Long Term Plans: Mathematics

Threshold concepts



Within our curriculum design, we have carefully considered how to sequence and interleave the threshold concepts within our subjects so that students are able to build and develop secure schema over time. The table below shows how we have mapped our threshold concepts throughout our Mathematics curriculum.

Year 7

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13
Number]	N/A	тсз	TC3 TC1	тсз тс1	тсз тс1	ТСЗ ТС1	TC3 TC1	тсз	TC3 TC1	тсз	TC1	TC1	N/A
Cycle 1: [Algebra and	Orientation	Unit 1 Algebra Algebraic notation Does order matter?	Unit 1 Algebra Substitution Directed numbers?	Unit 1 Algebra Substitution How do you substitute into expressions?	Unit 1 Algebra Simplifying What are like terms?	Unit 1 Algebra Simplifying What is the difference between expanding and factorising?	Unit 1 Algebra Solving Assessments – Whole school How do you find x?	Unit 1 Algebra Solving Assessments - Whole school How do you solve?	Unit 1 Algebra Sequences What is the next number in the sequence?	Unit 1 Algebra Sequences What is the general rule?	Unit 2 Number Place value, inequalities, and ordering Which is bigger?	Unit 2 Number Four operations inc. decimals Data & Planning days How do we multiply numbers?	Intervention week
			Mini Test/WCF		Mini Test/WCF		Mini Test/WCF		Mini Test/WCF		Mini Test/WCF	Mini Test	Mini Test/WCF

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 1
netry)	TC1	TC1	TC1 TC3	TC1	ТС1	TC1 TC2	TC4 TC1	TC4 TC1	TC4 TC1	TC4 TC1	TC4 TC1	TC4 TC1 TC3	TC2 TC1
Cycle 2: [NumberCTD and Geon	Unit 2 Number Four operations inc. decimals How do you multiply decimals?	Unit 2 Number Factors and multiples What are factors?	Unit 2 Number Factors and multiples What is the difference between a factor and a multiple?	Unit 2 Number Rounding and estimation What units should we use?	Unit 2 Number Rounding and estimation Overestimate or underestimate?	Unit 2 Number Application Maths Assessment What do we use methods to solve non- positive and decimal number problems?	Unit 3 Geometry Unit conversion How do we read scales?	Unit 3 Geometry Angle types, estimating, draw and measure. Acute, obtuse or reflex?	Unit 3 Geometry Angle facts Angles on a straight line add up to	Unit 3 Geometry Mixed angle facts How many angle facts apply?	Unit 3 Geometry Reflection of shapes Translation of Shapes	Unit 3 Geometry Rotation of Shapes Enlargements of Shapes	Unit 4 Fractions Fractions of amounts Calculate a fraction of an amount?
		Mini Test		Mini Test/WCF		Mini Test/WCF	Mini Test	Mini Test/WCF		Mini Test/WCF	Mini Test		Mini Test/WCF

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13
dntages]	TC2 TC1	ТС2 ТС1	TC2 TC1	ТС2 ТС1	TC2 TC1 TC3	TC2	TC2	TC2 TC1	TC2 TC1	N/A	N/A	TC2 TC1	N/A
Cycle 3: [Fractions and Percdnta	Unit 4 Fractions Fraction equivalence What is an improper fraction?	Unit 4 Fractions Four operations with fractions How do we multiply/divide fractions?	Unit 4 Fractions Four operations with fractions How do we add/subtract fractions?	Unit 4 Fractions Compare and order fractions How do you order fractions with different denominators?	Unit 4 Fractions Worded fraction problems Which operation do we apply?	Unit 5 Percentages FDP conversions and Ordering FDP How do you express one amount as a percentage of another?	Unit 5 Percentages FDP conversions and Ordering FDP How do you convert from FDP?	Unit 5 Percentages Percentages of amounts calculator How do you find a percentage of an amount (calculator)?	Revision and Assessments	Revision and Assessments	Unit 5 Percentages Percentage increase and decrease non- calculator How do you find a percentage of an amount (non- calculator)?	Unit 5 Percentages Simple interest What is simple interest?	Intervention Week
	Mini Test/WCF		Mini Test/WCF	Mini Test	Mini Test/WCF		Mini Test/WCF	Mini Test			Mini Test/WCF	Mini Test	

Year 8

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13
Number]	N/A	TC5 TC6	TC6	TC6	TC6	TC1 TC3	TC1 TC4	TC1 TC4	TC1	TC1	TC1	TC1 TC6 TC5	ТСЗ ТС1
Cycle 1: [Probability and Statisitcs and N	Orientation	Unit 6 – Probability and Statistics Probability scales and simple probability What is the chance of winning the Lottery?	Unit 6 Probability and Statistics Probability NOT and from listing outcomes and frequency trees Why do probabilities add up to 1?	Unit 6 Probability and Statistics Calculating MMMR What does average mean in maths?	Unit 6 Probability and Statistics Simple statistical diagrams Gaps or no gaps?	Unit 6 Probability and Statistics Pie charts Maths Assessment Can you compare pie charts?	Unit 7 Number Index laws	Unit 7 Number Calculating with powers and roots, inc. Pythagoras What is Pythagoras' Theorem?	Unit 7 Number Calculating with powers and roots, inc. Pythagoras What is the longest side of a right- angled triangle called?	Unit 7 Number Standard form What is the point of standard form?	Unit 7 Number Prime factorisation, HCF and LCM What is the difference between LCM and HCF?	Unit 7 Number Sets and Venn diagrams Who invented Venn diagrams?	Unit 8 Algebra Inequalities How do you represent an inequality on a number line?
			Mini Test/WCF	Mini test	Mini Test/WCF	Mini test	Mini Test/WCF		Mini Test	Mini Test/WCF	Mini test	Mini Test/WCF	

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 1
etry]	тсз	тсз	тсз	тсз	тсз	тсз	тсз	тс4	TC4	TC4 TC1	TC4 TC1	TC4 TC1	N/A
Cycle 2: [Algebra and 2D Geome	Unit 8 Algebra Complex manipulation What do we mean by making the subject?	Unit 8 Algebra Complex manipulation What does inverse mean?	Unit 8 Algebra Forming and Solving What is a coefficient?	Unit 8 Algebra Forming and Solving Why do we need to solve equations?	Unit 8 Algebra Expanding and factorising binomials What does expanding mean in maths?	Unit 8 Algebra Expanding and factorising binomials What does factorise mean?	Unit 8 Algebra Sequences Assessments – Whole School Geometric or arithmetic sequences?	Unit 9 2D Geometry Constructions Assessments - Whole School What is a compass?	Unit 9 2D Geometry Angles in parallel lines What are the differences between corresponding, alternate and co-interior angles?	Unit 9 2D Geometry Unit conversions Metric or imperial?	Unit 9 2D Geometry Area of trapezia and compound shapes What is a compound shape?	Unit 9 2D Geometry Area of trapezia and compound shapes Data & Planning days What is the formula for finding the area of a trapezium?	Intervention week
	Mini Test/WCF		Mini Test/WCF		Mini Test/WCF		Mini Test/WCF	Mini Test	Mini Test/WCF	Mini Test	Mini Test/WCF		Mini Test

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13
ng]	TC4 TC1	TC4 TC1	TC1 TC2 TC1	TC1 TC2 TC1	TC1 TC2 TC1	TC1 TC2 TC1	TC1 TC2 TC1	TC1 TC2 TC1	N/A	N/A	TC1 TC2 TC1	TC1 TC2 TC1	N/A
Cycle 3: [Proportional Reasoning	Unit 9 2D Geometry Circles What does R17 or R18 or R19 on car tires mean?	Unit 9 2D Geometry Circles What is the formula for the area of a circle?	Unit 10 Proportional Reasoning Percentage of amounts non calc and calc What is a percentage?	Unit 10 Proportional Reasoning Percentage increase/decrease calc Percentages on a calculator?	Unit 10 Proportional Reasoning Percentage increase/decrease non calc and calc When would you see percentage increase/decrea se in the real world?	Unit 10 Proportional Reasoning Reverse percentages What does reverse percentage mean?	Unit 10 Proportional Reasoning Compound interest What's the difference between compound interest and simple interest?	Unit 10 Proportional Reasoning Ratio What is a ratio?	Revision and Assessments	Revision and Assessments	Unit 10 Proportional Reasoning Ratio What does 2:3:4 mean?	Unit 10 Proportional Reasoning Compound measures How do we measure speed?	Intervention Week
	Mini Test/WCF		Mini test		Mini Test/WCF	Mini test	Mini Test/WCF	Mini Test	Mini Test/WCF			Min Test	Mini Test/WCF

Year 9

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13
	N/A	TC4	TC4 TC1	TC4 TC1 TC3	TC4 TC1 TC3	TC4 TC1 TC3	тс6	TC6	TC6 TC1	TC6 TC1	TC6	TC6	N/A
Cycle 1: [3D Geometry and Statistics]	Orientation	Unit 11 3D Geometry Solids' properties, nets, plans, elevations What does plan mean?	Unit 11 3D Geometry Surface area What is a net?	Unit 11 3D Geometry Volume of prisms What is a cross- section?	Unit 11 3D Geometry Volume of cylinders, cones and pyramids What is the area of the base?	Unit 11 3D Geometry Volume of cylinders, cones and pyramids What is a frustum?	Unit 12 Statistics Collecting and organising data What is the key? Assessments - Whole School	Unit 12 Statistics Interpret and compare statistical representations Correlation or causation? Assessments – Whole School	Unit 12 Statistics MMMR from a frequency table Why use a frequency table?	Unit 12 Statistics MMMR from a frequency table What is a class interval?	Unit 12 Statistics Frequency diagrams What is a frequency polygon?	Unit 12 Statistics Identifying errors and misconceptions in statistical diagrams How do you question the validity of statistical diagrams? Data & Planning days	Intervention week
			Mini Test/WCF	Mini Test	Mini Test/WCF		Mini Test/WCF	Mini Test	Mini Test/WCF	DIRT	Mini Test/WCF	Mini Test	Mini Test/WCF

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 1
Algebraic	тсз	тсз тс1	тсз тс1	ТСЗ ТС1	ТСЗ ТС1	тсз тс1	TC3 TC1	TC3 TC1	TC3 TC1	TC3 TC1	тсз	тсз	TC4 TC1
Cycle 2: [Graphs and Proportion and A Expressions]	Unit 13 Graphs and Proportion Coordinates and midpoints How do you find a midpoint?	Unit 13 Graphs and Proportion Linear functions Linear or nonlinear?	Unit 13 Graphs and Proportion Direct/Inverse proportion What is proportion?	Unit 13 Graphs and Proportion Scale Why do we use a scale?	Unit 14 Algebraic Expressions Sequences What is the nth term?	Unit 14 Algebraic Expressions Expanding Expanding triple brackets?	Unit 14 Algebraic Expressions Factorising Maths Assessment Why do we factorise quadratics?	Unit 14 Algebraic Expressions Factorising Difference of two squares?	Unit 14 Algebraic Expressions Solving How can you check the solution is correct?	Unit 14 Algebraic Expressions Solving How many solutions do quadratics equations have?	Unit 14 Algebraic Expressions Transposing Formulae What does transposition mean?	Unit 14 Algebraic Expressions Transposing Formulae Why do we factorise when transposing formulae?	Unit 15 2D Geometry Constructions and Loci
		Mini Test/WCF	Mini Test	Mini Test/WCF	Mini Test	Mini Test/WCF		Mini Test/WCF		Mini Test/WCF		Mini Test/WCF	Mini Test

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13
Graphs]	TC4 TC1	TC4 TC1	TC3 TC4 TC1	TC3 TC4 TC1	тсз тс1	тсз	TC3 TC1	тсз тс1	тсз тс1			ТСЗ ТС1	
Cycle 3: [2D Geometry and Algebra (Unit 15 2D Geometry Angles in polygons What is the difference between an interior and exterior angle?	Unit 15 2D Geometry Congruency and Similarity What does Congruency mean?	Unit 15 2D Geometry Trigonometry using similar triangles Enlargement on a coordinate grid	Unit 15 2D Geometry Arcs and sectors How do you find the area of a sector?	Unit 16 Algebra Graphs Form and solve inequalities What is the difference between solving an equation and solving an inequality?	Unit 16 Algebra Graphs Graphing inequalities and identifying regions How do we represent inequalities on a graph?	Unit 16 Algebra Graphs Simultaneous equations How do we eliminate terms?	Unit 16 Algebra Graphs Simultaneous equations Why is it called simultaneous equations?	Unit 16 Algebra Graphs Quadratic graphs What is the difference between a positive and negative quadratic graph?	Revision and Assessments	Revision and Assessments	Unit 16 Algebra Graphs Other algebraic graphs What does a reciprocal graph look like?	Intervention Week
		Mini Test/WCF	Mini Test		Mini Test/WCF		Mini Test/WCF		Mini Test/WCF				Mini Test/WCF

<u>Year 10</u>

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13
tistics]	N/A	TC4	TC4	TC4	TC4	TC4	TC4 TC1	TC4 TC1	TC5	тс6	тс6	тс6	тс6
Cycle 1: [Triangles & Transformations and Probability & Sta	Orientation	Unit 17 Triangles and Transformations Pythagoras' theorem inc. 3D What is Pythagoras theorem?	Unit 17 Triangles and Transformations Pythagoras' theorem inc. 3D What is a hypotenuse?	Unit 17 Triangles and Transformations Trigonometry What are the trigonometric ratios?	Unit 17 Triangles and Transformations Trigonometry (inc. graphs) What are the exact trigonometric values?	Unit 17 Triangles and Transformations Reflection, translation, and rotation What is translation in mathematics?	Unit 17 Triangles and Transformations Enlargement, inc. negative and fractional How does a negative and fractional scale factor change an enlargement?	Unit 17 Triangles and Transformations Mixed transformation What are the four types of transformations?	Unit 18 Probability and Statistics Experimental probability and Probability of combined events What is the AND & OR rule in probability?	Unit 18 Probability and Statistics MMMR from a frequency table How do we find a mean from a frequency table?	Unit 18 Probability and Statistics Cumulative frequency and box plots What does a cumulative frequency graph look like?	Unit 18 Probability and Statistics Cumulative frequency and box plots CTD What is a box plot?	Unit 18 Probability and Statistics Compound measures What is a compound measure?
			Mini Test/WCF		Mini Test/WCF		Mini Test/WCF	Mini Test	Mini Test/WCF	Mini Test	Mini Test/WCF		Mini Test

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 1
Geometry]	тсз	тсз	тсз	тсз	тсз	TC1	TC1	TC1 TC4	TC1 TC4	TC4	TC4	тс5	N/A
Cycle 2: [Algebra graphs and Limits and & Gec	Unit 19 Algebra Graphs Line segments What is a segment?	Unit 19 Algebra Graphs Equation of a line from coordinates What is the gradient?	Unit 19 Algebra Graphs Parallel and perpendicular lines What is the difference between parallel and perpendicular?	Unit 19 Algebra Graphs Sketching quadratics What is the trapezium rule?	Unit 19 Algebra Graphs Gradient of and area under curves What is a tangent?	Unit 20 Limits and 3D Geometry Estimation What is a significant figure?	Unit 20 Limits and 3D Geometry Bounds of accuracy Assessments – Whole School How do we calculate a lower and upper bound?	Unit 20 Limits and 3D Geometry Volume and S.A Assessments - Whole School How do we find the surface area of a prism?	Unit 20 Limits and 3D Geometry Volume and S.A How do we find the volume of a prism?	Unit 20 Limits and 3D Geometry Plans and Elevations Where are plans and elevations used in the real world?	Unit 20 Limits and 3D Geometry 3D Geometry Applications Adjacent, Opposite or Hypotenuse?	Unit 21 Probability Outcomes inc. product rule and sample space Data & Planning days Product rule for counting?	Intervention week
		Mini Test/WCF	Mini Test	Mini Test/WCF	Mini Test	Mini Test/WCF	Mini Test	Mini Test/WCF		Mini Test/WCF	Mini Test	Mini Test/WCF	Mini Test

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13
lber]	TC6	TC6 TC5	TC5	TC5	TC1	TC1	TC1	TC1 TC2	TC1	N/A	N/A	TC1 TC2	N/A
Cycle 3: [Probability and Num	Unit 21 Probability Understanding and using sampling Is it fair?	Unit 21 Probability Venn diagrams How do we find probabilities from a Venn Diagram?	Unit 21 Probability Probability of combined events What is the AND and OR rule in probability?	Unit 21 Probability Conditional probability How can one probability affect another?	Unit 22 Number Index laws inc. equations, fractional and negative What are the index laws?	Unit 22 Number Standard form calculations What are the principles of standard form?	Unit 22 Number Standard form calculations Standard form on a calculator?	Unit 22 Number Interest inc. growth and decay Growth or Decay?	Unit 22 Number Surds What is a surd?	Revision and Assessments	Revision and Assessments	Unit 22 Number Ratio What does it mean to put a ratio in the form 1:n?	Intervention Week
		Mini Test	Mini Test/WCF	Mini Test	Mini Test/WCF		Mini Test	Mini Test/WCF	Mini Test	Mini Test/WCF			Mini Test

<u>Year 11</u>

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13
	Orientation	TC3 TC1	TC3 TC1	TC3 TC1	TC3 TC1	TC3 TC1	TC3 TC1	TC4 TC1 TC3	TC4 TC1 TC3	N/A	N/A	TC4 TC1	TC4 TC1
Cycle 1: [Algebra & 2D Geometry]		Unit 23 Algebra Algebraic Fractions What are the similarities between manipulating fractions and algebraic fractions?	Unit 23 Algebra Solving quadratic equations Why do we factorise?	Unit 23 Algebra Solving quadratic equations What is the discriminant and why is it so useful?	Unit 23 Algebra Quadratic graphs What are the properties of quadratic curves?	Unit 23 Algebra Non-Linear Simultaneous Equations How solutions can, you get when solving quadratic simultaneous equations?	Unit 23 Algebra Functions What does fg(x) mean?	Unit 24 2D Geometry Trig inc. SOGCAHTOA, 3D, sine and cosine rule, area What is the Cosine rule?	Unit 24 2D Geometry Trig inc. SOGCAHTOA, 3D, sine and cosine rule, area How do we find the area using the cosine rule?	Mock Examinations 1	Mocks Examinations 1	Unit 24 2D Geometry Loci Is Loci applicable to the real world?	Unit 24 2D Geometry Bearings (including with trig) How do you combine trigonometry and bearings?
			Mini Test/WCF		M ini Test	Mini Test/WCF	M ini Test	Mini Test/WCF		Mini Test/WCF			Mini Test/WCF

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 1
ај	TC4 TC1	TC4 TC1	TC1 TC3	TC1 TC3	TC1 TC3	TC1 TC3	N/A	N/A	TC1 TC3				
Cycle 2: [Number and Algebra	Unit 24 2D Geometry Vectors inc. column and vector geometry What are vectors?	Unit 24 2D Geometry Vectors inc. column and vector geometry Can you combine vectors, if so why?	Unit 25 Number and Algebra Circle Theorems What are the different circle theorems?	Unit 25 Number and Algebra Function Transformations How do you reflect a graph in the y-axis?	Unit 25 Number and Algebra Graphing Proportion What is proportion?	Unit 25 Number and Algebra Iteration and Recursion What is iteration and recursion?	Examinations Mocks 2	Examinations Mocks 2	Unit 25 Number and Algebra Algebraic and Geometric Proof What are the different types of proof?	Revision	Revision	Revision	Revision
		Mini Test/WCF		Mini Test/WCF	M ini Test	Mini Test/WCF	M ini Test			Mini Test/WCF			

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13
Cycle 3: [Bespoke]	Revision	Revision	Revision	Revision	Revision	Examinations	Examinations	Examinations P1	Examinations P2	Examinations P3			