**Key Stage 3 Long Term Planning**

**Year 7 2020-2021 INTENT:**

Faculty Area: Mathematics (core) – Theta 1

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| **Year 7** | Transition | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |  |
| **Knowledge** | Transition Unit  Origins of number  Egyptian Numbers Roman Numerals | Analysing and displaying data  Number skills | Expressions, functions and formulae  Decimals and measures | Fractions  Probability | Ratio and Proportion | Lines and angles  Sequences and graphs | Transformations | Super Learning Week – 3 Days |
| **Skills** | Numeracy skills | Mode, median and range  Displaying data  Grouping data  Averages and comparing data  Line graphs and more bar charts  Using spreadsheets  Mental maths  Addition and Subtraction  Multiplication  Division  Time and money  Negative numbers  Factors, multiples and primes  Square and triangle numbers | Functions  Simplifying expressions 1 and 2  Writing expressions  Substituting into formulae  Writing formulae  Decimals and rounding  Length, mass and capacity  Scales and coordinates  Working with decimals mentally  Working with decimals  Perimeter  Area  More units | Comparing Fractions  Simplifying fractions  Working with fractions  Fractions and decimals  Understanding percentages  Percentages of amounts  The language of probability  Calculating probability  More probability calculations  Experimental probability  Expected outcomes | Direct Proportion  Writing ratios  Using ratios  Scale and measures  Proportions and fractions  Proportions and percentages | Lines, angles and triangles  Estimating, measuring and drawing angles  Drawing triangles accurately  Calculating angles  Angles in a triangle  Quadrilaterals  Sequences  Pattern sequences  Coordinates  Extending sequences  Straight-line graphs  Position-to-term rules | Congruency and enlargements  Symmetry  Reflection  Rotation  Translations and combined transformations |
| **Connections to previous learning**  **(KS2)** |  | Describing positions on Coordinate grids  Construct and interpret pie charts  Calculate and interpret mean as an average  Using negative numbers  Divide using long division  Use order operations | Use simple formulae  Express missing number problems algebraically  Multiply and divide using numbers with at least two decimals places  Recall equivalences between decimals, percentages and fractions  Solve problems involving similar shapes where scale factor is known  Area of parallelograms and triangles  Volume of cubes and cuboids  Name parts of a circle | Use common factors to simplify fractions  -Compare and order fractions of any size  Add and subtract fractions and mixed numbers  Multiply and divide proper fractions  Calculate decimal fraction equivalents  Recall equivalences between decimals, fractions and percentages  Use fractions to solve problems involving proportion | Solve problems using ratio using multiplication and division facts | Similar shapes involving scale factor  Find missing angles in triangles, quadrilaterals and regular polygons  Recognise vertically opposite angles and find missing angles  Generate and describe linear number sequences | Translate shapes on a coordinate grid and reflect in the axes |
| **Assessment** |  | *Skills check at*  *the end of each unit (4 during this term)* | *Skills check at the end of each unit (3 during this term)* | *Skills check at the end of each unit (3 during this term)* | *Skills check at the end of each unit (3 during this term)* | *Skills check at the end of each unit (3 during this term)* | *Skills check at the end of each unit (3 during this term)*  *End of year exam* |
| **Homework** |  | Revision/numeracy booklet | Revision/numeracy booklet | Revision/numeracy booklet | Revision/numeracy booklet | Revision/numeracy booklet | Revision/numeracy booklet |
| **Cultural enrichment including Trips, Visits, Experiences, Extra-curricular** |  | Finance: Time and money | STEM:Substituting into formula  STEM:More units | STEM: Expected outcomes |  | STEM:Calculating angles |  |
| **Reading, Writing & Talk** |  | Mathematical key terms for each unit.  Correct terminology used when answering questions (using standard English and full sentences)  Read and understand written questions | Mathematical key terms for each unit.  Correct terminology used when answering questions (using standard English and full sentences)  Read and understand written questions | Mathematical key terms for each unit.  Correct terminology used when answering questions (using standard English and full sentences)  Read and understand written questions | Mathematical key terms for each unit.  Correct terminology used when answering questions (using standard English and full sentences)  Read and understand written questions | Mathematical key terms for each unit.  Correct terminology used when answering questions (using standard English and full sentences)  Read and understand written questions | Mathematical key terms for each unit.  Correct terminology used when answering questions (using standard English and full sentences)  Read and understand written questions |
| **Numeracy** |  |  |  |  |  |  |  |
| **CIAG** | Why is mathematics important? |  |  |  | NCW Mathematics lessons: Where can Mathematics take you? |  |  |

**Key Stage 3 Long Term Planning**

**Year 8 2020-2021 INTENT:**

Faculty Area: Mathematics (core) – Theta 2/3

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| **Year 8** | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |  |
| **Knowledge** | Number  Area and Volume | Expressions and equations  Real life graphs | Decimals and ratio  Lines and angles | Calculating with fractions | Straight-line graphs  Percentages, decimals and fractions | Statistics, graphs and charts | Super Learning Week – 3 Days |
| **Skills** | Calculations  Calculating with negative integers  Powers and roots  Powers, roots and brackets  Multiples and factors  Area of a triangle  Area of a parallelogram and trapezium  Volume of cubes and cuboids  3D shapes  Surface area of cubes and cuboids  Problems and measures | Algebraic powers  Expressions and brackets  Factorising expressions  One-step equations  Two-step equations  The balancing method  Conversion graphs  Distance-time graphs  Line graphs  Complex line graphs  Graphs of functions  More real-life graphs | Ordering decimals and rounding  Place-value calculations  Calculations with decimals  Ratio and proportion with decimals  Using ratios  Quadrilaterals  Alternate angles and proof  Geometrical problems  Exterior and interior problems  Solving geometric problems | Adding and subtracting fractions  Multiplying fractions  Fractions, decimals and reciprocals  Dividing fractions  Calculating with mixed numbers | Direct proportion on graphs  Gradients  Equations of straight lines  Direct proportion problems  Fractions and decimals  Equivalent proportions  Writing percentages  Percentages of amounts  Problem solving | Pie charts  Using tables  Stem and leaf diagrams  Comparing data  Scatter graphs Misleading graphs |
| **Connections to previous learning**  **(KS2)** | Four operations  Factors, multiples and primes  Area and perimeter of simple shapes | Writing and simplifying expressions  Writing and substituting formulae  Drawing and interpreting line and bar graphs  Displaying data | Decimals and rounding  Four operations with decimals  Writing and using ratios  Lines and angles in triangles  Estimating, measuring and drawing angles  Calculating angles in triangles and quadrilaterals | Comparing fractions, decimals and percentages  Applying the four operations to fractions | Direct proportion  Proportion with fractions and percentages | Analysing and displaying data (Displaying, grouping and comparing data)  Line and bar graphs |
| **Assessment** | *Skills check at the end of each unit (2 during this term)* | *Skills check at the end of each unit (2 during this term)* | *Skills check at the end of each unit (2 during this term)* | *Skills check at the end of each unit (1 during this term)* | *Skills check at the end of each unit (2 during this term)* | *Skills check at the end of each unit (1 during this term)*  *End of year exam* |
| **Homework** | Revision/numeracy booklet | Revision/numeracy booklet | Revision/numeracy booklet | Revision/numeracy booklet | Revision/numeracy booklet | Revision/numeracy booklet |
| **Cultural enrichment including Trips, Visits, Experiences, Extra-curricular** |  | STEM: Graphs of functions | STEM:Using ratio |  | STEM:Direct proportion  Finance:Solving problems | STEM: Misleading graphs |
| **Reading, Writing & Talk** | Mathematical key terms for each unit.  Correct terminology used when answering questions (using standard English and full sentences)  Read and understand written questions | Mathematical key terms for each unit.  Correct terminology used when answering questions (using standard English and full sentences)  Read and understand written questions | Mathematical key terms for each unit.  Correct terminology used when answering questions (using standard English and full sentences)  Read and understand written questions | Mathematical key terms for each unit.  Correct terminology used when answering questions (using standard English and full sentences)  Read and understand written questions | Mathematical key terms for each unit.  Correct terminology used when answering questions (using standard English and full sentences)  Read and understand written questions | Mathematical key terms for each unit.  Correct terminology used when answering questions (using standard English and full sentences)  Read and understand written questions |
| **Numeracy** |  |  |  |  |  |  |
| **CIAG** |  | My dream career 1 |  | My dream career 2  NCW Mathematics lessons: Where can Mathematics take you? |  | My dream career 3 |

**Key Stage 3 Long Term Planning**

**Year 9 2020-2021 INTENT:**

Faculty Area: Mathematics (core) – higher

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| **Year 9** | Transition | Autumn 1 | | Autumn 2 | | Spring 1 | | Spring 2 | | Summer 1 | | Summer 2 | | |  |
| **Knowledge** | Basic number  Factors and multiples  Angles  Scale diagrams and bearings  Basic Algebra  Basic fractions | | Basic decimals  Coordinates and line graphs  Rounding  Collecting and representing data  Sequences | | Basic percentages  Perimeter and area  Real life graphs | | Circumference and area  Ratio and proportion  Equations | | Basic probability  Scatter graphs  Standard form | | Transformations  Constructions and loci  2D representation of 3D shapes | | Super Learning Week – 3 Days |
| **Skills** | Order and calculate with integers. Recognise inverses. Estimate answers  HCF, LCM, prime factorization  Use angle notations. Calculate angles including related to parallel lines.  Understand and use scales and bearings.  Algebraic notation. Simplify. Single brackets. Factorise.  Order and calculate with fractions | | Order and calculate with decimals. Understand place value. Convert from decimals to fractions  Read and plot coordinates in 4 quadrants  Use y=mx+c to find parallel and perpendicular lines.  Find equation of lines given one or two points  Round to decimal place and significant figure. Apply limits of accuracy  Read, draw and interpret a variety of charts  Know special sequences. Work out the nth term | | Understand percentages. Calculate percentages. Compare using percentages  Identify faces, edges and vertices. Calculate perimeter. Know area formula and calculate area.  Plot graphs of real life situations and find solutions, including speed/distance graphs | | Know the parts of a circle. Know and use the formula for the areas and circumference of a circle  Understand ratio notation. Divide in a given ratio  Substitute into formulae. Solve simple equations | | Solve problems using probability. Understand and use experimental probability  Know types of correlation. Plot and interpret a scatter graph. Draw and use a line of best fit  Place value for large numbers. Write numbers in standard form. | | Congruent and similar shapes. Reflections, rotations, enlargements and translations (including vector)  Use standard ruler and compass constructions and use to solve problems  Plans and elevations of 3D shapes | |
| **Connections to previous learning** | Year7 Autumn Term 1 Number Skills  Year8 Autumn Term 1 Number Skills  Year 7 Summer 1 Lines and angles.  Year 8 Spring 2 Lines and angles  Year 8 Expressions and equations  Year 8 Summer 1 Calculating with fractions | | Year 7 Autumn 2 Decimals and measure  Year 8 Spring1 Decimals and ratio  Year 8 Autumn 1 Statistics, graphs and charts  Year 7 Summer 1 Sequences and graphs | | Year 8 Summer 2 Percentages, decimals and fractions  Year 8 Autumn 1 Area and volume  Year 8 Spring 1  Real life graphs | | Year 8 Autumn term 1 Area and volume  Year 7 Spring 2 Ratio and proportion  Year 8 Autumn 2 Expressions and equations | | Year 7 Spring 1 Probability  Year 8 Autumn 2 Statistics, graphs and charts  Year 8 Autumn 1 Number | | Year 7 Summer 2 Transformations  Year 9 Autumn 1 Scale diagrams and bearings  Year 8 Autumn 1 Area and volume | |
| **Assessment** | *Skills check at the end of each unit (5 during this term)* | | *Skills check at the end of each unit (5 during this term)* | | *Skills check at the end of each unit (3 during this term)* | | *Skills check at the end of each unit (3 during this term)* | | *Skills check at the end of each unit (2 during this term)* | | *Skills check at the end of each unit (3 during this term)*  *End of year exam* | |
| **Homework** | Revision/numeracy booklet | | Revision/numeracy booklet | | Revision/numeracy booklet | | Revision/numeracy booklet | | Revision/numeracy booklet | | Revision/numeracy booklet | |
| **Cultural enrichment including Trips, Visits, Experiences, Extra-curricular** | Real life - household finance | | Nature - Fibonacci | | Real life – intepreting percentage | | Real life – best value  Real life – Using formula | |  | |  | |
| **Reading, Writing & Talk** | Mathematical key terms for each unit.  Correct terminology used when answering questions (using standard English and full sentences)  Read and understand written questions | | Mathematical key terms for each unit.  Correct terminology used when answering questions (using standard English and full sentences)  Read and understand written questions | | Mathematical key terms for each unit.  Correct terminology used when answering questions (using standard English and full sentences)  Read and understand written questions | | Mathematical key terms for each unit.  Correct terminology used when answering questions (using standard English and full sentences)  Read and understand written questions | | Mathematical key terms for each unit.  Correct terminology used when answering questions (using standard English and full sentences)  Read and understand written questions | | Mathematical key terms for each unit.  Correct terminology used when answering questions (using standard English and full sentences)  Read and understand written questions | |
| **Numeracy** |  | |  | |  | |  | |  | |  | |
| **CIAG** | When will I need math 1 | | When will I need math 2 | | When will I need math 3 | | When will I need math 4  NCW Mathematics lessons: Where can Mathematics take you? | | When will I need math 5 | | When will I need math 6 | |

**Key Stage 4 Long Term Planning**

**Year 10 2020-2021 SYLLABUS: AQA GCSE Mathematics 8300**

Curriculum Area: Mathematics (core) – Higher

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| **Year 10** | **Autumn 1** | **Autumn 2** | **Spring 1** | **Spring 2** | **Summer 1** | **Summer 2** | **Year 10 Work Experience – 1 Week** | **Super Learning Week – 3 Days** |
| **Knowledge** | Calculating with percentages  Measures  Surds | Statistical measures  Indices  Properties of polygons | Number – recap and review  Congruence and similarity  Pythagoras Theorem’ and  Trigonometry | Simultaneous equations  Probability  Statistics recap and review | Quadratics, rearranging formula and identities  Volume | Algebra recap and review  Sketching graphs  Quadratic equations and their graphs  Geometry and measures recap and review |
| **Skills** | Percentage problems including increase/decrease, original value problems and simple interest.  Limits of accuracy. Metric units to solve problems including conversions. Density and speed.  Calculate exactly with surds including simplifying, rationalizing and expanding brackets | Mean, mode, median and range  Positive integer powers. Calculate with powers.  Know the properties of polygons.  Calculate interior and exterior angles of polygons. | Change between factions and recurring decimals.  Upper and lower bounds  Surds and fractional indices.  Identify congruent triangles (SSS, SAS, ASA, RHS)  Know and use Pythagoras’ theorem  Know the trigonometric ratio. Use them to find sides and angles. | Solve simultaneous equations.  Understand the probability scale. Work out probabilities and solve problems. Use tree diagrams.  Construct and interpret histograms and box plots. | Expand and factorise quadratics. Simplify expressions. Use mathematical formula and change the subject. Show that algebraic expressions are equivalent.  Calculate the volume of cubes, cuboids and prisms. | Use y=mx+c to find parallel and perpendicular lines.  Plot reciprocal and exponential graphs  Recognise graphs if linear, quadratic, cubic and reciprocal functions  Solve linear and quadratic equations.  Find approximations using graphs.  Identify, describe and construct congruent shapes  Find surface area and volume of sphere, cones, frustums and composite shapes |
| **Connection to previous learning** | Year 9 Spring 1 Basic percentages  Year 7 Autumn 1 Decimals and measure. Year 8 Autumn 1 Area and volume  Year7 Autumn Term 1 Number Skills | Year 8 Autumn 2 Statistics, graphs and charts  Year 9 Factors and multiples  Year 9 Autumn 1 Angles | Year 9 Autumn 2 Decimals  Year 10 Autumn 1 Surds  Year 10 Autumn 2 Indices  Year 7 Summer 2 Transformations  Year 8 Autumn 1 Number | Year 9 Summer 1 Equations  Year 9 Spring 2 Basic probability  Year 7 Autumn 1 Analysing and displaying data | Year 9 Autumn 1 Basic Algebra  Year 10 Spring 2 Perimeter and area | Year 9 Spring 2 Equations  Year 9 Spring 1 Real life graphs  Year 10 Summer 1 Quadratics, rearranging formula and identities  Year 10 Summer 1 Volume  Year 9 Spring 1 Perimeter and area |
| **Assessment** | *Skills check at the end of each unit (3 during this term)* | *Skills check at the end of each unit (3 during this term)*  *CAP1* | *Skills check at the end of each unit (3 during this term)* | *Skills check at the end of each unit (3 during this term)* | *Skills check at the end of each unit (3 during this term)* | *Skills check at the end of each unit (3 during this term)*  *End of year exam* |
| **Homework** | Revision/numeracy booklet | Revision/numeracy booklet | Revision/numeracy booklet | Revision/numeracy booklet | Revision/numeracy booklet | Revision/numeracy booklet |
| **Cultural enrichment including Trips, Visits, Experiences, Extra-curricular** | Real life – problem solving in context  Real life – Metric/imperial units |  |  | Real life- Equations in real life context. | STEM – Using formula from other subjects | STEM – Using formula from other subjects |
| **Reading,**  **Writing & Talk** | Mathematical key terms for each unit.  Correct terminology used when answering questions (using standard English and full sentences)  Read and understand written questions | Mathematical key terms for each unit.  Correct terminology used when answering questions (using standard English and full sentences)  Read and understand written questions | Mathematical key terms for each unit.  Correct terminology used when answering questions (using standard English and full sentences)  Read and understand written questions | Mathematical key terms for each unit.  Correct terminology used when answering questions (using standard English and full sentences)  Read and understand written questions | Mathematical key terms for each unit.  Correct terminology used when answering questions (using standard English and full sentences)  Read and understand written questions | Mathematical key terms for each unit.  Correct terminology used when answering questions (using standard English and full sentences)  Read and understand written questions |
| **Numeracy** |  |  |  |  |  |  |
| **CIAG** | See the Math in ……1 | See the Math in ……2 | See the Math in ……3 | NCW Mathematics lessons: Where can Mathematics take you?  See the Math in ……4 | See the Math in ……5 | See the Math in ……6 |  |  |

**Key Stage 4 Long Term Planning**

**Year 11 2020-2021 SYLLABUS: AQA GCSE Mathematics 8300**

Curriculum Area: Mathematics (core) – Higher

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| **Year 11** | **Autumn 1** | **Autumn 2** | **Spring 1** | **Spring 2** | **Summer 1** |
| **Knowledge** | Further quadratics, rearranging formulae and identities  Trigonometry recap and extension  Growth and decay | Equations of a circle  Further equations and graphs  Direct and inverse proportion | Inequalities  Vectors  Further sketching graphs | Sine and cosine rules  Transforming functions  Numerical methods  Circle theorems | Gradients and rate of change  Pre-Calculus and area under a curve  Algebraic fractions  Exam preparation - Revision |
| **Skills** | Factorise quadratics with coefficient greater than 1.  Understand difference between equation and identity  Construct algebraical arguments and proof  Interpret inverse and composite functions  Know the Pythagoras and trigonometric ratios. Use trigonometric ratios to find sides and angles. Know the exact values for 0, 30, 45, 60 and 90 degrees.  Solve growth and decay problems including compound interest. | Recognise and use the equations of a circle with the center as the origin.  Find the equation of a tangent to a circle  Using the quadratic formula to solve quadratics, including competing the square to find solutions to graphs and turning points  Recognise and sketch linear and quadratic functions  Solve problems using direct and inverse proportion. Interpret equations for direct and inverse proportion. Use graphs for proportion problems | Solve linear and quadratic inequalities including set notation and on a graph  Add and subtract vectors. Multiply a vector by a scalar. Use diagrams and column representation of vectors.  Use vectors to construct geometric arguments and proof  Recognise, sketch and interpret linear, quadratic and reciprocal functions, including exponential and trigonometric functions | Know and apply the sine and cosine rule  Know and apply the area of a triangle to find area, sides and angles  Sketch translations and reflections of a given function  Find approximate solutions to equations numerically using iteration  Apply and prove circle theorems including angles, radii, tangents and chords | Identify gradient on a point of a curve  Apply concepts of average and instantaneous rates of change in numerical, algebraic and graphical context  Calculate gradients of graphs and area under a graph including quadratic and non-linear graphs |
| **Connection to previous learning** | Year 10 Summer 1 Quadratics, rearranging formula and identities  Year 9 Summer 2 Pythagoras’  Year 10 Spring 1  Year 10 Autumn 2 indices  Year 10 Autumn 1 Calculating with percentages | Year 10 Summer 1 Algebra recap and review  Year 9 Autumn 2 Coordinates and line graphs  Year 9 Spring 1 Area and perimeter  Year 10 Summer 1 Quadratics, rearranging formula and identities  Year 11 Autumn 1 Further Quadratics, rearranging formula and identities | Year 9 Spring 2 Equations  Year 9 summer 2 Transformations  Year 10 Summer 2 Quadratic equations and graphs | Year 10 Spring 1 Pythagoras Theorem’ and Trigonometry  Year 9 Spring 2 Circumference and area | Year 9 Autumn 2 Coordinates and Line graphs |
| **Assessment** | *Skills check at the end of each unit (2during this term)* | *Skills check at the end of each unit (3 during this term)*  *Mock 1 CAP1* | *Skills check at the end of each unit (2 during this term)* | *Skills check at the end of each unit (3 during this term)*  *Mock 2 CAP2* | *Skills check at the end of each unit (1 during this term)* |
| **Homework** | Revision/numeracy booklet | Revision/numeracy booklet | Revision/numeracy booklet | Revision/numeracy booklet | Revision/numeracy booklet |
| **Cultural enrichment including Trips, Visits, Experiences, Extra-curricular** | STEM – Using formula from other subjects  Finance – Compound interest  STEM – growth and decay in context | STEM – Solutions in context |  |  |  |
| **Reading,**  **Writing & Talk** | Mathematical key terms for each unit.  Correct terminology used when answering questions (using standard English and full sentences)  Read and understand written questions | Mathematical key terms for each unit.  Correct terminology used when answering questions (using standard English and full sentences)  Read and understand written questions | Mathematical key terms for each unit.  Correct terminology used when answering questions (using standard English and full sentences)  Read and understand written questions | Mathematical key terms for each unit.  Correct terminology used when answering questions (using standard English and full sentences)  Read and understand written questions | Mathematical key terms for each unit.  Correct terminology used when answering questions (using standard English and full sentences)  Read and understand written questions |
| **Numeracy** |  |  |  |  |  |
| **CIAG** |  |  | Why Study Maths ?  Looking at why pupils should continue to study maths and the careers that they lead to. | NCW Mathematics lessons: Where can Mathematics take you?  Mathematics KS5 taster sessions |  |