

TBSHS Year 8 Mathematics – Spring Term

Progression Pathway	Content and Concepts (depth of understanding and application)	Skills Development
7 – 9	<p>Pupils working on this path way will have shown they are able to complete the prior skills and are expected to be able to:</p> <ul style="list-style-type: none"> • Use appropriate methods to construct 45, 60 and 90 degrees • Construct right angled and equilateral triangles • Use knowledge of constructions to create cyclic quadrilaterals • Use trigonometry (sine, cosine and tangent) to find missing angles and lengths. • Understand the link between congruent triangle proofs and construction of unique triangles • Know, derive and apply the sine rule to find the area of a triangle • Know and use the cosine rule to find missing lengths in triangles • Find the surface area of a frustum, a cone and a sphere • Find upper and lower bounds for calculations of area and perimeter taking into account accuracy of measurement • Understand and apply the link between length and area scale factors 	<p>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.</p>
6 – 8	<p>Pupils working on this path way will have shown they are able to complete the prior skills and are expected to be able to:</p> <ul style="list-style-type: none"> • Understand what a locus is, and are able to construct them to solve problems (e.g. circles, angle and line bisectors) • Use congruency and similarity to find missing lengths and angles in 2D shapes • Convert between different metric units of area and length • Find missing lengths in 2D shapes and in prisms when given areas • Understand Pythagoras' theorem and can apply it to find perimeters and areas of parallelograms and trapezia when perpendicular height is not given • Apply their knowledge of area to solve problems involving compound areas, including circles • Find areas of sectors and lengths of arcs • Apply their knowledge of formulae for perimeters and areas to solve problems involving algebra 	<p>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.</p>
5 – 7	<p>Pupils working on this path way will have shown they are able to complete the prior skills and are expected to be able to:</p> <ul style="list-style-type: none"> • Construct triangles using compass and ruler • Know and use the properties of quadrilaterals to solve angle and area problems • Solve problems using: -Angle and symmetry properties of polygons, including exterior and interior angles -Angle properties of intersecting and parallel lines • Know and apply the formulae for finding the area and circumference of a circle. • Know and apply the formulae for the areas of parallelograms and trapezia • Find the areas of simple compound shapes consisting of triangles and rectangles 	<p>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.</p>
4 – 6	<p>Pupils working on this path way will have shown they are able to complete the prior skills and are expected to be able to:</p> <ul style="list-style-type: none"> • Draw and measure angles to the nearest degree • Use the correct mathematical terminology to describe angles (obtuse, acute, reflex) • Construct triangles using 2 angles and a length • Construct angle and line bisectors • Complete accurate scale drawings from simple linear ratios • Know and use the sum of angles in a triangle and around a point • Know and use approximate metric equivalents of imperial measures still in use • Know and use the standard units for area • Know and apply the formulae for the area of a rectangle and for a triangle • Identify and use symmetry properties of 2D shapes to find perimeters and areas 	<p>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.</p>
3 – 5	<p>Pupils working on this path way will have shown they are able to complete the prior skills and are expected to be able to:</p> <ul style="list-style-type: none"> • Draw common 2D shapes in different orientations • Convert between simple metric units of length (e.g. cm and m) • Find perimeters of simple polygons by measurement and calculation • Find areas of shapes by counting squares 	<p>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.</p>

2 – 4	<p>Pupils working on this path way will have shown they are able to complete the prior skills and are expected to be able to:</p> <ul style="list-style-type: none"> • Understand that “angle” is a measure of turning • Recognise a right angle • Understand the property of reflective symmetry in 2D shapes • Identify and name isosceles and equilateral triangles 	<p>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.</p>
1 – 3	<p>Pupils working on this path way will have shown they are able to complete the prior skills and are expected to be able to:</p> <ul style="list-style-type: none"> • Measure objects using direct comparison • Understand that “angle” is a measure of turning • Recognise a right angle • Use mathematical names for common 2D shapes and are able to describe the number of sides and angles they have 	<p>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.</p>