



| Unit 1: Number | | ✓ | SPARX |
|---|--|---|---------------|
| 1a. Calculations, Checking and Rounding | | | |
| Addition & subtraction with decimals | | | U478 |
| Multiplication with decimals | | | U293 |
| Division with decimals | | | U868 |
| Round integers | | | U480 |
| Round decimals | | | U298 |
| Round integers using significant figures | | | U731 |
| Round decimals using significant figures | | | U965 |
| Estimating calculations | | | U225 |
| Error intervals | | | U657 |
| Truncating decimals | | | U108 |
| Related calculations | | | U735 |
| Product rule for counting | | | U369 |
| 1b. Indices, Roots, Reciprocals and BIDMAS | | | |
| Calculating with roots and powers | | | U851 |
| Estimating roots and powers | | | U299 |
| Fractional unit indices (e.g. $\frac{1}{4}$) | | | U985 |
| Fractional indices | | | U772 |
| Index rules with positive indices | | | U235 |
| Index rules with negative indices | | | U694 |
| Order of operations (BIDMAS) | | | U976 |
| 1c. Factors, Multiples, Primes | | | |
| Factors of a number | | | U211 |
| Multiple of a number | | | U751 |
| Prime numbers | | | U236 |
| Prime factorisation | | | U739 |
| Highest common factors | | | U529/ U250 |
| Lowest common multiples | | | U751/ U250 |
| 1d. Standard Form and Surds | | | |
| Convert between ordinary and standard form – positive indices | | | U330 |
| Convert between ordinary and standard form – negative indices | | | U534 |
| Multiplying and dividing with standard form | | | U264 |
| Adding and subtracting with standard form | | | U290 |
| Use a calculator with standard form | | | U161 |
| Simplifying Surds | | | U338 |
| Multiplication & division with surds | | | U633 |
| Adding and subtracting with surds | | | U872 |
| Brackets Involving Surds | | | U499 |



| Unit 2: Algebra | | ✓ | SPARX |
|--|--|---|-------|
| 2a. Basics, Setting Up, Rearranging and Solving Equations | | | |
| Algebraic notation | | | U613 |
| Substitute into expressions | | | U201 |
| Substitute into algebraic formulae | | | U585 |
| Substitute into real-life formulae | | | U144 |
| Simplify expressions by collecting like terms | | | U105 |
| Simplify expressions using index laws | | | U662 |
| Expand single brackets | | | U179 |
| Expand double brackets | | | U768 |
| Factorise into single brackets | | | U365 |
| Factorise quadratic expressions | | | U178 |
| Factorise quadratic expressions with a coefficient of x squared | | | U858 |
| Factorising the difference of two squares | | | U963 |
| Solving linear equations - variable on one side | | | U325 |
| Solving linear equations - variable on both sides | | | U870 |
| Solving linear equations - variable in the denominator | | | U505 |
| Form and solve equations | | | U599 |
| Change the subject of a formula | | | U556 |
| Algebraic Proof | | | U582 |
| 2b. Sequences | | | |
| Term-to-term rules | | | U213 |
| Using the nth term | | | U530 |
| Nth term for arithmetic sequences (linear sequences) | | | U498 |
| Nth term for sequences of patterns | | | U978 |
| Nth term for quadratic sequences | | | U206 |
| Special sequences (Fibonacci, fractional etc.) | | | U680 |
| Nth term for geometric sequences | | | U958 |



| Unit 3: Averages and Range, Collecting and Interpreting Data | | ✓ | SPARX |
|--|--|---|---------------|
| 3a. Averages and Range | | | |
| Types of data | | | U322 |
| Calculate range | | | U526 |
| Calculate mode | | | U260 |
| Calculate median | | | U456 |
| Calculate mean (incl. reverse mean) | | | U291 |
| Averages from diagrams | | | U854 |
| Averages from frequency tables | | | U569 |
| Averages from grouped frequency tables | | | U877 |
| Choose suitable averages/compare averages | | | U717 |
| 3b. Representing and Interpreting Data | | | |
| <u>Two way</u> tables | | | U981 |
| Stem and Leaf Diagrams | | | U200/ U909 |
| Draw bar charts | | | U363 |
| Interpret bar charts | | | U557 |
| Draw pie charts | | | U508 |
| Interpret pie charts | | | U172 |
| Draw and interpret frequency polygons | | | U840 |
| Draw histograms with equal class width | | | U185 |
| Draw line graphs | | | U590 |
| Interpret line graphs (incl. time series) | | | U193 |
| 3c. Scatter Graphs | | | |
| Plot scatter graphs | | | U199 |
| Interpret scatter graphs | | | U277 |
| Use the line of best fit | | | U128 |



| Unit 4: Fractions, Ratio and Percentages | ✓ | SPARX |
|---|---|-------|
| 4a Fractions and Percentages | | |
| Finding fractions of shapes | | U679 |
| Finding equivalent fractions | | U704 |
| Ordering fractions | | U746 |
| Ordering fractions and mixed numbers | | U439 |
| Simplifying fractions | | U646 |
| Constructing fractions | | U163 |
| Convert between mixed numbers and improper fractions | | U692 |
| Adding and subtracting fractions | | U736 |
| Adding and subtracting mixed numbers | | U793 |
| Multiplying fractions | | U475 |
| Multiplying with mixed numbers | | U224 |
| Dividing fractions | | U544 |
| Dividing with mixed numbers | | U538 |
| Problem solving: fractions and mixed numbers | | U874 |
| Finding fractions of amounts without a calculator | | U881 |
| Finding fractions of amounts with a calculator | | U916 |
| Converting between fractions, decimals and percentages | | U888 |
| Ordering fractions, decimals and percentages | | U594 |
| Converting fractions to recurring decimals | | U550 |
| Converting recurring decimals to fractions | | U689 |
| Writing numbers as percentages of other numbers | | U925 |
| Finding the percentage an amount has been changed by | | U278 |
| Finding percentages of amounts without a calculator | | U554 |
| Finding percentages of amounts with a calculator | | U349 |
| Percentage increase/decrease without a calculator | | U773 |
| Percentage increase/decrease with a calculator | | U671 |
| Reverse percentages | | U286 |
| Simple interest calculations | | U533 |
| Compound interest calculations | | U332 |
| Growth and decay | | U988 |
| 4b Ratio and Proportion | | |
| Write and simplify ratio | | U687 |
| Sharing amounts into a given ratio | | U577 |
| Using equivalent ratios to find unknown amounts | | U753 |
| Converting between ratios, fractions and percentages | | U176 |
| Combining ratios | | U921 |
| Calculating with ratio and algebra | | U676 |
| Changing ratios | | U921 |
| Problem solving with ratio | | U865 |
| Solving direct proportion word problems (incl. recipes) | | U721 |
| Currency conversion | | U610 |
| Calculating with rates | | U256 |
| Drawing and interpreting scale diagrams | | U257 |



| Unit 5: Angles and Trigonometry | ✓ | SPARX |
|--|---|-------|
| 5a Polygons, Angles and Parallel Lines | | |
| Angles on a straight line and around a point | | U390 |
| Vertically opposite angles | | U730 |
| Angles in triangle | | U628 |
| Angles in parallel lines | | U826 |
| Combining angle facts | | U655 |
| Angles in quadrilaterals | | U732 |
| Angles in polygons | | U427 |
| 5b Pythagoras' Theorem and Trigonometry | | |
| Use Pythagoras' theorem in 2D | | U385 |
| Understanding sin, cos and tan | | U605 |
| Trigonometry (finding sides) | | U283 |
| Trigonometry (finding angles) | | U545 |
| Angles of elevation and depression | | U967 |
| Using the exact values of trigonometric values | | U627 |



| Unit 6 Graphs | | ✓ | SPARX |
|---|--|---|-------|
| 6a Graphs: the basics and real-life graphs | | | |
| Cartesian axis & coordinates | | | U789 |
| Plot linear real-life graphs | | | U652 |
| Using and interpreting linear real-life graphs | | | U638 |
| Plotting distance-time graphs | | | U403 |
| Interpreting distance-time graphs | | | U914 |
| Calculating speed from distance-time graphs | | | U462 |
| Plotting distance-time graphs using speeds | | | U966 |
| Plotting velocity-time graphs | | | U937 |
| Calculating acceleration from velocity-time graphs | | | U562 |
| Calculating distances from velocity-time graphs | | | U611 |
| Calculating midpoints | | | U933 |
| Solving shape problems involving coordinates | | | U889 |
| Calculate the length of a line segment | | | - |
| 6b Linear Graphs and Coordinate Geometry | | | |
| Plotting straight line graphs | | | U741 |
| Finding equations of <u>straight line</u> graphs | | | U315 |
| Using the equation of a line to find y-intercepts and gradients | | | U669 |
| Finding the equation of a line from its gradient and a point | | | U477 |
| Finding the equation of a line from two points | | | U848 |
| Equations of parallel lines | | | U377 |
| Equations of parallel and perpendicular lines | | | U898 |
| 6c Quadratic, Cubic and Other Graphs | | | |
| Plotting graphs of quadratic functions | | | U989 |
| Find the y-intercept of a quadratic graph | | | U667 |
| Find the x-intercept (roots) of a quadratic graph | | | U667 |
| Using a quadratic graph to solve a related quadratic equation | | | - |
| Graphs of cubic functions | | | U980 |
| Graphs of reciprocal functions | | | U593 |
| Draw circles with centre origin (0,0) | | | U567 |



| Unit 7: Perimeter, Area and Volume, Prisms, Circles, Cylinders, Spheres, Cones; Accuracy and Bounds | | ✓ | SPARX |
|---|--|---|-------|
| 7a Perimeter, Area and Circles | | | |
| Mixed problems: Finding the area and perimeter of simple shapes | | | U993 |
| Finding the area of compound shapes | | | U970 |
| Finding the perimeter of compound shapes | | | U351 |
| Problem <u>solving</u> : area/perimeter of rectangles/compound shapes | | | U934 |
| Finding the area of triangles | | | U945 |
| Finding the area of compound shapes containing triangles | | | U575 |
| Finding the area of parallelograms | | | U424 |
| Finding the area of trapeziums | | | U265 |
| Problem <u>solving</u> : area of triangles, parallelograms and trapeziums | | | U904 |
| Identifying parts of a circle | | | U767 |
| Finding the circumference of circles | | | U604 |
| Finding the area of circles | | | U950 |
| Finding the arc length of sectors | | | U221 |
| Finding the area of sectors | | | U373 |
| Converting units of area | | | U248 |
| 7b 3D Forms and Volume, Cylinders, Cones and Spheres | | | |
| Finding the volume of cubes and cuboids | | | U786 |
| Finding the surface area of cubes and cuboids | | | U929 |
| Finding the volumes of prisms | | | U174 |
| Finding the surface area of prisms | | | U259 |
| Finding the volume of a cylinder | | | U915 |
| Finding the surface area of a cylinder | | | U464 |
| Finding the volume of pyramids | | | U484 |
| Finding the surface area of pyramids | | | U871 |
| Finding the volume of cones | | | U116 |
| Finding the surface area of cones | | | U523 |
| Finding the volume of spheres | | | U617 |
| Finding the surface area of spheres | | | U893 |
| Finding the surface area of prisms | | | U259 |
| Finding the volume of a cylinder | | | U915 |
| Finding the surface area of a cylinder | | | U464 |
| Finding the volume of pyramids | | | U484 |
| Mixed problems: finding the volume of cones and spheres | | | U426 |
| Mixed problems: finding the surface area of cones and spheres | | | U771 |
| Finding the volume of frustums | | | U350 |
| Finding the surface area of frustums | | | U334 |
| Finding the volume of composite shapes | | | U543 |
| Finding the surface area of composite shapes | | | U561 |
| Converting units of volume | | | U468 |
| 3c Accuracy and Bounds | | | |
| Finding bounds for additions and subtractions | | | U587 |
| Finding bounds for multiplying and dividing | | | U587 |
| Problem solving with bounds | | | U587 |



| | | |
|--|---|-------|
| Unit 8: Transformations and Constructions | ✓ | SPARX |
| 8a Transformations | | |
| Translations | | U196 |
| Reflections | | U799 |
| Rotations | | U696 |
| Enlargement by a positive scale factor | | U519 |
| Enlargement by a negative scale factor | | U134 |
| Combining transformations | | U766 |
| 8b Constructions, Loci and Bearings | | |
| Nets of 3D shapes | | U761 |
| Plans and elevations | | U743 |
| Drawing and interpreting scale drawings | | U257 |
| Measuring and drawing bearings | | U525 |
| Calculating bearings | | U107 |
| Using a pair of compasses | | U678 |
| Constructing triangles | | U187 |
| Constructing bisectors of angles | | U787 |
| Constructing perpendicular bisectors and lines | | U245 |
| Mixed problems: constructing bisectors and perpendicular lines | | U979 |
| Constructing loci | | U820 |



Unit 9: Algebra

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9a. Solving Quadratics and Simultaneous Equations

| | |
|--|------|
| Factorise and solve quadratic equations | U228 |
| Factorise and solve quadratic equations – coefficient of x squared | U960 |
| Solve quadratic equations by completing the square | U589 |
| Solve quadratic equations using the quadratic formula | U665 |
| Form and solve quadratic equations | U150 |
| Solve simultaneous equations using elimination | U760 |
| Solve simultaneous equations using substitution | U757 |
| Solve simultaneous equations involving quadratics | U547 |
| Form and solve simultaneous equations | U137 |

9b. Inequalities

| | |
|--|------|
| Read and draw inequalities on number lines | U509 |
| Solve single inequalities | U759 |
| Solve inequalities with the variable on both sides | U738 |
| Solve double inequalities | U145 |
| Form and solve inequalities | U337 |



| Unit 10: Probability | ✓ | SPARX |
|---|---|-------|
| 10 Probability | | |
| Using probability phrases | | U803 |
| Writing probabilities as fractions | | U408 |
| Writing probabilities as fractions/decimals/percentages | | U510 |
| Probabilities of mutually exclusive events | | U683 |
| Expected results from repeated experiments | | U166 |
| Experimental probabilities | | U580 |
| Sample space diagrams | | U104 |
| Frequency trees | | U280 |
| Tree diagrams for independent events | | U729 |
| Tree diagrams for dependent events | | U558 |
| Using set notation | | U296 |
| Venn diagrams | | U476 |
| Venn diagrams with set notation | | U748 |
| Conditional probability from tables | | U246 |
| Conditional probability from tree diagrams | | U806 |
| Conditional probability from Venn diagrams | | U699 |



| Unit 11: Multiplicative Reasoning | | ✓ | SPARX |
|--|--|---|-------|
| 11 Direct and Inverse Proportion, Direct Proportional Graphs, Compound Measures, Repeated Proportional Change | | | |
| Solving direct proportional word problems | | | U721 |
| Solving inverse proportional word problems | | | U357 |
| Percentage change with a calculator | | | U671 |
| Compound interest calculations | | | U332 |
| Growth and Decay | | | U988 |
| Calculating with speed (incl. converting speed units) | | | U151 |
| Calculating with rates | | | U256 |
| Calculating with density (incl. converting density units) | | | U910 |
| Calculating with pressure (incl. converting pressure units) | | | U527 |
| Mixed problems: Calculating density and pressure | | | U842 |
| Interpreting direct proportion equations | | | U640 |
| Constructing direct proportion questions | | | U407 |
| Interpreting inverse proportion equations | | | U364 |
| Constructing inverse proportion equations | | | U138 |
| Graphs of direct and inverse proportion | | | U238 |



| Unit 12: Similarity and Congruence | | ✓ | SPARX |
|---|--|---|-------|
| 12 Similarity and Congruence in 2D and in 3D | | | |
| Understanding congruence | | | U790 |
| Congruent triangles | | | U866 |
| Understanding similarity | | | U551 |
| Finding unknown sides in similar shapes | | | U578 |
| Finding the perimeter and area of similar shapes | | | U630 |
| Finding the surface area and volume of similar shapes | | | U110 |
| Mixed problems: understanding similarity and congruence | | | U112 |



| Unit 13: Further Trigonometry, Pythagoras in 3D, Accuracy and Bounds | | ✓ | SPARX |
|--|--|---|-------|
| 13a Graphs of Trigonometric Functions | | | |
| Graphs of trigonometric functions | | | U450 |
| Translating trigonometric graphs | | | U598 |
| Reflecting trigonometric graphs | | | U487 |
| 13b Further Trigonometry | | | |
| Area of a triangle | | | U592 |
| Sine rule | | | U952 |
| Cosine rule | | | U591 |
| Trigonometry in 3D | | | U170 |
| Pythagoras in 3D | | | U541 |



| Unit 14: Further Statistics | | ✓ | SPARX |
|---|--|---|-------|
| 14a Collecting Data | | | |
| Types of data | | | U322 |
| Collecting and recording data using tables | | | U120 |
| Selecting sampling techniques | | | U162 |
| Designing and using questionnaires | | | U911 |
| Capture Recapture | | | - |
| 14b Cumulative Frequency, Box Plots and Histograms | | | |
| Drawing cumulative frequency graphs | | | U182 |
| Interpreting cumulative frequency graphs | | | U642 |
| Drawing box plots | | | U879 |
| Interpreting box plots | | | U837 |
| Comparing populations using box plots and cumulative frequency graphs | | | U507 |
| Drawing histograms with equal class widths | | | U185 |
| Drawing histograms with unequal class widths | | | U814 |
| Interpreting histograms | | | U983 |
| Calculating averages from histograms | | | U267 |



Unit 15: Equations and Graphs



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15 Quadratics, Expanding Triple Brackets, Sketching Graphs, Graphs of Circles, Cubes and Quadratics

| | | |
|---|--|------|
| Expand triple brackets | | U606 |
| Interpreting graphs of quadratic functions | | U667 |
| Solving quadratic equations graphically | | U601 |
| Finding the turning point of a quadratic graph by completing the square | | U769 |
| Graphs of cubic functions | | U980 |
| Solving simultaneous equations graphically | | U875 |
| Solve quadratic inequalities | | U133 |
| Graphs of inequalities | | U747 |
| Substituting into iterative formulae | | U434 |
| Finding approximate solutions to equations using iteration | | U168 |



| | | |
|---|---|-------|
| Unit 16: Circle Theorems and Circle Geometry | ✓ | SPARX |
| 16a Circle Theorems | | |
| Identifying parts of circles | | U767 |
| Angles subtended at the centre or circumference of a circle | | U459 |
| Angles in segments and cyclic quadrilaterals | | U251 |
| Circle theorems for chords and tangents | | U489 |
| Alternate segment theorem | | U130 |
| Mixed problems: circle theorems | | U808 |
| Proving circle theorems | | U807 |
| 16b Circle Geometry | | |
| Equations of circles | | U567 |
| Equations of tangents to a circle | | U567 |



Unit 17: More Algebra and Rationalising Denominators



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17 Changing the Subject of Formulae (More Complex), Algebraic Fractions, Solving Equation Arising from Algebraic Fractions, Rationalising Surds, Proof

| | | |
|--|--|------|
| Rationalising denominators containing a single term | | U707 |
| Rationalising denominators containing two terms | | U281 |
| Simplifying algebraic fractions by cancelling common factors | | U103 |
| Simplify algebraic fractions by factorising into one bracket | | U437 |
| Simplifying algebraic fractions by factorising into two brackets | | U294 |
| Multiplying algebraic fractions | | U457 |
| Dividing algebraic fractions | | U824 |
| Adding and subtracting algebraic fractions | | U685 |
| Solve equations with the variable in the denominator | | U505 |
| Changing the subject of a formula | | U556 |
| Writing algebraic proofs | | U582 |
| Substituting into functions | | U637 |
| Substituting into composite functions | | U895 |
| Finding composite functions | | U448 |
| Finding inverse functions | | U996 |



| | | |
|--|---|-------|
| Unit 18: Vectors and Geometric Proof | ✓ | SPARX |
| 18 Vectors and Geometric Proof | | |
| Understanding column vectors | | U632 |
| Adding and subtracting column vectors | | U903 |
| Multiplying column vectors by a scalar | | U564 |
| Solving geometric problems using vectors | | U781 |
| Geometric proof with vectors | | U560 |
| Identifying parallel vectors | | U660 |



| Unit 19: Proportion and Graphs | | ✓ | SPARX |
|---|--|---|-------|
| 19a Reciprocal and Exponential Graphs; Gradient and Area Under a Curve | | | |
| Graphs of reciprocal functions | | | U593 |
| Graphs of exponential functions | | | U229 |
| Growth and decay | | | U988 |
| Transforming graphs | | | U455 |
| Estimating areas under non-linear graphs | | | U882 |
| Estimating gradients of non-linear graphs | | | U800 |
| 19b Direct and Inverse Proportion | | | |
| Graphs of direct and inverse proportion | | | U238 |
| Constructing direct proportion equations | | | U407 |
| Constructing inverse proportion equations | | | U138 |