**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 UnitOrigins of numberEgyptian Numbers Roman Numerals | Analysing and displaying dataNumber skills | Expressions, functions and formulaeDecimals and measures | FractionsProbability | Ratio and Proportion | Lines and anglesSequences and graphs | Transformations | Super Learning Week – 3 Days |
| **Skills** | Numeracy skills  | Mode, median and rangeDisplaying dataGrouping dataAverages and comparing dataLine graphs and more bar chartsUsing spreadsheetsMental mathsAddition and SubtractionMultiplicationDivisionTime and moneyNegative numbersFactors, multiples and primesSquare and triangle numbers | FunctionsSimplifying expressions 1 and 2Writing expressionsSubstituting into formulaeWriting formulaeDecimals and roundingLength, mass and capacityScales and coordinatesWorking with decimals mentallyWorking with decimalsPerimeterAreaMore units | Comparing FractionsSimplifying fractionsWorking with fractionsFractions and decimalsUnderstanding percentagesPercentages of amountsThe language of probabilityCalculating probability More probability calculationsExperimental probabilityExpected outcomes | Direct ProportionWriting ratiosUsing ratiosScale and measuresProportions and fractionsProportions and percentages | Lines, angles and trianglesEstimating, measuring and drawing anglesDrawing triangles accurately Calculating anglesAngles in a triangleQuadrilateralsSequencesPattern sequencesCoordinatesExtending sequencesStraight-line graphsPosition-to-term rules | Congruency and enlargementsSymmetryReflectionRotationTranslations 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 divisionUse order operations | Use simple formulaeExpress missing number problems algebraicallyMultiply and divide using numbers with at least two decimals placesRecall equivalences between decimals, percentages and fractionsSolve problems involving similar shapes where scale factor is knownArea of parallelograms and trianglesVolume of cubes and cuboidsName parts of a circle | Use common factors to simplify fractions-Compare and order fractions of any sizeAdd and subtract fractions and mixed numbersMultiply and divide proper fractionsCalculate decimal fraction equivalents  Recall equivalences between decimals, fractions and percentagesUse fractions to solve problems involving proportion | Solve problems using ratio using multiplication and division facts  | Similar shapes involving scale factorFind missing angles in triangles, quadrilaterals and regular polygonsRecognise vertically opposite angles and find missing anglesGenerate 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 formulaSTEM: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**  | NumberArea and Volume | Expressions and equationsReal life graphs | Decimals and ratioLines and angles | Calculating with fractions | Straight-line graphsPercentages, decimals and fractions | Statistics, graphs and charts | Super Learning Week – 3 Days |
| **Skills** | CalculationsCalculating with negative integersPowers and rootsPowers, roots and bracketsMultiples and factorsArea of a triangleArea of a parallelogram and trapeziumVolume of cubes and cuboids 3D shapesSurface area of cubes and cuboidsProblems and measures | Algebraic powersExpressions and bracketsFactorising expressionsOne-step equationsTwo-step equationsThe balancing methodConversion graphsDistance-time graphsLine graphsComplex line graphsGraphs of functionsMore real-life graphs | Ordering decimals and roundingPlace-value calculationsCalculations with decimalsRatio and proportion with decimalsUsing ratiosQuadrilateralsAlternate angles and proofGeometrical problemsExterior and interior problemsSolving geometric problems | Adding and subtracting fractionsMultiplying fractions Fractions, decimals and reciprocalsDividing fractionsCalculating with mixed numbers | Direct proportion on graphsGradientsEquations of straight linesDirect proportion problemsFractions and decimalsEquivalent proportionsWriting percentagesPercentages of amountsProblem solving | Pie chartsUsing tablesStem and leaf diagramsComparing dataScatter graphs Misleading graphs |
| **Connections to previous learning****(KS2)** | Four operationsFactors, multiples and primesArea and perimeter of simple shapes | Writing and simplifying expressionsWriting and substituting formulaeDrawing and interpreting line and bar graphsDisplaying data | Decimals and roundingFour operations with decimalsWriting and using ratiosLines and angles in trianglesEstimating, measuring and drawing anglesCalculating angles in triangles and quadrilaterals | Comparing fractions, decimals and percentagesApplying the four operations to fractions | Direct proportionProportion 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 proportionFinance: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 2NCW 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 numberFactors and multiplesAnglesScale diagrams and bearingsBasic AlgebraBasic fractions | Basic decimalsCoordinates and line graphsRoundingCollecting and representing dataSequences | Basic percentagesPerimeter and areaReal life graphs | Circumference and areaRatio and proportionEquations | Basic probabilityScatter graphsStandard form | TransformationsConstructions and loci2D representation of 3D shapes | Super Learning Week – 3 Days |
| **Skills** | Order and calculate with integers. Recognise inverses. Estimate answersHCF, LCM, prime factorizationUse 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 fractionsRead and plot coordinates in 4 quadrantsUse y=mx+c to find parallel and perpendicular lines.Find equation of lines given one or two pointsRound to decimal place and significant figure. Apply limits of accuracyRead, draw and interpret a variety of chartsKnow special sequences. Work out the nth term | Understand percentages. Calculate percentages. Compare using percentagesIdentify 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 circleUnderstand ratio notation. Divide in a given ratioSubstitute into formulae. Solve simple equations | Solve problems using probability. Understand and use experimental probabilityKnow types of correlation. Plot and interpret a scatter graph. Draw and use a line of best fitPlace 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 problemsPlans and elevations of 3D shapes |
| **Connections to previous learning** | Year7 Autumn Term 1 Number SkillsYear8 Autumn Term 1 Number SkillsYear 7 Summer 1 Lines and angles. Year 8 Spring 2 Lines and anglesYear 8 Expressions and equationsYear 8 Summer 1 Calculating with fractions | Year 7 Autumn 2 Decimals and measureYear 8 Spring1 Decimals and ratioYear 8 Autumn 1 Statistics, graphs and chartsYear 7 Summer 1 Sequences and graphs | Year 8 Summer 2 Percentages, decimals and fractionsYear 8 Autumn 1 Area and volumeYear 8 Spring 1 Real life graphs | Year 8 Autumn term 1 Area and volumeYear 7 Spring 2 Ratio and proportionYear 8 Autumn 2 Expressions and equations | Year 7 Spring 1 ProbabilityYear 8 Autumn 2 Statistics, graphs and chartsYear 8 Autumn 1 Number  | Year 7 Summer 2 TransformationsYear 9 Autumn 1 Scale diagrams and bearingsYear 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 valueReal 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 4NCW 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 percentagesMeasuresSurds | Statistical measuresIndicesProperties of polygons | Number – recap and reviewCongruence and similarityPythagoras Theorem’ andTrigonometry | Simultaneous equationsProbabilityStatistics recap and review | Quadratics, rearranging formula and identitiesVolume | Algebra recap and reviewSketching graphsQuadratic equations and their graphsGeometry 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 rangePositive 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 boundsSurds and fractional indices.Identify congruent triangles (SSS, SAS, ASA, RHS)Know and use Pythagoras’ theoremKnow 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 graphsRecognise graphs if linear, quadratic, cubic and reciprocal functionsSolve linear and quadratic equations. Find approximations using graphs. Identify, describe and construct congruent shapesFind surface area and volume of sphere, cones, frustums and composite shapes  |
| **Connection to previous learning** | Year 9 Spring 1 Basic percentagesYear 7 Autumn 1 Decimals and measure. Year 8 Autumn 1 Area and volumeYear7 Autumn Term 1 Number Skills | Year 8 Autumn 2 Statistics, graphs and chartsYear 9 Factors and multiplesYear 9 Autumn 1 Angles | Year 9 Autumn 2 DecimalsYear 10 Autumn 1 SurdsYear 10 Autumn 2 IndicesYear 7 Summer 2 TransformationsYear 8 Autumn 1 Number | Year 9 Summer 1 EquationsYear 9 Spring 2 Basic probabilityYear 7 Autumn 1 Analysing and displaying data | Year 9 Autumn 1 Basic Algebra Year 10 Spring 2 Perimeter and area | Year 9 Spring 2 EquationsYear 9 Spring 1 Real life graphsYear 10 Summer 1 Quadratics, rearranging formula and identitiesYear 10 Summer 1 VolumeYear 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 contextReal 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 identitiesTrigonometry recap and extensionGrowth and decay | Equations of a circleFurther equations and graphsDirect and inverse proportion | InequalitiesVectorsFurther sketching graphs | Sine and cosine rulesTransforming functionsNumerical methodsCircle theorems | Gradients and rate of changePre-Calculus and area under a curveAlgebraic fractionsExam preparation - Revision |
| **Skills** | Factorise quadratics with coefficient greater than 1.Understand difference between equation and identityConstruct algebraical arguments and proofInterpret inverse and composite functionsKnow 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 circleUsing the quadratic formula to solve quadratics, including competing the square to find solutions to graphs and turning pointsRecognise and sketch linear and quadratic functionsSolve 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 graphAdd and subtract vectors. Multiply a vector by a scalar. Use diagrams and column representation of vectors.Use vectors to construct geometric arguments and proofRecognise, sketch and interpret linear, quadratic and reciprocal functions, including exponential and trigonometric functions | Know and apply the sine and cosine ruleKnow and apply the area of a triangle to find area, sides and anglesSketch translations and reflections of a given functionFind approximate solutions to equations numerically using iterationApply and prove circle theorems including angles, radii, tangents and chords | Identify gradient on a point of a curveApply concepts of average and instantaneous rates of change in numerical, algebraic and graphical contextCalculate 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 identitiesYear 9 Summer 2 Pythagoras’Year 10 Spring 1Year 10 Autumn 2 indicesYear 10 Autumn 1 Calculating with percentages | Year 10 Summer 1 Algebra recap and reviewYear 9 Autumn 2 Coordinates and line graphsYear 9 Spring 1 Area and perimeterYear 10 Summer 1 Quadratics, rearranging formula and identitiesYear 11 Autumn 1 Further Quadratics, rearranging formula and identities | Year 9 Spring 2 EquationsYear 9 summer 2 TransformationsYear 10 Summer 2 Quadratic equations and graphs | Year 10 Spring 1 Pythagoras Theorem’ and TrigonometryYear 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 subjectsFinance – Compound interestSTEM – 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 |  |