Maths Curriculum – Year 10 Foundation and Higher Tier

Year	When	Lead	Topic	Summary	Skills and Knowledge	Assessment for Learning	Big Questions	Keywords
10F	A1	KSA	Tables	Construct and interpret tables	-Two way tables -Timetables	- Questioning - Retrievals - Assessment 1 - Annual assessment - Homework	-Why do we use two-way tables? -What are the benefits?	-Represent -Combine -Probability
10F	A1	KSA	Sampling	Design a questionnaire and collect data	-Collecting data, understand sample and population -Questionnaires/surveys	- Questioning - Retrievals - Assessment 1 - Annual assessment - Homework	-What makes a good questionnaire?	-Leading questions -Bias -Sample size -Representative
10F	A1	KSA	Averages	Calculate the averages from data in a table	-Averages for discrete data -Combined mean problems for discrete data -Ungrouped data - frequency tables -Grouped data - frequency tables -Averages from a bar chart -Comparing two distributions -Advantages and disadvantages of different averages	- Questioning - Retrievals - Assessment 1 - Annual assessment - Homework	-What is the process for estimating the mean?	-Estimate -Grouped data -Intervals -Compare -Averages
10F	A1	KSA	Charts and Graphs	Investigate the different ways of representing data	-Bar charts -Composite bar charts -Dual/comparative bar charts -Line graphs -Frequency polygons -Pictograms	- Questioning - Retrievals - Assessment 1 - Annual assessment - Homework	What are the benefits of a composite bar chart?	-Composite -Frequency -Key -Dual
10F	A1	KSA	Pie Charts	Draw and interpret pie charts	-Reading pie charts -Drawing pie charts	- Questioning - Retrievals - Assessment 1 - Annual assessment - Homework	-Can you use a protractor to draw an accurate pie chart?	-Construct -Protractor -360 degrees -Represent

10F	A2	KSA	Scatter Graphs	Plot and interpret scatter graphs	-Drawing scatter graphs -Interpreting scatter graphs	- Questioning - Retrievals - Assessment 1 - Annual assessment - Homework	-What is correlation?	-Correlation -Line of best fit -Relationship -Plot -Predict
10F	A2	KSA	Properties of Shapes, Parallel Lines and Angle Facts	Recall and apply the angle facts	-Estimating and measuring angles -Properties of 2D shapes including perpendicular lines -Angle facts including vertically opposite -Angles in triangles -Angles in quadrilaterals -Alternate angles -Corresponding angles -Symmetry and rotational symmetry	- Questioning - Retrievals - Assessment 1 - Annual assessment - Homework	-Which angle facts can you recall and apply?	-Estimate -Alternate -Corresponding -Rotational symmetry -Perpendicular
10F	A2	KSA	Interior and Exterior Angles of Polygons	-Calculate the sizes of interior and exterior angles	-Interior angles -Exterior angles -Solve angle problems -Congruent shapes and understanding why some shapes tessellate	- Questioning - Retrievals - Assessment 2 - Annual assessment - Homework	-How do we calculate the sum of interior angles?	-Interior -Exterior -Sum -Tessellate
10F	A2	KSA	Quadratic Equations	Expand, factorise and solve quadratics	-Expand to form a quadratic -Factorise a quadratic -Factorise a quadratic - difference of two squares -Solve quadratics by factorising -Identify the roots of a quadratic	- Questioning - Retrievals - Assessment 2 - Annual assessment - Homework	-How do we use factorising to solve quadratics?	-Expand -Factorise -Solve -Roots
10F	A2	KSA	Quadratic Graphs	Accurately plot and sketch a quadratic and use this to highlight is properties	-Plot a quadratic graph -Identify the roots, intercept, line of symmetry and turning point -Find approximate solutions to quadratic equations using graph -Interpret quadratic graphs from real life problems	- Questioning - Retrievals - Assessment 2 - Annual assessment - Homework	-What properties can we identify once a quadratic has been plotted?	-Roots -Solutions -Parabola -Turning point
10F	SP1	KSA	Right Angled Trigonometry	Calculate missing sides and angles	-Finding the hypotenuse -Finding the short side -Mixture practice -Given 3 sides prove it is/is not a right angled triangle	- Questioning - Retrievals - Assessment 2	-What is the inverse function?	-Adjacent -Hypotenuse -Opposite -Inverse

				using trigonometry	-Apply Pythagoras with a triangle drawn on a coordinate grid -Calculate the length when given a pair of coordinates -Exam Style Questions	- Annual assessment - Homework	-What does SOH, CAH, TOA stand for?	
10F	SP1	KSA	Area and Perimeter	Calculate perimeter, area and surface area	-Perimeter of rectangles, triangles, parallelograms and trapezia -Perimeter of compound shapes -Solve perimeter problems using algebra -Area of rectangles and triangles -Area of parallelograms and trapezia -Area of compound shapes -Solve area problems involving algebra -Surface area of cubes and cuboids -Surface area of other prisms	- Questioning - Retrievals - Assessment 2 - Annual assessment - Homework	-What is the difference between area and surface area?	-Compound -Prism -Perimeter -Area -Units
10F	SP2	KSA	3D Forms and Volume	Calculate surface area and volume of 3D shapes	-Identify 3D shapes and nets -Volume of prisms -Surface area of prisms including triangular prism, cube and cuboid -Volume and surface area of shapes made from cubes and cuboids -Convert between metric measures of volume and capacity e.g. 1ml - 1cm3	- Questioning - Retrievals - Assessment 2 - Annual assessment - Homework	-How can we use nets to help calculate the surface area?	-Compound -Prism -Net -Surface Area -Units
10F	SP2	KSA	Probability	Calculate probabilities from trees and tables	-Probability scale and theoretical probability, -Add simple probabilities and using 1-p (event not occurring) -Sample spaces and listing systematically -Probability from frequency tables and two way tables -Record outcomes in a table and calculate relative frequency -Probability from a Venn diagram -Draw and use frequency trees -Tree diagrams - two independent events	- Questioning - Retrievals - Assessment 3 - Annual assessment - Homework	-What is theoretical probability and how is it calculated? -What is relative frequency?	-Chance -Relative Frequency -Outcomes -Theoretical
10F	SU1	KSA	Loci, Constructions and Bearings	Use a compass, pencil and ruler to find regions	-Loci - a region bounded by a circle and an intersecting line and a given distance from a point and a given distance from a line -Loci - equal distances from two points or two line segments and regions being defined as 'nearer to' or 'greater than' -Interpret maps and scale drawings -Bearings	- Questioning - Retrievals - Assessment 3 - Annual assessment - Homework	-What is the difference between an angle and a bearing?	-Loci -Boundary -Intersect -Bisect

				Use bearings to solve problems				
10F	SU1	KSA	Compound Measures	Work with speed, density and pressure	-Metric conversions for length, weight and capacity -Convert between metric speed measures -Convert between density measures -Convert between pressure measures	- Questioning - Retrievals - Assessment 3 - Annual assessment - Homework	-What are the units for speed, density and pressure?	-Convert -Rearrange -Units
10F	SU1	KSA	Ratio	Solve a variety of ratio problems	-Simplifying and equivalent rations -Sharing into a ratio -Knowing the difference -Knowing one quantity -Combining ratios -Ratio problems	- Questioning - Retrievals - Annual assessment - Homework	-How do we combine ratios?	-Ratio -Equivalent -Scale factor
10F	SU2	KSA	Similarity and Congruence	Name the rules of congruence	-Understanding congruence and solve problems using the rules -Solve problems involving similarity in 2D shapes -Understand the effect of enlargement on perimeter of shapes -Know that scale diagrams, including bearings and maps are 'similar' to the real-life examples	- Questioning - Retrievals - Annual assessment - Homework	-What is the difference between similar and congruent shapes?	-Similar -Scale factor -Congruent
10F	SU2	KSA	Primes and Indices	Use prime decompositi on to find the HCF and LCM	-Prime factorisation -LCM and HCF	- Questioning - Retrievals - Annual assessment - Homework	-How do we use a Venn diagram to find HCF and LCM?	-Prime numbers -HCF -LCM -Venn diagram
10F	SU2	KSA	Perimeter, Area and Volume	Calculate the area and missing lengths and angles of a sector Calculate surface area and volume of 3D shapes	-Arc lengths of sectors -Calculate the missing radius or angle (inverse) -Area of sectors -Calculate the missing lengths or angle (inverse) -Volume of composite solids -Surface area of composite solids -Surface area and volume of spheres -Surface area and volume of pyramids -Surface area and volume of cones	- Questioning - Retrievals - Annual assessment - Homework	-How do we calculate the area of a sector?	-Area -Sector -Radius -Volume -Surface area

10H	A1	KSA	Indices	Introduce fractional and negative powers. Change the base to solve equation	Index Laws recap Fractional and negative indices Changing the base Solving problems involving index laws	- Questioning - Retrievals - Assessment 1 - Annual assessment - Homework	-What is the impact of a negative power?	-Reciprocal -Index -Power -Base
10H	A1	KSA	Surds	Manipulate and simplify surds	Simplifying surds Multiplying surds Multiplying surds with powers Adding and subtracting surds Expanding brackets with surds Rationalising the denominator	- Questioning - Retrievals - Assessment 1 - Annual assessment - Homework	-What does it mean to rationalise?	-Simplify -Root -Expand -Rationalise -Conjugate
10H	A1	KSA	Recurring Decimals to Fractions	Convert a recurring decimal to a fraction	Convert a recurring decimal to a fraction	- Questioning - Retrievals - Assessment 1 - Annual assessment - Homework	-What is the algebraic process of converting a recurring decimal to a fraction?	-Recurring -Terminating
10H	A1	KSA	Change the Subject	Rearrange complex formulae to change the subject	Changing the subject Changing the subject - involving factorising	- Questioning - Retrievals - Assessment 1 - Annual assessment - Homework	-What is the impact of factorising when rearranging formulae?	-Rearrange -Factorise
10H	A1	KSA	Linear Graphs	Identify the properties of parallel and perpendicular lines and use this to calculate the equations of these lines	Plotting linear graphs y=mx+c, does this point lie on the line? Equation of a line from a graph Equation of a line between two points Parallel lines Perpendicular lines	- Questioning - Retrievals - Assessment 1 - Annual assessment - Homework	-What do we know about the gradients of parallel and perpendicular lines?	-Parallel -Perpendicular

10H	A2	KSA	Solving Quadratics	Use 4 methods to solve a quadratic	Expand more than two brackets Compare coefficients and solve to find unknowns Factorising and solving quadratics including difference of two squares Factorising and solving quadratics - coefficients greater than one Solving quadratics using the formula Graphical quadratics - plot, sketch, find roots Solving quadratics by completing the square	- Questioning - Retrievals - Assessment 1 - Annual assessment - Homework	-How does having a coefficient of x squared make factorising harder?	-Factorise -Formula -Completing the square -Graphing
10H	A2	KSA	Simultaneous Equations	Use elimination and substitution to solve a pair of simultaneous equations	Solve by elimination Form and solve simultaneous equations Solve by substitution Solve by substitution involving quadratics Solving simultaneous equations graphically	- Questioning - Retrievals - Assessment 2 - Annual assessment - Homework	-When is substitution used to solve simultaneous equations?	-Variable -Unknown -Substitute
10H	A2	KSA	Proportion	Solve direct and inverse proportion algebraically	Direct proportion Inverse proportion Set up and solve proportion problems	- Questioning - Retrievals - Assessment 2 - Annual assessment - Homework	-What are the formulas for direct and inverse proportion?	-Direct -Inverse -Constant
10H	SP1	KSA	Averages and Range	Calculate the averages from tables	Averages from (discrete) frequency tables Quartiles and interquartile range for discrete data in a list or table Averages from grouped frequency tables Averages from ungrouped frequency tables Averages from a bar chart	- Questioning - Retrievals - Assessment 2 - Annual assessment - Homework	-What is the process for estimating the mean?	-Estimate -Grouped data -Intervals -Compare -Averages
10H	SP1	KSA	Representing and Interpreting Data	Draw and interpret histograms, box plots and cumulative frequency graphs	Sampling - stratified, limitations, data handing cycle, types pf data Drawing histograms Interpreting histograms Draw and interpret box plots Drawing a cumulative frequency graph Interpreting a cumulative frequency graph	- Questioning - Retrievals - Assessment 2 - Annual assessment - Homework	-What is frequency density?	-Cumulative -Median -Quartiles -Frequency density

10H	SP1	KSA	Angles in Polygons and Parallel Lines		Angles in parallel lines Interior Angles Exterior Angles Problem solving questions involving by why polygons will tessellate	- Questioning - Retrievals - Assessment 2 - Annual assessment - Homework	-How do we calculate the sum of interior angles?	-Interior -Exterior -Sum -Tessellate -Corresponding -Alternate
10H	SP2	KSA	Pythagoras and Trigonometry	Calculate missing sides and angles of right angled triangles	3D Pythagoras Right angled triangles - missing sides Right angled triangles - missing angles Find angles of elevation and depression 2D and 3D trigonometry problems Sketch and identify sin, cos and tan graphs Exact values	- Questioning - Retrievals - Assessment 2 - Annual assessment - Homework	How do we know when to use Pythagoras or SOH, CAH, TOA?	-Adjacent -Hypotenuse -Opposite -Inverse
10H	SP2	KSA	Perimeter, Area and Circles	Calculate the area of a sector and calculate the size of the radius and angle	Recaps circles Calculate arc lengths of sectors Calculate missing angles of sectors of circles given the arc length and radius, or find the missing radius given the arc length and angle Area of sectors Calculate missing angles of sectors of circles given the area and radius, or find the missing radius given the area of sector and angle	- Questioning - Retrievals - Assessment 3 - Annual assessment - Homework	-How do we calculate the area of a sector?	-Area -Sector -Radius -Volume -Surface area
10H	SU1	KSA	Bounds	Use error intervals to perform calculations	Find the upper and lower bounds including the error interval for Upper and lower bounds with real life measurements 4 operations with upper and lower bounds	- Questioning - Retrievals - Assessment 3 - Annual assessment - Homework	-Which values are selected when finding an upper or lower bound of a division?	-Error interval -Upper -Lower

10H	SU1	KSA	Loci, Construction and Bearings	Use a compass, pencil and ruler to find regions Use bearings to solve problems	Draw and construct diagrams from given instructions, including the following: -a region bounded by a circle and an intersecting line; -a given distance from a point and a given distance from a line; -equal distances from two points or two line segments; -regions may be defined by 'nearer to' or 'greater than'; -Find and describe regions satisfying a combination of loci; -Use constructions to solve loci problems (2D only); Use and interpret maps and scale drawings; Estimate lengths using a scale diagram; Make an accurate scale drawing from a diagram; Use three-figure bearings to specify direction; Mark on a diagram the position of point B given its bearing from point A; give a bearing between the points on a map or scaled plan; given the bearing of a point A from point B, work out the bearing of B from A; Use accurate drawing to solve bearings problems; solve locus problems including bearings.	- Questioning - Retrievals - Assessment 3 - Annual assessment - Homework	-What is the difference between an angle and a bearing?	-Loci -Boundary -Intersect -Bisect
10H	SU1	KSA	Probability	Calculate probabilities from trees, Venn diagrams and tables	Two-Way Tables Probability involving algebra Venn Diagrams Set Notation Probability Trees Conditional Probability	- Questioning - Retrievals - Annual assessment - Homework	-How is probability calculated form a tree diagram?	-Chance -Relative Frequency -Outcomes -Theoretical -Intersection
10H	SU1	KSA	Compound Measure	Work with speed, density and pressure	SDT DMV PFA Mixed and Problem Solving	- Questioning - Retrievals - Annual assessment - Homework	-What are the units for speed, density and pressure?	-Convert -Rearrange -Units
10H	SU1	KSA	Similarity and Congruence	Use and apply the rules of congruence	Congruence Similarity Effects of Similarity Problem Solving	- Questioning - Retrievals - Annual assessment - Homework	-What is the difference between similar and congruent shapes?	-Similar -Scale factor -Congruent

10H	SU2	KSA	Further Trigonometry	Apply the Sine rule and the Cosine rule	Right-Angled Trigonometry recap Sine Rule Cosine Rule Area Rule Problem Solving 3D Trig	- Questioning - Retrievals - Annual assessment - Homework	-What is the sine and cosine rule? -When do you use the sine and cosine rule?	-Adjacent -Hypotenuse -Opposite -Inverse -
10H	SU2	KSA	Vectors	Prove using vectors	Vector Notation Represent Vectors Length of a Vector Sums and Scalar Multiples of Vectors Geometry Problems Vectors and Ratio Proof	- Questioning - Retrievals - Annual assessment - Homework	-How do we use vectors to show two lines are parallel?	-Parallel -Straight line -Multiple -Scalar
10H	SU2	KSA	3D Forms and Volume	Calculate the surface area and volume of 3D shapes and use these to solve complex problems	Volume of a pyramid Volume of a cone Surface area of a pyramid Surface area of a cone Volume and surface area of spheres Complex shapes such as segments of circle and frustums of cones Surface area and volumes of compound solids constructed from cubes, cuboids, cones, pyramids, spheres, hemispheres and cylinders Form equations involving more complex shapes and solve these equations - problem solving	- Questioning - Retrievals - Annual assessment - Homework	-How do we calculate the surface area of a pyramid?	-Surface area -Volume -Cone -Pyramid -Frustum