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| Flat_BL@2x-100 | Wollaston School: 2023 Curriculum Map for MathematicsCurriculum Lead: Rachel Lynch | cid:image001.png@01D52C2F.ED74AF70 |
| **Curriculum Aim and scope**: **Key Stage 3:** We will build on the work that has been covered in the primary schools as well as beginning to introduce some lower level GCSE topics as part of the higher end challenging curriculum.  Those working below the expected level will continue to build on their numeracy skills whilst following an appropriate curriculum designed to improve proficiency in shape, data and algebra so students are prepared for the start of GCSE in year 9.  Homework will be set weekly and will include questions designed to master essential skills each term.  Development of problem solving and reasoning skills will be enhanced alongside the teaching of the main curriculum.  Students will be encouraged to become more independent learners as they will have access to on-line mathematical learning resources which they will use in school and for homework.  Links to literacy will include the spelling and definitions of new words associated with mathematics.  Students work will be checked for spelling, punctuation, and grammar.  There will be three assessment points throughout the year.   **Key Stage 4:** We teach GCSE at two tiers ‘Higher’ and ‘Foundation’. The content is prescribed but our aim is to develop problem solving skills and relate mathematics to real life needs. |

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| **Year** | **Term** | **Unit** | **Description of what is being taught including end learning goals** | **Links to National Curriculum**  | **Subject Specific Terminology and Key Words** | **Prior knowledge (including previous key stage/retrieval required** | **Assessment and Homework****(How is the learning being checked- how do you know it is is being remembered?** |
| **Year 7** | 1 | Unit 1: Place Value Unit 2: Written Methods | Understanding place value including decimalsRounding to nearest 10,100,1000Rounding to decimal places and significant figures Multiplying and dividing with powers of 10Introduction of standard form and boundsUnderstand and know how to use written methods including with decimal numbersUnderstand factors, multiplesHCF and LCMPrime factor decompositions | N1N2N8N13N4N3 | FiguresPlace valuePositiveRoundWhole numberDecimal Ordinary numberStandard formBoundsSignificant figuresAdd Subtract Multiply DivideIntegerColumn method Factor MultipleHighest common factorLowest common multiplePrime number | Understand place value Ordering and comparing numbersRounding Multiplying and dividing by powers of 10Written methods with integersTimes tablesList multiples and factorsIdentify common multiples & factorsDefine prime numbers and prime factorsRecall prime factors up to 19 | Weekly Sparx HWUnit tests |
|  | 2 | Unit 3: Perimeter, area and unitsUnit 4: Angles and 2D Shapes | Perimeter and area of all 2D shapes including circlesPerimeter and area of compound shapesProblem solving questions involving area and perimeterConversion between unitsDrawing and measuring anglesAngle facts: Angles around a point, vertically opposite angles angles on a straight line, angles in a triangle, angles in a quadrilateral and angles in polygons both regular and irregularIdentify the symmetries of all 2D shapes and name them | G1G2N12G3G7G10G11G12 | EstimateConvertPerimeterAreaRectangleTriangleParallelogramCompound shapeTrapeziumCircumferencePiProtractorAcuteObtuseRight angleReflexStraight lineDegreesQuadrilateralPoylgonsIrregular | Convert between unitsRecognise when it is possible to use formulae for area of shapesRecognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles | Weekly Sparx HWUnit testsEnd of term cumulative assessments (topics from term 1 and 2) |
|  | 3 | Unit 5: FractionsUnit 6: Fractions, decimals and percentages | Equivalent fractionsOrdering fractionsSimplifying fractionsMixed number into improper fraction and vice versaAdd and subtract fractions including mixed numbersEquivalent fractions, decimals and percentagesOrdering FDPFraction of an amountPercentage of an amountPercentage increase/decrease including simple interestPercentage change | N2N4N9N10N11R8 | EquivalentAscendingDescending Mixed numberImproper fractionSimplifyingAscendingDescendingDepreciatesAnnum | Use common factors to simplify fractionsCompare and order fractionsAdd and subtract fractions including mixed numbersMultiply simple pair of fractionsDivide proper fractions by whole numbersRecall and use simple equivalence between simple f,d,pSolve problems involving calculations of % | Weekly Sparx HWUnit tests |
|  | 4 | Unit 7: Intro to AlgebraUnit 8: Coordinates and graphs | Use function machinesSimplify expressions by collecting like terms including powers and also involving multiplication and dividingExpand single bracketsFactorise into a single bracketLinear sequencesPlot and read coordinatesFind the midpoint of two pointsDraw linear graphsRead and interpret real life linear graphsUnderstand equation of line y = mx + cIdentify parallel lines | A1A2A4A14A15A8A9A11 | FunctionSimplifyPowersIndicesExpandFactoriseLinearSequencenth termPlotCoordinateMidpointLinearGradienty-interceptparallel lines | Use simple formulaeGenerate and describe linear sequencesDescribe positions on the full coordinate grid | Weekly Sparx HWUnit testsEnd of term cumulative assessments (topics from 3 and 4) |
|  | 5 | Unit 9: Order of operationsUnit 10: Ratio and proportion | Use the order of operations to solve simple calculations including bracketsApply BIDMAS to solve a calculation including powers and rootsPut the brackets into a calculation to make it trueSolve complex BIDMAS calculationsEquivalent ratiosSimplify ratiosIdentify the relationship between ratios and fractionsDivide in a given ratioBest value problemsSimple direct proportion including recipe questionsSimple inverse proportion | N5N6R1R4R5R6R7R9 | OrderOperationsBIDMASPowersRootsEquivalentSimplifyRatioProportionDirect proportionInverse proportion | Use their knowledge of order of operations to carry out calculationsSolve problems involving unequal sharing and grouping using knowledge of fractions and multiples | Weekly Sparx HWUnit tests |
|  | 6 | Unit 11: Working with data | Calculate averages from a list of data and frequency tableDraw and interpret stem and leaf diagramsDraw and fill in two way tablesDraw and interpret bar chartsDraw and interpret pictogramsComplete and interpret scatter graphs**Revision and consolidation of the year** | S1S2S3 | AverageMeanMode MedianRangeFrequency Stem and leafBar chartsAxisPictogramsKeyScatter graphCorrelation | Calculate and interpret the mean as an averageInterpret and construct line graphs | Weekly Sparx HWUnit testsEnd of year assessment |
| **Year 8** | 1 | Unit 1: Number propertiesUnit 2: Positive and negative numbersUnit 3: Rounding and estimation | Index laws for multiplication and divisionUnderstand factors, multiples and prime numbersHCF and LCMPrime factor decompositionsOrdering positive and negative numbers+/-/x/÷ positive and negative integersSubstitute negative integers into expressions and formulaeBIDMASRounding to nearest 10,100,1000Rounding to decimal places and significant figures Use rounding to significant figures to estimate in simple calculations including worded problemsUse inequality notation to specify simple error intervals due to rounding | N3N1N2N4N5N6N7N8N1N12N13N14 | Prime numberSquare numberCube numberSquare rootCube rootFactorMultipleProductLowest Common MultipleHighest Common factorIndex / IndicesPowerBaseDirected NumberPositiveNegativeInequalitySubstituteIndex/IndicesRoundSignificant figureEstimateLower boundUpper boundError intervalInequalitySquare root | **KS2**Times tablesList multiples and factorsIdentify common multiples & factorsDefine prime numbers and prime factorsRecall prime factors up to 19**Year 7 Unit 2:**Should already be familiar with factors, multiples, and HCF/LCM using listing strategies.Some HA pupils may have seen prime factorisation**KS2**Use negative numbers in context, and calculate intervals across zero**Year 7** Unit 1: Place ValueUnit 9: Order of Operations**Year 7**Unit 1: Place Value – Will have seen rounding to 10/100/1000 and decimal places.HA pupils will have seen significant figures and started to estimate**Year 8**Unit 1: Square roots | Weekly Sparx HWUnit tests |
|  | 2 | Unit 4: Length and AreaUnit 5: 3D shapesUnit 6: Compound measures | Calculate the perimeter and area of all 2D shapes including circlesCalculate the perimeter and area of compound shapesFocusing on functional questionsCalculate the volume and surface area of cubes, cuboids, prisms including cylindersConvert between units of area and volumeSpeed distance time including graphsDensity, mass and volumeForce, pressure and area | G1G2N12G15G16N12R1R10 | PerimeterAreaCompound shapeParallelogramTrapeziumRadiusDiameterCircumferenceChordSectorSegmentTangentVolumeSurface areaPrismCylinderPiFormulaeAxisUnitsSpeed Distance TimeDensityMass VolumeForcePressureArea | **Year 7**Unit 3 Perimeter Area and UnitsAll pupils will have seen area and perimeter of 2D shapes including trapeziumHA pupils will have looked at circumference and area of circles**KS2**Recognise and describe 3D shapesCalculate the volume of cubes/cuboids**Year 7/8**Calculating the area of 2D shapes**KS2** Converting units | Weekly Sparx HWUnit test End of term cumulativeAssessment (topics from term 3 and 4) |
|  | 3 | Unit 7: Calculations with fractionsUnit 8: Probability | Equivalent fractionsOrdering fractionsSimplifying fractionsConverting mixed numbers into improper fractions and vice versaAdd and subtract fractions including mixed numbersMultiply and divide fractions including mixed numbersList outcomesApply the property that the probabilities of mutually exclusive outcomes sum to 1Construct and complete a sample space diagramsDraw and interpret venn diagrams | N2N3N4P1P2P3P4 | EquivalentAscendingDescendingSimplifyMixed NumberImproper fractionOutcomeEventProbabilityMutually exclusiveSample spaceVenn diagramIntersectUnionComplement | **KS2/Year 7**Use common factors to simplify fractionsCompare and order fractionsAdd and subtract fractions including mixed numbersMultiply and divide simple fractions (KS2 or top set in year 7)Probability will be a new topic but students will need prior knowledge of working with fractions and decimals from KS2 and year 7 | Weekly Sparx HWUnit tests |
|  | 4 | Unit 9: Algebraic manipulationUnit 10: Solving equations | Simplify expressions by collecting like terms including powers and also involving multiplication and dividingExpand and factorise into a single bracketExpand and factorise into double bracketsSolve linear equationsUnderstand inequality notationSolve linear inequalitiesRearranging formulae | A1A3A4A5A6A7 | ExpressionSimplifyExpandFactoriseLinear QuadraticSolveInequalityRearrangeChanging the subject | **Year 7:**Unit 7 – intro to algebraStudents would have dealt with single brackets in year 7 **KS2**find pairs of numbers that satisfy an equation with unknowns | Weekly Sparx HWUnit test End of term cumulativeAssessment (topics from term 1 and 2) |
|  | 5 | Unit 11: AnglesUnit 12: Transformations | Apply the sum of angles around a pointVertically opposite angles Finding missing angles on a straight lineFinding missing angles in a triangleFinding missing angles in a quadrilateral and angles in polygons both regular and irregularUse angle facts to find angles on parallel linesTransform 2D shapes by:ReflectionTranslationRotationEnlargementIdentify which transformation has occurred | G5G7G10G11G12G13G16G8G9 | AnglesVerticallyStraight lineTriangleQuadrilateralPolygonRegularIrregularParallel linesCorrespondingAlternateCo-interior anglesTransformationReflection TranslationVectorRotationCentreEnlargementScale Factor | **KS2**Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles**Year 7**Unit 4 -Angle facts: Angles around a point, vertically opposite angles angles on a straight line, angles in a triangle, angles in a quadrilateral and angles in polygons both regular and irregular**KS2**Students will be familiar with translating and reflecting shapes from KS2 |  |
|  | 6 | Unit 13: Statistics | Calculate averages from a list of data and frequency tableFind averages from stem and leaf diagramsRead, complete and interpret two way tablesConstruct and interpret pie chartsComplete and interpret scatter graphs**Revision and consolidation of the year** | S1S2S3 | AveragesMeanMedianMode RangeStem and leafKeyTwo way tablesPie chartsProtractorScatter graphCorrelationRelationship | **KS2**Calculate and interpret the mean as an averageInterpret and construct line graphs**Year 7**Unit 11 - working with data | Weekly Sparx HWUnit testsEnd of year assessment |
| **Year 9** | 1 | Unit 1: Arithmetic Unit 2: Powers and rootsUnit 3: Fractions, decimals and percentages | Use formal written methods for +/-/x/÷ involving decimals+/-/x/÷ positive and negative integersProblem solving with the aboveApply BIDMAS to solve a calculation including powersRecognise and define square numbers, square roots, cube numbers and cube rootsUse index laws including fractional and negativeConvert between ordinary form and standard form+/-/x/÷ with numbers written in standard formSimplifying surdsEquivalent fractions, ordering fractions and simplifying fractionsConverting mixed numbers into improper fractions and vice versaAdd, subtract, multiply and divide fractions including mixed numbersCalculate exactly with fractions, including solving problemsFind equivalent fractions, decimals and percentagesOrdering FDPChange recurring decimals into fractions | N1N2N3N4N5N6N7N8N9N10N11N13N15N16R3 | IntegerBIDMASPowersSquare numbersSquare rootsCube numbersCube rootsIndex LawsStandard formOrdinary formSurdsSimplifyEquivalentMixed numbersImproper fractionsExact valueRecurring decimals | **Year 7** Unit 1 – Place valueUnit 2 – Four operationsUnit 5 - FractionsUnit 6 – FDPUnit 9 – Order of operations**Year 8** Unit 1 – Number propertiesUnit 2 – Positive and negative numbersUnit 7 – Calculations with fractionsStudents will be consolidating what they have previously learned in year 7 and 8 on these core skills before extending each unit to a higher level. | Weekly Sparx HWUnit testsEnd of term cumulative assessment |
|  | 2 | Unit 4: Algebraic manipulationUnit 5: Coordinates and graphs  | Simplifying expressions by collecting like terms including powers and also involving multiplication and dividingExpand and factorise into a single bracketExpand and factorise into double bracketsSimplify algebraic fractionsComplete the square on an algebraic expressionPlot and read coordinatesFind the midpoint of two pointsDraw linear graphsRead and interpret real life linear graphsUnderstand equation of line y = mx + cIdentify parallel linesIdentify perpendicular linesFind the equation given two points | A1A3A4A5A12A13A8A9A10A11A12 | ExpressionSimplifyExpandFactoriseLinear QuadraticComplete the squarePlotCoordinateMidpointLinearGradienty-interceptParallel linesPerpendicular lines | **Year 7** Unit 7 – Intro to algebra**Year 8**Unit 9 - Algebraic manipulationStudents will be familiar with collecting like terms, expanding and factorising from year 7 and 8.**Year 7**Unit 8 – Coordinates and graphsStudents would have learnt as far as parallel lines if they have been in set 1 or 2 in year 7.Sets 3 and 4 – as far as drawing straight line graphs | Weekly Sparx HWUnit testsEnd of term cumulative assessment |
|  | 3 | Unit 6: 2D shapesUnit 7: 3D shapes | Find unknown angles using angle factsCalculate the area and perimeter for 2D shapesUse Pythagoras theorem to find a missing length and apply it to solve problems involving area and perimeter of shapesUse SohCahToa to find missing sides or angles in a right angle triangleKnow the 3D shapes and their netsCalculate the volume and surface area of cubes, cuboids, prisms including cylindersCalculate the volume and surface area of pyramids, Spheres, Hemispheres, frustums and conesApply Pythagoras to cone problems | G1G2G5G6G10G12G13G14G15 | TrapeziumParallelogramSymmetryPythagoras TheoremSineCosineTangentOppositeAdjacentHypotenuseAreaPerimeterCubeCuboidPrismCylinderSpherePyramidConeFrustumVolumeSurface area | **Year 7** Unit 3 – Perimeter & AreaArea & perimeter of 2D shapes and compound shapesUnit 4 – Angles & 2D ShapesBasic angle facts **Year 8** Unit 4 Length & areaRecap of 2D areaUnit – 11 – AnglesAngles in polygons | Weekly Sparx HWUnit testsEnd of term cumulative assessment |
|  | 4 | Unit 8: Solving equationsUnit 9: Sequences | Solve linear equationsForm and solve linear equationsChange the subject of the formulaSolve quadratics by factorisingSolve simultaneous equations including worded problemsRecognise and continue sequencesFind the nth term of a linear sequenceFind the nth term of a quadratic sequencesExtension: geometric sequences | A1A3A4A5A7A12A13A14A15A16 | SolveLinearQuadraticSubjectExpandFactoriseSimultaneousTermPositionLinear sequenceArithmetic sequenceQuadratic sequenceGeometric sequenceNth termGenerate | **Year 8** Solving EquationsSolving linear equations including x on both side and bracketsHigher – change the subject**Year 7** Unit 7 – Introduction to AlgebraIntro to Linear sequences | Weekly Sparx HWUnit testsEnd of term cumulative assessment |
|  | 5 | Unit 10: Percentages Unit 11: Proportion | Calculate percentages of an amountPerform a percentage increase/decreaseFind the percentage changeReverse percentages – solve original value problemsCalculate simple interest and compound interestSet up, solve and interpret the answers growth and decay problemsSolve best value problemsAdapt a recipe and use this to solve problemsSolve direct proportion problemsSolve inverse proportion problemsApply statistics to a capture and recapture problemForm an equation using variables in direct and inverse proportion and use this to solve problems (finding k) | N10N11R8R9A2A5A6 | PercentageMultiplierCompound interestSimple interestDepreciationDirect proportionInverse proportion | **Year 7**Unit 6 – FDPFinding basic percentages of amounts and percentage changeHigher – simple interest**Year 7** Unit 10 – Ratio & ProportionBest value problems, recipe problems, direct proportion problemsHigher – simple inverse problems**Year 8**Unit 10 – solving equations**Year 9** Unit 8 – Solving equations | Weekly Sparx HWUnit testsEnd of term cumulative assessment |
|  | 6 | Unit 12: Constructions, loci and bearings | Construct trianglesUse constructions to solve simple loci problemsUse scale factors, diagrams and mapsConstruct and measure bearings on diagramsFind bearings**Revision and consolidation of the year** | G3G4G9R2 | ConstructLocus/LociScale FactorBearing | **Year 7** Unit 4 – Measure AnglesMeasure and draw angles accuratelyUnit 10 – Ratio and proportion **Year 8** Unit 11 – Angles (including measuring accurately)**Year 9** Unit 11 - proportion | Weekly Sparx HWUnit testsEnd of year assessment |
| **Year 10****Foundation** | 1 | Unit 1: Rounding and error intervals Unit 2: PercentagesUnit 3: Ratio and proportion | Rounding to nearest 10,100,1000Rounding to decimal places and significant figures Error intervalsEstimationPercentages of an amountPercentage increase/decreasePercentage changeReverse percentagesSimple interest and compound interestGrowth and decay problemsEquivalent ratiosSimplify ratiosIdentify the relationship between ratios and fractionsDivide in a given ratioBest value problemsSimple direct proportion including recipe questionsSimple inverse proportion | N2N8Consolidate KS3 contentR6R1R3R4N7 | RoundEstimateTruncateLower BoundUpper BoundError IntervalPercentageMultiplierProfitLossCompound interestSimple interestDepreciationRatioDirect ProportionInverse proportionSimplifyBest Value | **Year 7**Unit 1: Place Value – Will have seen rounding to 10/100/1000 and decimal places.HA pupils will have seen significant figures and started to estimate**Year 8**Unit 1: Square rootsUnit 3: Rounding and estimation**Year 7**Unit 6: FDP**Year 9**Unit 10: Percentages**Year 7**Unit 10: Ratio**Year 9**Unit 11: Proportion | Weekly HWUnit testsEnd of term cumulative assessment |
|  | 2 | Unit 4: Perimeter and area Unit 5: Volume and surface area | Perimeter and area of all 2D shapes including circlesPerimeter and area of compound shapesFocusing on functional questionsArea of sectors and length of an arcVolume and surface area of cubes, cuboids, prisms including cylindersVolume and surface area of pyramids, Spheres, Hemispheres and cones | G3G7N4G5G8 | Perimeter AreaCompoundSectorArcVolumeSurface areaCubeCuboidPrismCylinderPyramidSphereHemisphereCone | **Year 7**Unit 3: Perimeter, area and units**Year 8**Unit 4: Length and area**Year 9**Unit 6: 2D shapes**Year 8**Unit 5: 3D shapes**Year 9**Unit 7: 3D shapes | Weekly HWUnit testsEnd of term cumulative assessment |
|  | 3 | Unit 6: Angles and bearingsUnit 7: Transformations | Angles around a pointVertically opposite angles Angles on a straight lineAngles in a triangleAngles in a quadrilateral and angles in polygons both regular and irregularAngles in parallel linesUse scale factors, diagrams and mapsConstruct and measure bearings on diagramsFind bearingsTransform 2D shapes by:ReflectionTranslationRotationEnlargementIdentify which transformation has occurredDescribe directional vectors as column vectors and vice versaAdd and subtract vectors, and multiply vectors by a scalar (use diagrammatic and column representations)Construct similar shapes by enlargement of a positive integer scale factor from a given point on a coordinate grid | G6R1G1G2G9G14G15R1 | Vertically oppositeQuadrilateralPolygonRegularIrregularExterior angleInterior angleCorrespondingAlternateCo-interiorScale factorBearingTransformationRotationReflectionEnlargementTranslationInvariantVectorCentreScale factorSimilar | **Year 7**Unit 4: Angles and 2D shapes**Year 8**Unit 11: Angles**Year 9**Unit 6: 2D shapes**Year 8**Unit 12: Transformations | Weekly HWUnit testsEnd of term cumulative assessment |
|  | 4 | Unit 8: Drawing graphsUnit 9: Straight line graphs | Plotting coordinatesDrawing linear graphsDrawing quadratic graphsPlotting cubic, reciprocal and exponential graphsFind the midpoint of two pointsRead and interpret real life linear graphsUnderstand equation of line y = mx + cIdentify parallel linesFind the equation given two points | A3A5A6A8A4 | PlotSketchLinearQuadraticCubicReciprocalExponentialGradientY-interceptParallelPerpendicular | **Year 7**Unit 8: Coordinates and graphs**Year 9**Unit 5: Coordinates and graphs**Year 7**Unit 8: Coordinates and graphs**Year 9**Unit 5: Coordinates and graphs | Weekly HWUnit testsEnd of term cumulative assessment |
|  | 5 | Unit 10: Compound MeasuresUnit 11: Probability | Convert between unitsSpeed distance time including graphsDensity, mass and volumeForce, pressure and areaList outcomesApply the property that the probabilities of mutually exclusive outcomes sum to 1Sample spaceVenn diagramsTree diagrams | R2N1P1P2P3 | SpeedDensityMassVolumeForcePressureProbabilityEstimated frequencyRelative frequencyMutually exclusiveExhaustiveIndependentSample SpaceVenn diagramTree diagram | **Year 7**Unit 3: Perimeter, area and units**Year 8**Unit 4: Length and areaUnit 6: Compound measures**Year 8**Unit 8: Probability  | Weekly HWUnit testsEnd of term cumulative assessment |
|  | 6 | Unit 12: Averages and range | Averages from a list of data and frequency tablesAverages from a stem and leaf diagramRecap prior content from KS3**Revision and consolidation of the year** | S4S5Recap KS3 contentS1S2S6 | AverageMeanModeMedianRangeInter-quartile rangeUpper quartileLower quartile | **Year 7**Unit 11: Working with data**Year 8**Unit 13: Statistics | Weekly HWUnit testsEnd of year assessment (Mocks) |
| **Year 11****Foundation** | 1 | Unit 1: Multiples and FactorsUnit 2: Algebraic manipulationUnit 3: Solving equations | Recognise, list and define prime numbersUnderstand and can find the multiples and factors Find the HCF of a set of numbersFind the LCM of a set of numbersSolve worded problems involving the lowest common multiplePerform prime factor decompositionsUse prime factor decomposition to find the HCF or LCM of two numbersUse function machines and find the output, input or functionSubstitute positive and negative integers into expressions and formulaeSubstitute positive and negative integers into expressions and formulae, including with powersSimplify expressions by collecting like terms, including powersSimplify expressions involving sums, products and powers, including using index lawsExpand and simplify multiple single bracketsTake out common factors to factoriseExpand the product of two binomialsFactorise a quadratic expression of the form x² + bx + c, including using the difference of two squaresUse algebra to construct arguments and prove identitiesChange the subject of a formulaSolve linear equationsForm and solve linear equationsSolve quadratics by factorisingSolve simultaneous equations including worded problems | Consolidate KS3 content focusing on more problem solving exam style questionsA1A2A3A12A12A13 | Prime factorsFactorMultipleProduct of primeHCFLCMPrime factor decompositionFunctionSubstituteExpressionEquationFormulaeSimplifyLike termsIndexIndicesExpandFactoriseIdentitySubjectSolveSimultaneous | **Year 7**Unit 2: The four operations**Year 8**Unit 1: Number properties**Year 7**Unit 7: Introduction to algebra**Year 8**Unit 9: Algebraic manipulation**Year 9**Unit 4: Algebraic manipulation**Year 8**Unit 10: Solving equations**Year 9:**Unit 8: Solving equations | Weekly HWUnit tests |
|  | 2 | Unit 4: Indices and standard formUnit 5: Area, perimeter and right angled triangles | Find integer powers and rootsUse the order of operations to solve calculations including bracketsApply order of operations to the four operations with negative integersConvert between ordinary numbers and standard formRewrite a number in correct standard form notationMultiply and divide with numbers written in standard formAdd and subtract with numbers written in standard formSolve worded problems involving numbers written in standard formSolve functional problems by finding the area or perimeter of compound shapes made from rectanglesFind the area of 2D shapesApply Pythagoras theorem to find an unknown sideUse trigonometric ratios to find an unknown side/angle in a right angle triangleIdentify when to use Pythagoras' theorem and when to use the trigonometric ratiosKnow the exact values of trig | N3N5G10G11R1 | IntegerPowerIndex RootOrdinary NumberStandard FormCompound shapePythagoras TheoremTrigonometric ratioSineCosineTangentHypotenuseOpposite sideAdjacent side | **Year 7**Unit 9: Order of operations**Year 8**Unit 1: Number PropertiesUnit 2: Positive and negative numbers**Year 9**Unit 2: Powers and roots**Year 7**Unit 3: Perimeter, area and units**Year 8**Unit 4: Length and area**Year 9**Unit 6: 2D Shapes**Year 10**Unit 4: Perimeter and area | Weekly HWUnit testsMocks |
|  | 3 | **Tailored revision from the mocks analysis** | GCSE SpecificationKey topic to prioritise:Sequences – should have been interweaved when doing algebraic topics in year 10/11 but not covered as a topic in fully since year 9Fractions  |  |  |  |  |
|  | 4 | **Tailored revision from the mocks analysis and a focus on past papers** | GCSE Specification |  |  |  |  |
|  | 5 | **Tailored revision with a focus on past papers** | GCSE Specification |  |  |  |  |
|  | 6 | **Tailored revision for paper 2 and 3** | GCSE Specification |  |  |  |  |
| **Year 10****Higher** | 1 | Unit 1: Surds and IndicesUnit 2: Solving quadraticsUnit 3: Drawing graphs and graphing inequalities | Simplify expressions involving sums, products and powers, including using index lawsFractional and negative indicesSimplify surdsExpand brackets with surdsRationalise surdsFind and use the nth term of geometric sequences (r^n, where n is an integer and r can be a surd)Expand double and triple bracketsSolve quadratics by factorising, quadratic formula and completing the square including questions that require rearrangingSolve quadratic inequalitiesUnderstand equation of line y = mx + cIdentify parallel linesIdentify perpendicular linesFind the equation given two pointsPlotting quadratic, cubic, reciprocal and exponential graphsRepresent linear inequalities on graphs | N2N3N4A14A1A2A13A5A6A8 | ProductPowerIndexIndicesSurdRationalIrrationalRationaliseGeometric sequenceExpandFactoriseQuadratic formulaInequalityComplete the squareParallelPerpendicularGradientY-InterceptLinearQuadraticCubicReciprocalExponential | **Year 8**Unit 9: Algebraic manipulation**Year 9**Unit 2: Powers and roots**Year 8**Unit 9: Algebraic manipulation**Year 9**Unit 4: Algebraic manipulationUnit 8: Solving equations**Year 7**Unit 8: Coordinates and graphs**Year 9**Unit 5: Coordinates and graphs | Weekly HWUnit testsEnd of term cumulative assessment |
|  | 2 | Unit 4: Arcs and sectorsUnit 5: Circle theorems | Finding the area or perimeter of compound shapes including parts of circlesArea of sectorsLength of an arcFind the perimeter of a sector when given the area or the area when given the perimeterRecognise and name the parts of a circleUse the standard circle theorems to find a missing angle including in a complex problemProve the standard circle theorems | G3G7G4 | SectorSegmentArcCircumferenceDiameterRadiusChordTangentAlternate segmentCyclic Quadrilateral | **Year 8**Unit 4: Length and area**Year 8**Unit 4: Length and area | Weekly HWUnit testsEnd of term cumulative assessment |
|  | 3 | Unit 6: Similarity and congruenceUnit 7: Complex transformations of shapesUnit 8: Conditional probability | Use the basic congruence criteria for triangles (SSS, SAS, ASA, RHS)Prove two triangles are congruentFind a missing side length in two shapes that are similar in the context of a problemApply the concepts of similarity, including the relationships between lengths, areas and volumes in similar figuresProve two triangles are similarRecap transformations of 2D shapesEnlargements including negative and fractional scale factorsCalculate probabilities from a two way table, including conditional probabilitiesComplete Venn diagrams, including when the intersection needs to be calculatedFind conditional probabilities from a Venn diagramComplete probability tree diagrams and find probabilities | R1G9G1G2P1P2P3P4N1 | SimilarCongruentScale FactorTransformationRotationReflectionEnlargementTranslationScale FactorVectorCentreProbabilityIndependentMutually ExclusiveExhaustiveConditionalVenn diagramProbability treeTwo-way table | **Year 8**Unit 12: Transformations**Year 8**Unit 8: Probability | Weekly HWUnit testsEnd of term cumulative assessment |
|  | 4 | Unit 9: Volume and algebraUnit 10: Bounds and compound measures | Volume and surface area of cubes, cuboids, prisms including cylindersVolume and surface area of pyramids, Spheres, Hemispheres, cones and frustumsApply Pythagoras to cone problemsApply algebra to the formulae for volume and surface area of a complex solids to solve problemsUse inequality notation to specify simple error intervals due to rounding and truncationFind upper and lower boundsConvert compound unitsSpeed distance time including graphsDensity, mass and volumeForce, pressure and area | G5G8G9G10A12N2N8R1R2 | CubeCuboidPrismPyramidConeSphereFrustumSurface areaVolumeError intervalUpper boundLower boundTruncateEstimateCompound unitSpeedDensityMassVolumeForcePressure | **Year 8**Unit 5: 3D Shapes**Year 9**Unit 7: 3D Shapes**Year 8**Unit 3: Rounding and estimationUnit 6: Compound measure | Weekly HWUnit testsEnd of term cumulative assessment |
|  | 5 | Unit 11: Graphs of circlesUnit 12: Linear and quadratic simultaneous equations | Recognise and interpret the equation of a circle with centre at the originCalculate whether a given point lies inside, on or outside a circleSolve problems using the equation of a circleFind the equation of a tangent to a circle at a given pointSolve problems including find the equation of a tangent to a circle at a given pointSolve two linear simultaneous equations in two variables algebraicallyForm and solve two linear simultaneous equations in two variables algebraicallySolve two linear simultaneous equations in two variables graphicallySolve two simultaneous equations (one linear, one quadratic) algebraically and graphically | A10A12 | OriginTangentRadiusSimultaneousEquationLinearQuadratic | New topic but knowledge from previous circle chapters and coordinate geometry may be helpful**Year 9**Unit 8: Solving equations | Weekly HWUnit testsEnd of term cumulative assessment |
|  | 6 | Unit 13: Histograms, cumulative frequency and boxplots | Interpret and calculate quartiles and interquartile rangeFind the interquartile range from a stem and leaf diagramConstruct, complete and interpret box plotsCompare boxplotsConstruct and interpret a cumulative frequency diagramConstruct and interpret a histogram with unequal class widthsEstimate from a histogramApply statistics to a capture and recapture problem | S1S2S3S4S5S6 | Lower QuartileUpper QuartileInterquartile rangeHistogramCumulative frequencyBoxplotFrequency polygon | Mainly new content but the following previous chapters may be helpful**Year 7:** Working with data**Year 8**Unit 13: Statistics**Year 9**Unit 11: proportion | Weekly HWUnit testsEnd of year assessment (Mocks) |
| **Year 11****Higher** | 1 | Unit 1: Functions and iterationUnit 2: Transforming graphsUnit 3: Advanced Trigonometry  | Show that a complex equation has a solution between two valuesFind a given xn using iterationFind approximate solutions to equations using iteration, including using suﬃx notation in recursive formulaeObtain the output or input of a function using function notationWrite the reverse process of a function as the "inverse function"Use the succession of two functions as a "composite function", including writing this as a single functionSolve problems involving functions, including using simultaneous equations to find the function machineComplete the square to find the turning point of quadratic functionsFind the roots, intercepts and turning point of quadratic functionsUse the sketch of a quadratic graph to find the equation using the roots, intercepts and turning pointDescribe and sketch translations of functionsDescribe and sketch stretches of functionsDescribe and sketch reflections of functionsDescribe and sketch combined transformations of functionsInterpret the effect combined transformations of functions on specific pointsRecap on Pythagoras and trigonometry ratios for right angle trianglesKnow the exact values of trigApply the Sine rule for non right angle trianglesApply the Cosine rule for non right angle trianglesApply the area of triangle rule Recognise and sketch graphs of trigonometric functions | A3A11R6A5A7G10G11G12G13 | IterationFunctionInverse functionComposite functionTurning pointRootInterceptTranslationPythagoras TheoremTrigonometric ratioSineCosineTangentHypotenuseOpposite sideAdjacent sideSine RuleCosine rule | New content but substitution and rearranging skills from previous years will be required for this unitNew contentUseful previous chapters:**Year 9** Unit 4: Algebraic manipulation**Year 10**Unit 2: Solving quadratics**Year 8 and 10**Unit 12/Unit 7: Transformations**Year 9**Unit 6: 2D shapesStudents will be familiar with trig in right angle triangles | Weekly HWUnit tests |
|  | 2 | Unit 4: VectorsUnit 5: Real life graphs and rates of changeUnit 6: Algebraic proof | Describe directional vectors as column vectors and vice versaAdd and subtract vectors, and multiply vectors by a scalar (use diagrammatic and column representations)Use vectors to solve geometrical problems, including midpointsUse vectors to solve geometrical problems, including midpoints and lines divided into a ratioUse vectors to construct geometrical proofs (lines are parallel, points lie on a straight line)Complete and read distance-time and speed-time graphs, and find the speed from a distance-time graphFind the average speed or acceleration on non-standard real-life distance-time or speed-time graphsEstimate the speed or acceleration on non-standard real-life distance-time or speed-time graphs by finding the gradient of a tangentFind the areas under line graphs and interpret the resultsEstimate the areas under curved graphs and interpret the resultsInterpret line graphs for time series dataUse algebra to construct arguments and prove identitiesDisprove by counterexampleExpress a number property using algebraConstruct simple algebraic proofsConstruct complex algebraic proofsConstruct complex algebraic proofs in a problem solving context | G14G15A8A9R4R5S2A2 | VectorColumn vectorMagnitudeScalarVelocityGradientAccelerationTangentTrapeziumTime SeriesIdentityProof | New content**Year 8**Unit 6: Compound measures**Year 10**Unit 10: Compound measuresMainly new content but previous algebraic units will be helpful**Year 8**Unit 9: Algebraic manipulation**Year 9**Unit 4: Algebraic manipulation | Weekly HWUnit testsMocks |
|  | 3 | **Tailored revision from the mocks analysis** | GCSE SpecificationKey topics to prioritise for higher:RatioRecurring decimalsSequences |  |  |  |  |
|  | 4 | **Tailored revision from the mocks analysis and a focus on past papers** | GCSE Specification |  |  |  |  |
|  | 5 | **Tailored revision with a focus on past papers** | GCSE Specification |  |  |  |  |
|  | 6 | **Tailored revision for paper 2 and 3** | GCSE Specification |  |  |  |  |