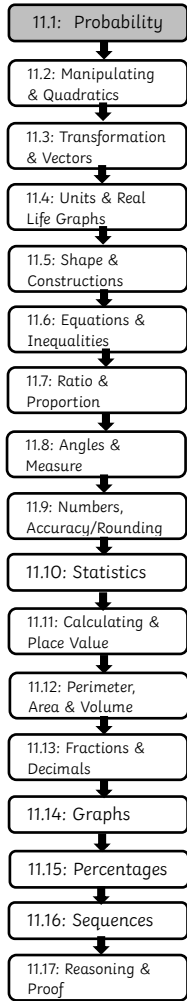


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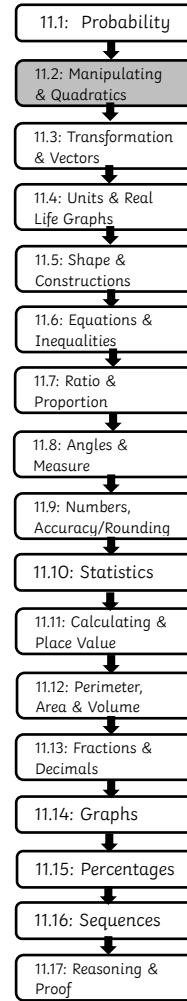


Unit 1 – Probability	Sparx Codes
Language of probability, 0-1 probability scale, random, fair, equally likely, bias, unequally likely	U803
Calculate probability and write as fractions, decimals or percentages	U408 U510
Sample space diagrams for combined events	U104
Mutually exclusive events & their probabilities	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	U476
Find the union and intersection of sets	U748
Recognise the symbols { } for sets, \cap for intersection and \cup for union	U296
Know the addition law for mutually exclusive events: $P(A \text{ or } B) = P(A) + P(B)$	
Know the multiplication law for independent events: $P(A \& B) = P(A) \times P(B)$	
Use a tree diagram to solve problems involving combined events that are independent and dependent	U558 U729



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Unit 2 – Manipulating & 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 U134
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	U902
Convert units of length, mass and capacity	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



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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	U755
Solve equations with two or more steps	U325
Solve equations with the unknown on both sides	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 graphically	U836
Read and draw inequalities on a number line	U509
Solve single inequalities	U759
Solve inequalities with the variable on both sides	U738
Construct and solve inequalities	U337
Substitute numbers into expressions	U201
Substitute numbers into algebraic formulae	U585
Substitute numbers into real-life formulae	U144
Substitute numbers into functions	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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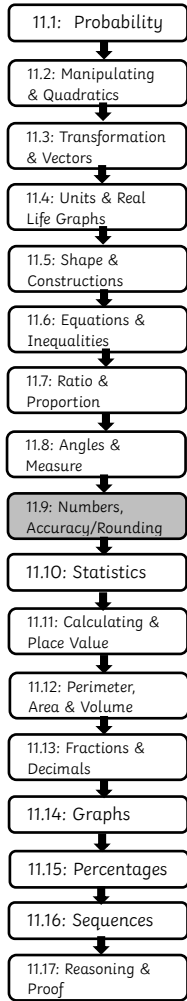
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Unit 8 – Angles & Measure	Sparx Codes
Angle rule: vertically opposite angles are equal	U730
Angle rule: angles around a point add to 360	U390
Angle rule: angles at a point on a straight line add to 180	U390
Angles in parallel lines: alternate, corresponding 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
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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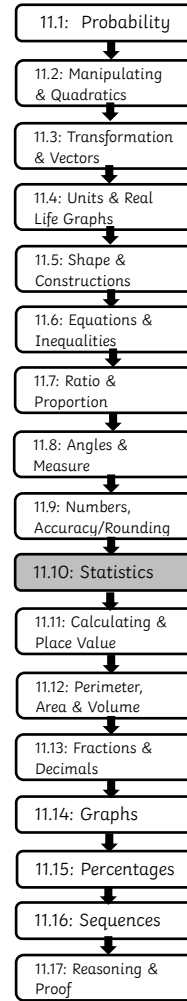


Unit 9 – Numbers, Accuracy & Rounding	Sparx Codes
Calculate HCF and LCM using prime factors and Venn diagrams	U250
Read, write and evaluate negative integer powers	U851
Calculate with roots and integer indices	U851
Error intervals - express rounding and truncation errors using inequality notation $a < x \leq b$	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 10.6	
Factors, HCF, Multiples, LCM	U751 U211 U529
Primes and prime factors	U236 U739
Round to the nearest 1000, 100, 10 or whole number	U480
Round to a specified number of decimal places	U298
Round to a specified number of significant figures	U731 U965
Round to an appropriate degree of accuracy	
Estimate calculations by rounding to one significant figure	U225
Estimate and check if solutions to problems are of the correct size & determine if an estimate is an overestimate or underestimate	



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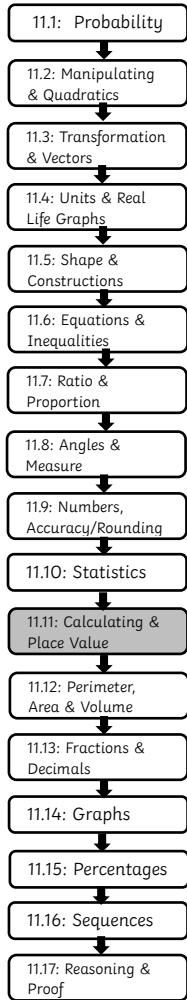


Unit 10 – Statistics	Sparx Codes
Interpret and construct tables and line graphs for time series data	U590 U193
Find the group the median lies in from grouped data	U877
Interpret, analyse and compare distributions using graphical representations or averages/spread	U520 U717
Understand sampling	U162
The 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	U520
Plot bivariate data on a scatter graph	U199
Understand positive and negative correlation	U277
Draw and use a line of best fit on a scatter graph	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



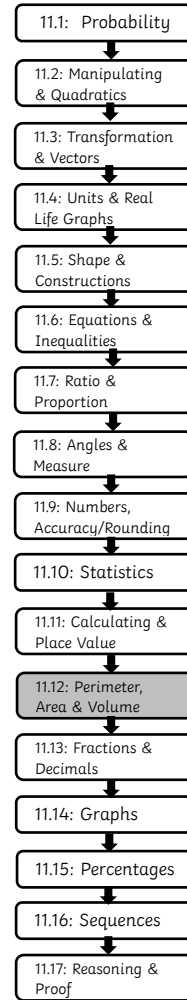
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Unit 11 – Further Calculating & Place Value		Sparx Codes
Recognise that numbers of the form $A \times 10^n$ where $1 \leq A < 10$, and n is an integer are in standard form		
Interpret, write and compare numbers in standard form		U330
Enter numbers in standard form on a calculator		U534
		U161
Calculate with standard form		U264 U290
The rest of the unit is a review of Unit 10.4		
Understand place value		M763 M704 M522 (KS3)
Use the signs $<$, \leq , $>$, \geq , $=$, \neq to compare numbers, including compound inequalities (e.g. $-1 < 0.5 < 4$)		
Order a set of integers and decimals		U435
Add, subtract, multiply and divide with negative numbers		U742 U548
Add and subtract with integers and decimals		U417 U478
Multiply with integers, and multiply integers and decimals by a decimal		U127 U293
Divide with integers, divide a decimal by an integer, an integer by a decimal, and a decimal by a decimal		U453 U868
Multiply and divide with place value		U735
Use a scientific calculator		U926
Apply BIDMAS to multi-step calculations		U976

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Unit 12 – Perimeter, Area & Volume		Sparx Codes
Circle definitions and properties, including: centre, radius, chord, diameter and circumference, tangent, arc, sector and segment		U767
Arc length & perimeter of sectors of circles		U221
Area of sectors of circles		U373
Volume of a sphere		U617
Volume of a pyramid		U484
Volume of cone		U116
Mixed problems involving volume of cones & spheres		U426
Surface area of a cuboid		U929
Surface area of prisms		U259
Surface area of a cylinder		U464
Surface area of a sphere		U893
Surface area of a pyramid		U871
Surface area of a cone		U523
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)		U970
Area and perimeter of compound shapes		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 $C = 2\pi r = \pi d$		U604
Area of a circle $A = \pi r^2$		U950
Volume of cuboids ($V = \text{length} \times \text{width} \times \text{height}$)		U786
Volume of a prism ($V = \text{area of cross-section} \times \text{height}$)		U174
Volume of a cylinder ($V = \pi r^2 \times \text{height}$)		U915
Sketch the net of a solid		U761

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Unit 13 – Fractions & Decimals		Sparx Codes
This unit is a review of Unit 10.8 and Unit 10.10		
Shade fraction diagrams or say what fraction of a diagram is shaded	U679 U163	
Convert between improper and mixed numbers	U692	
Equivalent fractions	U704	
Simplify fractions	U646	
Order fractions and decimals	U746 U439	
Find a number between two fractions or integers		
Convert between fractions and decimals, with or without a calculator, including recurring decimals	U888	
Find fractions of amounts, with or without a calculator	U881 U916	
Given a fraction, and the result, find the original amount or answer word problems related to fractions		
Express one quantity as a fraction of another		
Add and subtract fractions	U736	
Add and subtract mixed numbers	U793	
Multiply with fractions	U475	
Multiply mixed numbers	U224	
Divide with fractions	U544	
Divide with mixed numbers	U538	
Solve problems involving fractions and mixed numbers	U874	
Complete fraction calculations on a calculator		

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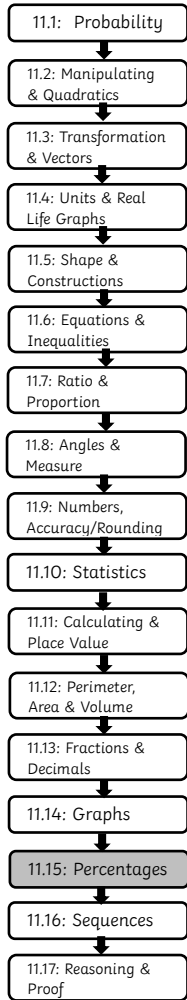
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Unit 14 – Graphs		Sparx Codes
Use the form $y = mx + c$ to identify parallel lines	U377	
Find the equation of a line through one point with a given gradient	U477	
Find the equation of a line through two given points	U848	
Recognise, sketch and interpret graphs of linear functions and quadratic functions	U669 U667	
Recognise, sketch and interpret graphs of simple cubic functions and the reciprocal function, $y = \frac{1}{x}$ with $x \neq 0$	U980 U593	
The rest of the unit is a review of Unit 10.12		
Work with coordinates in all four quadrants	U789	
Plot graphs of linear functions written in the form: $y = ax + b$ or $ax + by + c = 0$	U741	
Use linear graphs to estimate values of y for given values of x and vice versa		
Understand intercept and rate of change (gradient) of a graph		
Use the form $y = mx + c$ to identify gradient and intercept algebraically		
Find the equation of a straight line graph	U315	



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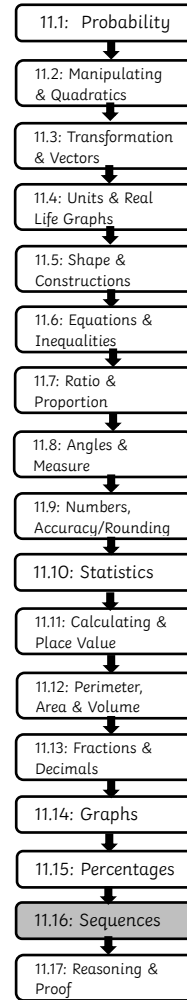


Unit 15 – Percentages		Sparx Codes
Compound interest		U332
Exponential growth or decay		U988
Find the percentage an amount has changed by		U278
Find original values in percentage problems		U286
Solve percentage change problems		U773 U671
The rest of the unit is a review of Unit 10.13		
Write numbers as percentages of other numbers Express one quantity as a fraction of another		U925
Find percentages of amounts		U554 U349
Simple interest		U533



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Unit 16 – Sequences		Sparx Codes
Know the features of a quadratic sequence (differences have equal gaps)		
Quadratic sequences – nth term (use)		U206
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		
The rest of the 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
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



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Unit 17 – 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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