**Maths Year 10 Key Objectives**

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| **Key Objective** | **Pathway A** | **Pathway B** | **Pathway C** | **Pathway D** |
| **1. Algebra Skill** | **Term 1 I can recall and apply compound measure formulas from memory in functional scenarios** | **Term 1 I can recall and apply SDT, DMV and FPA formulae from memory** | **Term 1 I can recall and apply SDT and DMV formulae from memory** | **Term 1 I can recall and apply SDT formulae from memory** |
| **2. Charts & Graphs** | **Term 1 I can plot and interpret the intersection points of a circle, cubic and quadratic graphs** | **Term 1 I can plot the turning points and points of intersections for a quadratic graph by completing the square** | **Term 1 I can match linear, quadratic, cubic and reciprocal graphs with its equations** | **Term 1 I can match linear graphs with its equation** |
| **3. Expression, Equations and Identities** | **Term 1 I can algebraically and graphically solve simultaneous equations with two variables when given a linear - linear pair or a linear - quadratic pair**  | **Term 1 I can algebraically solve simultaneous equations with two variables when given as a linear – linear and linear- quadratic pair** | **Term 1 I can algebraically solve simultaneous equations with two variables when given a linear - linear pair** | **Term 1 I can solve simultaneous equations by plotting it onto a graph and finding the point of intersection** |
| **4. Numbers, Decimals and Fractions** | **Term 1 I can calculate exactly with fractional and negative indices and surds and I can rationalise the denominator with conjugate pairs** | **Term 1 I can calculate exactly with fractional and negative indices and surds and I can rationalise the denominator** | **Term 1 I can estimate roots to 1 decimal place and solve fractional power problems involving square roots and cube roots** | **Term 1 I can calculate square numbers up to 15 squared, cube numbers up to 5 cubed and find their roots** |
| **5. Graphs** | **Term 2 I can identify, interpret, solve and plot direct and inverse proportional graph when given as powers and roots** | **Term 2 I can identify, interpret, solve and plot direct and inverse proportional graph** | **Term 2 I can find the equation of a straight line in the form y = mx + c from a straight line graphs and from given coordinates** | **Term 2 I can find intercepts and gradients from basic straight line graphs** |
| **6. Indices, Ratio and Percentages** | **Term 2 I can use standard index form in the form of prefixes to solve functional problems** | **Term 2 I can use standard index form to solve functional problems** | **Term 2 I can apply the four operations to numbers given in standard index form with and without a calculator** | **Term 2 I can multiply and divide numbers using powers of 10** |
| **7. Collecting, Processing, Representing and Interpreting Data** | **Term 2 I can create, compare and analyse box plots with outliers constructed from cumulative frequency graphs** | **Term 2 I can group data into a frequency table and use it to plot cumulative  frequency graphs and construct  box plots with outliers** | **Term 2 I can create and describe with reasoning the different types of data capture method that can be used to capture data** | **Term 2 I can describe with reasoning the different types of data capture method that can be used to capture data** |
| **8. Geometry and Measure Skill** | **Term 3 I can transform 3D shapes using scale factors and mathematically describe the change in surface area, volume and density** | **Term 3 I can transform 3D shapes using scale factors and mathematically describe the change in surface area and volume** | **Term 3 I can draw the plan and elevation of 3D shapes and use the properties of the 3D shape to calculate the surface area** | **Term 3 I can draw the plan and elevation of 3D shapes** |
| **9. Properties of 2D Shapes** | **Term 3 I can apply Sine and Cosine rule with circle theorem, segments of circles and bearings** | **Term 3 I can use the Sine and Cosine rule to find angles and lengths of non-right angled triangle** | **Term 3 I can use Pythagoras Theorem and trigonometric ratios to find missing lengths on a right angled triangle** | **Term 3 I can use the Pythagoras Theorem to find the length of missing sides** |
| **10. Charts & Graphs** | **Term 3 I can plot and interpret the intersection points of a circle, cubic and quadratic graphs** | **Term 3 I can plot the turning points and points of intersections for a quadratic graph by completing the square** | **Term 3 I can match linear, quadratic, cubic and reciprocal graphs with its equations** | **Term 3 I can match linear graphs with its equation** |

**Maths Year 9 Key Objectives**

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| **Key Objective** | **Pathway X** | **Pathway A** | **Pathway B** | **Pathway C** | **Pathway D** |
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| **1. Indices, Ratio and Percentages** | Term 1 I can solve vector problems involving ratios | Term 1 I can solve direct, inverse and changing ratio and proportion problems | Term 1 I can solve direct and inverse ratio and proportion problems and I can convert fractions into ratios | Term 1 I can solve ratio and proportion problems including difference between two part and ratio and segment problems | Term 1 I can simplify ratios and solve recipe type problems and scaling problems |
| **2. Charts & Graphs** | Term 1 I can find and interpret the median by creating and using equal and unequal class widths on histograms | Term 1 I can compare data and distribution using and find the averages by creating and using equal and unequal class widths on histograms | Term 1 I can compare data and distribution by creating and using equal and un equal class widths on histograms | Term 1 I can compare data and distribution using line graphs, composite bar charts and pie charts | Term 1 I can draw line graphs, pictograms, composite bar charts and pie charts |
| **3. Graphs** | Term 1 I can find the equations of a tangent line and perpendicular line from cyclic graphs in the form ax + by + c = 0 | Term 1 I can find the equation of a parallel and perpendicular line in the form ax + by + c = 0 when coordinates are provided | Term 1 I can find the equation of a parallel and perpendicular line in the form ax + by + c = 0 from straight line graphs | Term 1 I can plot a linear graph and use it to find the gradient and intercept | Term 1 I can plot a linear graph when an equation is given |
| **4. Algebra Skill** | Term 1 I can create, re-arrange and algebraically proof formulas and equations | Term 1 I can deduce expressions to calculate the nth term of linear, geometric, quadratic and algebraic Fibonacci type sequences | Term 1 I can deduce expressions to calculate the nth term of a linear, geometric and quadratic sequences | Term 1 I can deduce and use an expression for a linear sequence | Term 1 I can substitute values into a linear sequence and describe the pattern |
| **5. Data and Probability** | Term 2 I can calculate the probability of independent and conditional events by using tree diagrams with quadratic equations | Term 2 I can calculate and interpret experimental probability and can construct and use tree diagrams to describe conditional probability | Term 2 I can calculate and interpret experimental probability and can construct and use tree diagrams | Term 2 I can calculate and interpret experimental probability by using two way tables, sample space diagrams and frequency tree diagrams | Term 2 I can use words, decimals and fractions to describe the probability scale and I can list outcomes |
| **6. Expression, Equations and Identities** | Term 2 I can form and solve inequalities involving linear and quadratic expressions algebraically and graphically given in a worded format | Term 2 I can solve worded and geometric quadratic equation problems when A isn’t 1 by factorising, completing the square and using the quadratic formula  | Term 2 I can solve quadratic equations when A isn’t 1 by factorising, completing the square and using the quadratic formula | Term 2 I can solve quadratic equations by factorising and using the quadratic formula | Term 2 I can expand double brackets |
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| **7. Properties of 2D Shapes** | Term 2 I can apply Sine and Cosine rule in 2D and 3D scenarios | Term 2 I can use Pythagoras’ Theorem and trigonometric ratios including exact trigonometric values to find missing lengths and angles in triangles | Term 2 I can use Pythagoras Theorem and trigonometric ratios to find missing lengths and angles | Term 2 I can apply the properties of angles within polygons by breaking them up into triangles and quadrilaterals to find missing angles | Term 2 I can apply the properties of angles at a point, straight line, triangles and quadrilaterals to find missing angles |
| **8. Collecting, Processing, Representing and Interpreting Data** | Term 3 I can use capture – recapture method in detail and interpret the findings | Term 3 I can find the equation of the line of best fit from a scatter diagram and use it to extrapolate and Interpolate the data | Term 3 I can use the equation of the line of best fit from a scatter diagram to extrapolate and Interpolate the data | Term 3 I can use the line of best fit from a scatter diagram to extrapolate and Interpolate the data | Term 3 I can plot a scatter diagram and find the line of best fit |
| **9. Numbers, Decimals and Fractions** | Term 3 I can calculate, apply and interpret limits of accuracy including upper and lower bounds | Term 3 I can estimate powers, decimals, roots and surds and calculate answers using significant figures | Term 3 I can estimate numbers to one significant figure and use it to perform calculations from worded scenarios | Term 3 I can estimate numbers to one significant figure and use it to perform calculation | Term 3 I can estimate real life lengths and dimensions from pictures |
| **10. Geometry and Measure Skill** | Term 3 I can calculate lengths, areas and perimeters of compound shapes and segments of circles by using surds, exact angles and quadratic equations | Term 3 I can calculate the volume and surface area of spheres, cones, pyramids and frustums  | Term 3 I can calculate the volume and surface area of cylinders, cones, pyramids and prisms | Term 3 I can calculate the volume of cuboids and compound prisms | Term 3 I can calculate the volume of cuboids |

**Maths Year 8 Key Objectives**

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| **Key Objective** | **Pathway X** | **Pathway A** | **Pathway B** | **Pathway C** | **Pathway D** |
| **1. Indices, Ratio and Percentages** | Term 1 I can use standard index form in the form of prefixes to solve functional problems | Term 1 I can construct and use prime factor trees to solve algebraic HCF and LCM problems; I can convert recurring decimals into fractions | Term 1 I can construct and use prime factor trees to find the HCF and LCM to solve functional problems; I can convert recurring decimals into fractions | Term 1 I can construct and use prime factor trees to find the HCF and LCM of two values; I can use prime factors to determine if a fraction is recurring or terminating | Term 1 I can construct a prime factor tree |
| **2. Charts & Graphs** | Term 1 I can transform and sketch trigonometric function graphs, functional function graphs and inverse functional graphs | Term 1 I can identify, calculate and plot linear, quadratic, cubic graphs, exponential and reciprocal graphs | Term 1 I can identify, calculate and plot linear, quadratic and cubic graphs | Term 1 I can plot a linear, quadratic and cubic graph when an equation is given | Term 1 I can plot points on a graph and describe its relationship |
| **3. Graphs** | Term 1 I can graphically and mathematically justify direct and inverse proportion | Term 1 I can construct, calculate values  and interpret real life graphs; this includes distance time graphs, velocity time graphs and rate of change graphs | Term 1 I can construct and interpret real life graphs; this includes distance time graphs, velocity time graphs and rate of change graphs | Term 1 I can construct interpret real life graphs; this includes distance time graphs and rate of change graphs | Term 1 I can construct and interpret distance time graphs |
| **4. Algebra Skill** | Term 1 I can use compound and inverse functions | Term 1 I can use iteration to find a solution from an equation and give to an appropriate degree of accuracy | Term 1 I can use iteration to find a solution from an equation and give it to 2 decimal places | Term 1 I can substitute values into complex formulas and give answers to a given number of decimal places | Term 1 I can substitute values into simple formulas and give answers to a given number of decimal places |
| **5. Data and Probability** | Term 2 I can calculate the probability of independent and conditional events using tree diagrams, Venn diagrams. | Term 2 I can create grouped frequency tables from raw data and use it to find the mean, median and mode | Term 2 I can find the mean, median and mode from grouped frequency tables | Term 2 I can find the mean and mode from grouped and ungrouped frequency tables | Term 2 I can find the mean, median and mode from grouped frequency table |
| **6. Expression, Equations and Identities** | Term 2 I can algebraically and graphically solve simultaneous equations with two variables when given a linear - linear pair or a linear - quadratic pair  | Term 2 I can solve fractional linear equations involving brackets, algebraic denominators and ratios | Term 2 I can solve fractional linear equations involving brackets and mixed denominators | Term 2 I can solve linear equations involving brackets and unknowns on both sides | Term 2 I can solve basic linear equations by using the balancing method |
| **7. Properties of 2D Shapes** | Term 2 I can identify, proof and apply circle theorems to calculate multiple angles | Term 2 I can apply circle theorem to calculate a missing angle | Term 2 I can find the interior and exterior angles of any regular shapes | Term 2 I can use angle properties of triangles and quadrilaterals to find missing angles for triangles and irregular quadrilaterals | Term 2 I can find missing angles within triangles and quadrilaterals by measuring with a protractor and using basic angle properties |
| **8. Collecting, Processing, Representing and Interpreting Data** | Term 3 I can create, compare and analyse box plots with outliers constructed from cumulative frequency graphs | Term 3 I can plot, analyse time series graphs in detail and describe trends and seasonal variation | Term 3 I can plot and analyse time series graphs in detail using moving averages | Term 3 I can plot and analyse time series graph | Term 3 I can create and plot data from a data capture sheet |
| **9. Numbers, Decimals and Fractions** | Term 3 I can rationalise the denominator with conjugate pairs | Term 3 I can apply the rule of BIDMAS to solve complex problems involving mixed fractions, roots and indices with and without a calculator and give answers to an appropriate number of significant figures | Term 3 I can apply rule of BIDMAS to solve simple problems involving mixed fractions, roots and indices with and without a calculator and give answers to an appropriate number of significant figures | Term 3 I can apply the rule of BIDMAS to fractions, decimals and mixed fractions with and without a calculator and give answers to an appropriate number of significant figures and determine | Term 3 I can apply the four operations to fractions and decimals with and without a calculator |
| **10. Geometry and Measure Skill** | Term 3 I can transform 3D shapes using scale factors and mathematically describe the change in surface area, volume and density | Term 3 I can describe combined transformation as well as fractional and negative enlargement | Term 3 I can describe combined transformation as well as fractional enlargement | Term 3 I can describe combined transformation | Term 3 I can translate, rotate, enlarge and reflect shapes |

**Maths Year 7 Key Objectives**

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| **Key Objective** | **Pathway X** | **Pathway A** | **Pathway B** | **Pathway C** | **Pathway D** |
| **1. Indices, Ratio and Percentages** | Term 1 I can use mixed multipliers to calculate the original amount of a population after compound growth or decay | Term 1 I can calculate compound interest and depreciation using multipliers | Term 1 I can increase and decrease percentages by using multipliers | Term 1 I can find percentage increase and decrease of an amount and apply them to real-life situations | Term 1 I can find multiples of 10% and 5% of an amount |
| **2. Charts & Graphs** | Term 1 I can extrapolate, interpolate and form equations using scatter diagrams | Term 1 I can convert multiple quantities by creating and using conversion graphs | Term 1 I can create and use conversion graphs to find quantities that are not within the range of the graph | Term 1 I can create and use conversion graphs | Term 1 I can use conversion graphs |
| **3. Graphs** | Term 1 I can use the form y = mx + c to identify parallel and perpendicular lines | Term 1 I can find the distance between two points when given as a coordinate using Pythagoras Theorem | Term 1 I can find the distance between two points on a graph using Pythagoras Theorem | Term 1 I can identify and plot coordinates in all four quadrants and find the midpoint between two coordinates | Term 1 I can identify and plot coordinates in all four quadrants |
| **4. Algebra Skill** | Term 1 I can deduce expressions to calculate the nth term of linear, geometric, quadratic and algebraic Fibonacci type sequences | Term 1 I can expand double and triple brackets and factorise and solve quadratic expressions | Term 1 I can expand polynomials and factorise expressions | Term 1 I can expand double brackets and factorise expressions | Term 1 I can expand and factorise expressions |
| **5. Data and Probability** | Term 2 I can interpret and analyse averages from frequency tables, moving average graphs and real life problems | Term 2 I can state the advantages and disadvantages for all three averages and use this to decide which average to use for a given scenario | Term 2 I can select and calculate which average to use for a given scenario and justify my choice with reasons | Term 2 I can calculate, interpret and describe data using mean, median, mode and range | Term 2 I can calculate, interpret and describe data using median, mode and range  |
| **6. Expression, Equations and Identities** | Term 2 I can solve fractional linear equations involving brackets, algebraic denominators and ratios | Term 2 I can solve worded and algebraic linear equations including those with brackets and unknowns on both sides of the equation | Term 2 I can solve worded and algebraic linear equations, including those with unknowns on both sides of the equation | Term 2 I can solve worded linear equations when there is an unknown on one side | Term 2 I can collect like terms |
| **7. Properties of 2D Shapes** | Term 2 I can solve functional geometry problems involving Pythagoras Theorem and Trigonometry in 2D and 3D | Term 2 I can apply the properties of angles at a point, angles in triangles and angles in quadrilaterals to solve angle problems, including algebraic problems | Term 2 I can apply the properties of angles at a point, angles in triangles and angles in quadrilaterals to find missing angles | Term 2 I can Identify, estimate and correctly measure and describe angles in a shape and on a straight line using a ruler and protractor | Term 2 I can measure lines using a ruler and measure the size of an angle using a protractor  |
| **8. Collecting, Processing, Representing and Interpreting Data** | Term 3 I can construct, interpret and use 2 way and 3 way Venn diagrams. | Term 3 I can construct and interpret two way tables from worded problems and use it to create a frequency diagram | Term 3 I can create and complete a two way table from a worded scenario and use it to create a frequency diagram | Term 3 I can complete two way tables and a frequency diagrams when the diagrams are given | Term 3 I can complete frequency diagrams, tally charts and bar charts |
| **9. Numbers, Decimals and Fractions** | Term 3 I can apply the four operations to surds, this includes expanding brackets involving surds | Term 3 I can apply the four operations to integers, decimals and mixed fractions given in a functional context | Term 3 I can apply the four operations to integers, decimals and mixed fractions | Term 3 I can apply the four operations to integers and decimals  | Term 3 I can confidently apply the four operations to whole numbers |
| **10. Geometry and Measure Skill** | Term 3 I can calculate the volume and surface area of spheres, cones,  frustums and pyramids | Term 3 I can calculate and interpret the perimeter and area of compound shapes and circles when mixed units are given | Term 3 I can calculate and interpret the perimeter and area of compound shapes and circles | Term 3 I can identify and calculate the properties of faces, surfaces, nets, edges and vertices of basic prisms | Term 3 I can identify the properties of faces, surface areas, nets, edges and vertices of basic prisms |