication, division, addition and subtraction • Estimate by rounding to one significant figure • Understand the impact of rounding accuracy and applies this when solving problems including perimeter of compound shapes • Understand the impact of multiplying and dividing by numbers between 0 and 1 • Use scales of maps to calculate real life distances and solve problems • Use angles and symmetry in polygons to find missing angles or unknown angles • Find missing interior and exterior angles in both regular and irregular polygons • Solve problems using angle and symmetry properties of polygons and angle properties of intersecting parallel lines, and explain these properties • Calculate and solve problems relating to bearings from worded problems	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 how Standard Form is derived from our place value system • Convert numbers into, and from, Standard Form • Estimate by rounding up to three decimal places • Complete prime factor decomposition to find a number as a product of its prime factors • Use prime factor decomposition and Venn diagrams to find the LCM and HCF of given numbers • Understand and recall properties of polygons • Use angles and symmetry in polygons to find missing angles or unknown angles • Use angle knowledge to find missing angles using intersecting parallel lines • Justify reasons when finding angles involving parallel line • Know and use the properties of quadrilaterals when classifying different types of quadrilaterals Solve problems involving bearings by calculation and drawing	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: • Estimate by rounding to one decimal place • Estimate lengths of 2D shapes • Understand how to calculate the perimeter of compound shapes and be able to successfully apply the knowledge to solve problems • Multiply negative integers • Find LCM of a pair of numbers using multiplication methods and can identify factors and multiples of numbers up to 3 digits • Understand how to calculate the mean of data and can calculate the mean when given raw data • Calculate the area of simple 2D shapes including a rectangle, triangle and parallelogram • Use their understanding of place value to multiply and divide whole numbers and decimals by 10, 100 and 1000 • Order and subtract negative numbers in context • Understand and use appropriate non-calculator methods for multiplying and dividing any three-digit number by any two-digit number. • Check their solutions by applying inverse operations or estimating using approximations • Accurately measure angles to the nearest degree • Calculate unknown angles in a triangle and at a point • Describe angles in correct terms • Calculate bearings from part given diagrams	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.

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: • Add or subtract up to two decimal places • Understand the principles of place value and be able to order simple decimals • Apply understanding of place value to simple real life problems e.g. monetary/shopping budget • Use their understanding of place value to multiply and divide whole numbers by 10 or 100 • When solving number problems use a range of mental methods including mental recall of multiplication tables up to 12 x 12 and corresponding division facts • Use efficient written methods of addition, subtraction, multiplication and division. • When considering solutions to problems solved, consider the reasonableness of their answer	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: • Calculate the perimeter of basic 2D shapes • Use simple mental strategies for multiplication and division of integers up to 100 • Solve simple number problems relating to multiplication and division • Show understanding of place value in numbers up to 1000 and use this to make approximations • Use decimal notation and recognise negative numbers, in contexts such as money or temperature • Use mental recall of addition and subtraction facts to 20 in solving problems involving larger numbers • Add and subtract numbers with two digits mentally and numbers with three digits using written methods • Use mental recall of the 2, 3, 4, 5 and 10 to derive the associated division facts. • Use known facts to solve whole-number problems involving multiplication or division, including those that give rise to remainders	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: • Use number bonds and diagrams to complete basic multiplication and division problems • Count sets of objects and use mental recall of addition and subtraction facts to 10. Begin to understand the place value of each digit and order numbers up to 100 • Choose the appropriate operation when solving addition and subtraction problems, using the knowledge that subtraction is the inverse of addition	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.