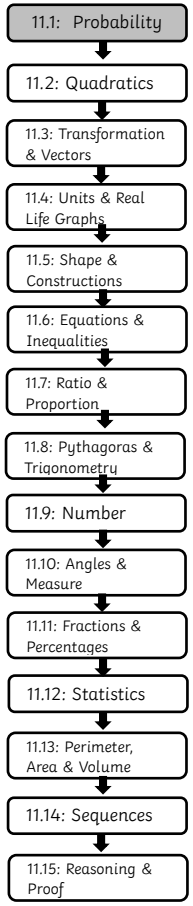
Personalised Learning Checklist (PLC): Year 11 Crossover Foundation



Unit 1 – Probability	Sparx Codes
Language of probability, 0-1 probability scale, random, fair, equally likely, bias, unequally likely	U803
Calculate probability and write as fractions, decimals or percentages	U408 U510
Sample space diagrams for combined events	U104
Mutually exclusive events & their probabilities	U683
Experimental probability	U580
Expected results from repeated experiments	U166
Use a frequency tree to record outcomes of an event	U280
Use listing strategies to identify all permutations or combinations	
Represent outcomes using a Venn diagram Find the union and intersection of sets	U476 U748
Recognise the symbols { } for sets, ∩ for intersection and ∪ for union	U296
Know the addition law for mutually exclusive events: P(A or B) = P(A) + P(B)	
Know the multiplication law for independent events: P(A & B) = P(A) x P(B)	
Use a tree diagram to solve problems involving combined events that are independent and dependent	U558 U729

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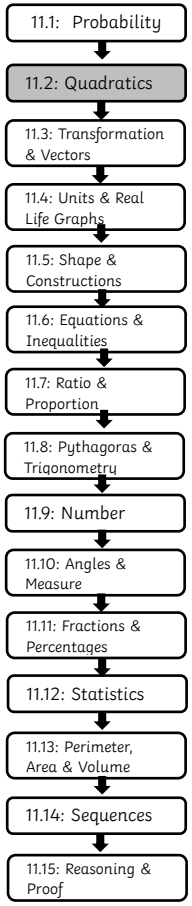

Unit 2 – Quadratics	Sparx Codes
Using algebraic notation	U613
Simplifying expressions by collecting like terms	U105
Simplifying expressions using index laws	U662
Expanding single brackets	U179
Factorising into one bracket	U365
Expanding double brackets	U768
Factorise quadratic expressions of the form $x^2 + bx + c$	U178
Factorising the difference of two squares $x^2 - a^2 = (x - a)(x + a)$	U963
Solve quadratic equations by factorising	U228
Draw the graph of quadratic functions of the form $y = ax^2 + bx + c$	U989
Use quadratic graphs to estimate values of y for given values of x and vice versa	U667
Identify and interpret roots, intercepts and turning points of quadratic functions graphically	U667
Find approximate solutions to a quadratic equation using a graph	U601

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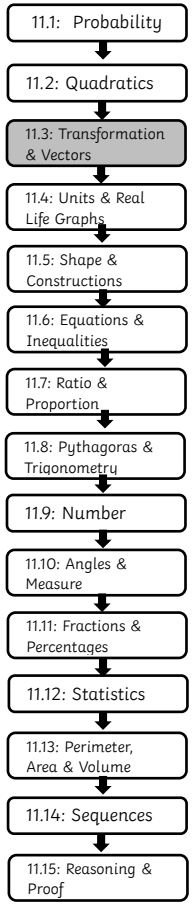

Unit 3 – Transformation and Vectors	Sparx Codes
Line symmetry and rotational symmetry	U849
To draw and describe a translation of a shape	U196
To draw and describe a reflection of a shape	U799
To draw and describe a rotation of a shape	U696
Enlarge a shape using a centre and scale factor	U519
Carry out combinations of transformations Describe the resultant of multiple transformations as a single transformation	U766
Understand invariant points of a transformation	
Understand similarity and find missing values in similar shapes	U551 U578
Add and subtract vectors	U903
Multiply a vector by a scalar	U564
Draw vectors on a diagram and describe them	U781
Identify parallel vectors	U660

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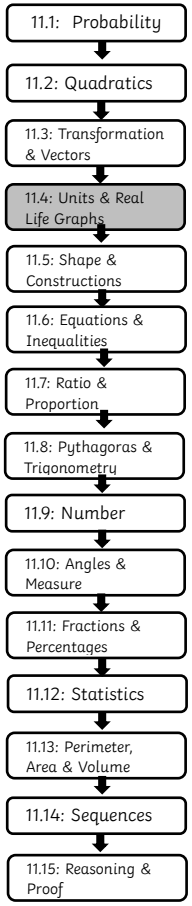

Unit 4 – Units and Real Life Graphs	Sparx Codes
Read, convert and calculate with time Convert units of length, mass and capacity	U902 U388
Understand and calculate compound units involving speed, distance and time	U151 U256
Understand and calculate compound units involving density, mass and volume	U910
Understand and calculate pressure	U527
Understand and calculate population density	
Solve problems involving compound units	U842
Solve problems involving time, timetables, speed and distance tables	
Plot and interpret graphs in real contexts	U652 U638 U862 U896
Plot and interpret distance-time graphs	U403 U914
Interpret the gradient of a straight line graph as a rate of change	U462 U966
Review plotting linear graphs, y = mx + x, gradient and intercept	U741 U315 U669
Recognise, sketch and interpret graphs of quadratic, cubic and reciprocal functions	U980 U593

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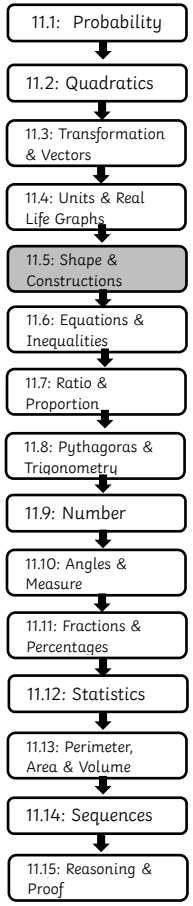

Unit 5 – Shape & Constructions	Sparx Codes
Solve geometrical problems involving coordinates	U889
Calculate midpoint of a line	U933
Properties of 3D shapes (including faces, edges and vertices)	U719
Construct and interpret plans and elevations of 3D shapes	U743
Understand and use isometric drawings	
Recognise, draw and interpret nets of 3D shapes	U761
Congruence and congruence criteria for triangles (SSS, SAS, ASA, RHS)	U790 U866
Use compasses	U678
Use ruler and protractor or compasses to construct triangles	U187
Construct an angle bisector	U787
Construct perpendicular bisectors and lines	U245
Construct loci	U820
Use scale diagrams	U257

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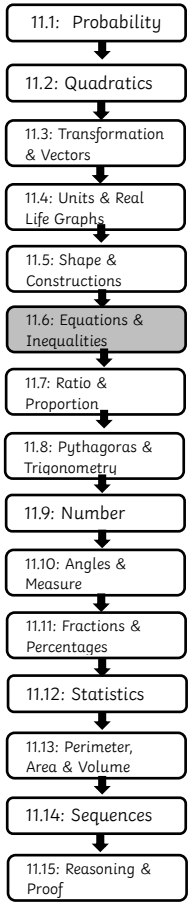

Unit 6 – Equations & Inequalities	Sparx Codes
Solve equations with one step Solve equations with two or more steps Solve equations with the unknown on both sides	U755 U325 U879
Solve equations with the unknown in the denominator	U505
Construct and solve an equation	U599
Solve simultaneous equations using elimination	U760
Solve simultaneous equations using substitution	U757
Solve simultaneous equations graphically	U836
Construct and solve simultaneous equations	U137
Read and draw inequalities on a number line	U509
Solve single inequalities Solve inequalities with the variable on both sides	U759 U738
Construct and solve inequalities	U337
Substitute numbers into expressions Substitute numbers into algebraic formulae Substitute numbers into real-life formulae Substitute numbers into functions	U201 U585 U144 U637
Rearrange a formula to change the subject	U556

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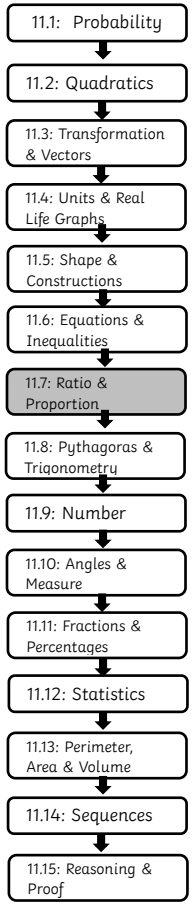

Unit 7 – Ratio & Proportion	Sparx Codes
Write and simplify ratios	U687
Use equivalent ratios to find unknown amounts	U753
Convert between ratios, fractions and percentages	U176
Share amounts in a ratio	U577
Solve best-buy or better value problems	
Understand direct proportion and solve problems involving direct proportion	U721
Understand inverse proportion and solve inverse proportion problems Understand that X is inversely proportional to Y is equivalent to X is proportional to $\frac{1}{Y}$	U357
Graphs of direct and inverse proportion	U238
Interpret direct proportion equations	U640
Interpret inverse proportion equations	U364

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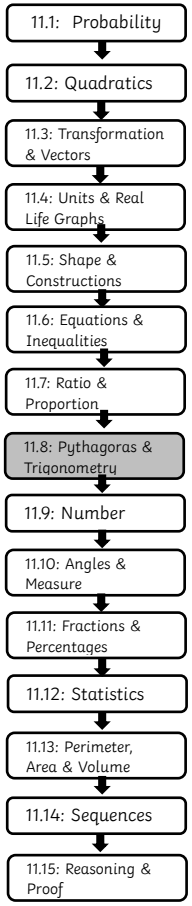

Unit 8 – Pythagoras and Trigonometry	Sparx Codes
Pythagoras' Theorem	U385
Understand sin, cos and tan in trigonometry	U605
Use trigonometry to find unknown sides in triangles	U283
Use trigonometry to find unknown angles in triangles	U545
Use exact trigonometric values	U627

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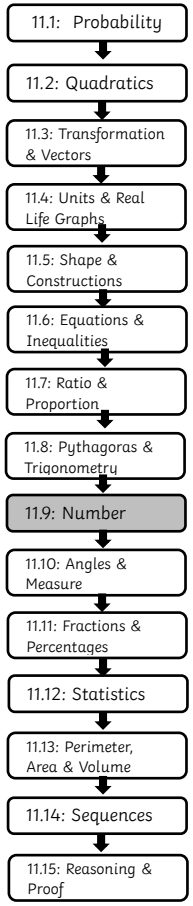

Unit 9 – Number	Sparx Codes
Error intervals - express rounding and truncation errors using inequality notation $a < x \leq b$	U657 U108 U301
Limits of accuracy – know rounded measurements are inaccurate by up to half a unit each way	U657
The rest of the unit is a review of Unit 10.2 & Unit 10.4	
Factors, HCF, Multiples, LCM	U751 U211 U529
Primes and prime factors	U236 U739
Powers and Roots	U851 U694
Order sets of integers and decimals	U435
Add/subtract (U417, U478), multiply (U127, U293) & divide (U453, U868) with integers & decimals	See left
Solve problems involving finance such as bills & bank statements	
BIDMAS (order of operations)	U976
Standard form	U330 U534 U264 U290

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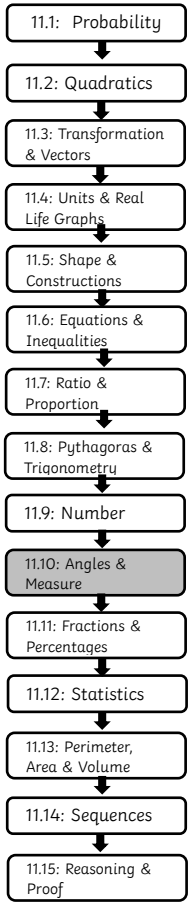

Unit 10 – Angles & Measure	Sparx Codes
Notation for labelling lengths and angles, including the names of angles (acute, obtuse, right, reflex)	
Notation for labelling right angles, parallel lines and equal lengths or sides and angles in shapes	
Angle rule: vertically opposite angles are equal	U730
Angle rule: angles around a point add to 360	U390
Angle rule: angles at a point on a straight line add to 180	U390
Angles in parallel lines: alternate, corresponding and interior angles	U826
Combining angle facts	U655
Angle sum of a triangle is 180, and use of equilateral and isosceles	U628
Angle sum of quadrilateral is 360, and use of special quadrilaterals	U732 U329
Names and properties of triangles, quadrilaterals and polygons	U121
Angle sum of any polygon & interior or exterior angles in regular polygons	U427
Draw and measure line segments and angles accurately	U447
Bearings (8 compass bearings, and 3-figure bearings)	U525 U107
Scale factors, scale diagrams and maps	U257

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- 11.5: Shape & Constructions
- 11.6: Equations & Inequalities
- 11.7: Ratio & Proportion
- 11.8: Pythagoras & Trigonometry
- 11.9: Number
- 11.10: Angles & Measure
- **11.11: Fractions & Percentages**
- 11.12: Statistics
- 11.13: Perimeter, Area & Volume
- 11.14: Sequences
- 11.15: Reasoning & Proof

Unit 11 – Fractions & Percentages	Sparx Codes
This unit is a review of Units 10.8, 10.10 & 10.13	
Shade fraction diagrams or say what fraction of a diagram is shaded	U679 U163
Convert between improper and mixed numbers	U692
Equivalent fractions & simplifying fractions	U704 U646
Order fractions, decimals and percentages	U746 U439 U594
Convert between fractions, decimals and percentages, including recurring decimals	U888
Find fractions of amounts	U881 U916
Add and subtract fractions Add and subtract mixed numbers	U736 U793
Multiply with fractions Multiply mixed numbers	U475 U224
Divide with fractions Divide with mixed numbers	U544 U538
Solve problems involving fractions and mixed numbers	U874
Write numbers as percentages of other numbers Express one quantity as a fraction of another	U925
Find percentages of amounts	U554 U349
Percentage change	U773 U671
Find original values in percentage problems	U286
Find the percentage an amount has changed by	U278
Simple interest	U533
Compound interest	U332
Growth and decay	U988

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Unit 12 – Statistics	Sparx Codes
Understand sampling	U162
The rest of the unit is a review of Unit 10.5 & Unit 10.14	
Construct and interpret bar charts, comparative bar charts and vertical line charts	U363 U557
Construct and interpret pictograms	U506
Construct and interpret pie charts	U508 U172
Compare data using appropriate representations or averages	U520 U717
Interpret and construct tables and line graphs for time series data	U590 U193
Plot bivariate data on a scatter graph Understand positive and negative correlation Draw and use a line of best fit on a scatter graph	U199 U277 U128
Calculate the range	U526
Calculate the median	U456
Find the mode	U260
Calculate the mean	U291
Averages from a frequency table	U569
Averages from grouped data	U877
Averages from diagrams	U854
Choose suitable averages and solve problems	U717

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Unit 13 – Perimeter, Area & Volume	Sparx Codes
Circle definitions and properties, including: centre, radius, chord, diameter and circumference, tangent, arc, sector and segment	U767
The rest of the unit is a review of Unit 10.11	
Find area and perimeter of simple shapes	U993
Area of a rectangle (Area = length x width) Area and perimeter of compound shapes	U970 U351
Problem solving: Area & perimeter of rectangles and compound shapes	U226 U934
Area of a triangle (Area = $\frac{1}{2}$ x base x height)	U945
Area of a parallelogram (Area = base x height)	U424
Area of a trapezium (Area = $\frac{1}{2}$(a + b) x height)	U265
Problem solving: Area of triangles, parallelograms & trapeziums	U343 U904
Circumference of a circle C = 2πr = πd	U604
Area of a circle A = πr^2	U950
Arc length & perimeter of sectors of circles Area of sectors of circles	U221 U373
Volume of cuboids (V = length x width x height)	U786
Volume of a prism (V = area of cross-section x height) Volume of a cylinder (V = πr^2 x height)	U174 U915
Volume of a sphere Volume of a pyramid Volume of cone Mixed problems involving volume of cones & spheres	U617 U484 U116 U426
Sketch the net of a solid	U761
Surface area of a cuboid Surface area of prisms Surface area of a cylinder Surface area of a sphere Surface area of a pyramid Surface area of a cone	U929 U259 U464 U893 U871 U523

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Unit 14 – Sequences	Sparx Codes
This unit is a review of Unit 10.9	
Term-to-term rules: generate a sequence or identify a rule and continue a sequence	U213
Understand position-to-term rules (nth term) and substitute numbers in	U530
Know the features of an arithmetic sequence (terms have a common difference)	
Arithmetic sequences – nth term (use or find) Determine if a number is a term of a sequence	U498
Sequences of patterns – nth term	U978
Know the features of a quadratic sequence (differences have equal gaps)	
Quadratic sequences – nth term (use)	U206
Special sequences – know features of, & recognise (eg) Square numbers (1, 4, 9, 16, 25, 36, 49, 64, 81, 100…) Cube numbers (1, 8, 27, 64, 125, …) Triangle numbers (1, 3, 6, 10, 15, 21, 28, 36, 45, …)	U680
Knows the features of a geometric sequence (terms have a common ratio)	
Geometric sequences – recognise, find common ratio, continue and use nth term	U958
Know the features of a Fibonacci sequence (each term is the sum of the previous two terms)	
Fibonacci sequences – recognise and continue the sequence	

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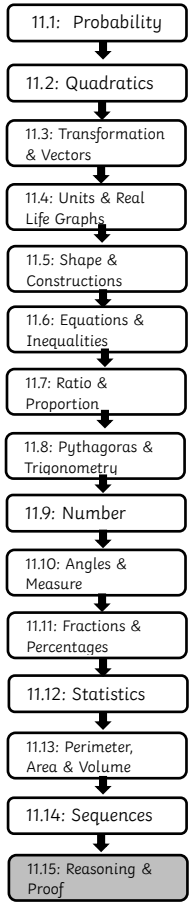

Unit 15 – Reasoning & Proof	Sparx Codes
Know the difference between an equation (true for a specific value) and an identity (true for all values)	
Show algebraic expressions are equivalent, and construct algebraic proofs	U582
Construct geometric proofs using angle facts	U471
Understand the proof of the angle sum of a triangle using alternate angles	
Construct geometric proofs using congruence & similarity	U887

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