Curriculum Sequencing - Year 10

Unit: 10.1a PROPORTION		RATIO AND PROPORTION
	WHAT WE ARE STUDYING Working with fractions and ratios Equivalent ratios Scale factors for length, area and volume	

LINKS TO EARLIER TOPICS	**WHAT IT WILL HELP US LEARN**
Ratios; fractions; scale diagrams; surface area and volume; speed-distance-time; percentage changes	Solving geometrical and repeated proportional change problems using ratios

Key Skills:	R	A	G
Writing and simplifying ratios			
Using equivalent ratios to find unknown amounts			
Converting between ratios, fractions and percentages			
Write any ratio in the form 1:n or n:1			
Scale up appropriately when working with a unitary ratio.			
Sharing amounts in a given ratio			
Problem solving: Sharing amounts in a given ratio			
(Higher):			
Combining ratios			
Calculating with ratios and algebra			
Changing ratios			
Reading, converting and calculating with time			
Estimating and measuring			
Converting units of length, mass and capacity			
Converting units of area			
Converting units of volume			
Problem solving: Converting units of length, area and volume			
Using appropriate units			

WHY WE STUDY THIS	**KEY WORDS**	**SPARX**
to develop proportional thinking which links to real-life problems **YOU WILL USE THIS IN…** Banking, Finance, Professional chefs, Mathematics, Baking, Real estate workers, Retail banks, Stock brokers, Construction work, architecture and drafting	common fraction, common ratio, fraction, ratio, unit fraction, similar figures scale factor, scale, area, multiplier, volume	U753, U176 U577, U595 U921, U676 U865, U721 U357, U902 U102, U388 U248, U468 U663, U497 U687

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<tr><td colspan="2">Unit: 10.1b PROPORTION</td><td colspan="3">RATIO AND PROPORTION</td></tr>
<tr><td></td><td>WHAT WE ARE STUDYING

Direct and inverse proportion
Rates of Change
Percentage change incl. repeated percentage change</td><td colspan="3"></td></tr>
<tr><td>LINKS TO EARLIER TOPICS
Ratios; fractions; scale diagrams; surface area and volume; speed-distance-time; percentage changes</td><td colspan="4">WHAT IT WILL HELP US LEARN
Solving geometrical and repeated proportional change problems using ratios</td></tr>
<tr><td colspan="2">Key Skills:</td><td>R</td><td>A</td><td>G</td></tr>
<tr><td colspan="2">Solving direct proportion word problems</td><td></td><td></td><td></td></tr>
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<tr><td colspan="2">Interpreting direct proportion equations</td><td></td><td></td><td></td></tr>
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<tr><td colspan="2">Graphs of direct and inverse proportion</td><td></td><td></td><td></td></tr>
<tr><td colspan="2">Percentage change without a calculator</td><td></td><td></td><td></td></tr>
<tr><td colspan="2">Percentage change with a calculator</td><td></td><td></td><td></td></tr>
<tr><td colspan="2">Finding original values in percentage calculations</td><td></td><td></td><td></td></tr>
<tr><td colspan="2">Finding the percentage an amount has been changed by</td><td></td><td></td><td></td></tr>
<tr><td colspan="2">Simple interest calculations</td><td></td><td></td><td></td></tr>
<tr><td colspan="2">Compound interest calculations</td><td></td><td></td><td></td></tr>
<tr><td colspan="2">Growth and decay</td><td></td><td></td><td></td></tr>
<tr><td>WHY WE STUDY THIS

to develop proportional thinking which links to real-life problems

YOU WILL USE THIS IN…
Banking, Finance, Mathematics, Bakers, Real estate workers, Stock brokers, Weather forecasting, manufacturing, construction, healthcare, production, sports studies, environmental studies, banking, investments, analyst.</td><td>KEY WORDS

direct proportion, inverse proportion, conversion graphs, multiplier, reverse percentage, compound interest, simple interest, growth decay</td><td colspan="3">SPARX

U721, U357
U640, U407
U364, U138
U238, U773
U671, U286
U278, U533
U332, U988</td></tr>
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Unit: 10.2 SEQUENCES		ALGEBRA		
	WHAT WE ARE STUDYING Finding nth term of a sequence Using triangular, square, cube and Fibonacci numbers in sequences			
LINKS TO EARLIER TOPICS Model situations with formulae, generating sequences.	**WHAT IT WILL HELP US LEARN** Quadratic sequences and recursive formulae (iteration)			
Key Skills:		**R**	**A**	**G**
Term-to-term rules				
Substituting into position-to-term rules				
Position-to-term rules for arithmetic sequences				
Position-to-term rules for sequences of patterns				
Special sequences				
Position-to-term rules for geometric sequences				
Fibonacci style sequences				
WHY WE STUDY THIS Understanding different relationships and how they can be modelled. **YOU WILL USE THIS IN…** Engineers, natural scientists, software developers, tilers, food services	**KEY WORDS** term-to-term rule, linear, rule, sequence, arithmetic sequence, geometric sequence, nth term, common difference, pattern	**SPARX** U213 U530 U498 U978 U206 (H) U680 U958 U171		

Unit: 10.3a PROBABILITY CALCULATIONS FOR MORE THAN ONE EVENT	PROBABILITY

WHAT WE ARE STUDYING

Properties of mutually exclusive events
Relative frequency
Using two-way tables, tree diagrams and Venn diagrams for independent and dependent event.

LINKS TO EARLIER TOPICS

Venn diagrams, multiplying fractions, probability of single event

WHAT IT WILL HELP US LEARN

Probability and statistical distributions; GCSE Statistics

Key Skills:	R	A	G
Using probability phrases			
Writing probabilities as fractions			
Writing probabilities as fractions, decimals and percentages			
Probabilities of mutually exclusive events			
Expected results from repeated experiments			
Sample space diagrams			
Venn diagrams			
Venn diagrams with set notation			
Using set notation			
Frequency trees			
Tree diagrams for independent events			
Calculating experimental probabilities			

WHY WE STUDY THIS

to develop an understanding of probability and probabilistic thinking

YOU WILL USE THIS IN…

Statistical analysis, Data Science, Financial analysis, Brand optimisation, Genetics, Actuary

KEY WORDS

Probability, probability scale, independent events, mutually exclusive events, sample, frequency, Venn diagram, sets, intersection, union, tree diagram, random, fair

SPARX

U803
U408
U510
U683
U166
U104
U476
U748
U296
U280
U558
U580

10.3b PROBABILITY CALCULATIONS FOR MORE THAN ONE EVENT (Higher only)		PROBABILITY
	WHAT WE ARE STUDYING Two-way tables, tree diagrams and Venn diagrams to calculate conditional probability Using systematic listing strategies	
LINKS TO EARLIER TOPICS Venn diagrams, multiplying fractions, probability of single event	**WHAT IT WILL HELP US LEARN** Probability and statistical distributions; GCSE Statistics	

Key Skills:	R	A	G
Tree diagrams for dependent events			
Using the product rule for counting			
Conditional probabilities from tables			
Conditional probabilities from Venn diagrams			
Using the conditional probability formula			
Conditional probabilities from tree diagrams			

WHY WE STUDY THIS	KEY WORDS	SPARX
to develop an understanding of probability and probabilistic thinking **YOU WILL USE THIS IN…** Statistical analysis, Data Science, Financial analysis, Brand optimisation, Genetics, Actuary	Probability, probability scale, independent events, mutually exclusive events, sample, frequency, Venn diagram, sets, intersection, union, tree diagram, random, fair	U558 U729 U580 U369 U246 U699 U821 U806

10.4a NUMERACY AND ACURACY		NUMBER
	WHAT WE ARE STUDYING Rounding to a required degree of accuracy Higher: Working with upper and lower bounds Calculating with roots and indices Estimating powers and roots	
LINKS TO EARLIER TOPICS Place value, Rounding, Measurements, Recognising and using roots	**WHAT IT WILL HELP US LEARN** Accuracy, Recursive formulae (Iteration), Index laws, exact trig values, surds	

Key Skills:	R	A	G
Rounding integers			
Rounding decimals			
Rounding integers using significant figures			
Rounding decimals using significant figures			
Estimating calculations			
Finding error intervals			
Finding bounds for calculations (H)			
Truncating decimals			

Finding error intervals for truncated numbers Calculating with roots and powers Estimating roots and powers (H) Fractional indices (1/a) (H) Fractional indices (a/b) (H) Using standard form with positive indices Using standard form with negative indices			

WHY WE STUDY THIS Understanding how numbers can be represented in context	**KEY WORDS** truncate, significant figures, rounding, cube number, square number, index notation, square root, cube root, exponent, quotient, product	**SPARX** U480, U298 U731, U965 U225, U657 U587, U108, U301, U851 U299 (H) U985 (H) U772 (H) U235, U694 U330, U534
YOU WILL USE THIS IN… Science, Astronomy, Engineering, Science, Mathematics, Engineering, Computer programmers, structural engineers		

10.4b NUMERACY AND ACURACY		**NUMBER**
	WHAT WE ARE STUDYING Calculating in standard form Calculating with fraction Calculating with surds (higher only)	
LINKS TO EARLIER TOPICS Index laws, rounding, calculations with fractions	**WHAT IT WILL HELP US LEARN** Calculating in standard form, understand and use units of length, time, mass, rationalising surds, exact trig values	

Key Skills:	**R**	**A**	**G**
Multiplying and dividing numbers in standard form			
Adding and subtracting numbers in standard form			
Standard form with a calculator			
Finding fractions of shapes			
Constructing fractions			
Finding equivalent fractions			
Simplifying fractions			
Ordering fractions			
Adding and subtracting fractions			
Converting between mixed numbers and improper fractions			
Adding and subtracting mixed numbers			
Ordering fractions and mixed numbers			
Multiplying fractions			
Multiplying with mixed numbers			
Dividing fractions			
Dividing with mixed numbers			
Problem solving: Fractions and mixed numbers			
Multiplying and dividing surds (H)			
Simplifying surds (H)			
Adding and subtracting surds (H)			
Expanding brackets with surds (H)			
Rationalising denominators containing a single term (H)			
Rationalising denominators containing two terms (H)			

WHY WE STUDY THIS	KEY WORDS	SPARX
Understanding how numbers can be represented in context	Standard index form simplest form equivalent fraction improper fraction non-unit fraction reciprocal, Surd, Simplify, Rationalise	U330 U534 U264 U290 U161
YOU WILL USE THIS IN… Science, Mathematics, Engineering, Astronomy, Architecture		

10.5a LINEAR ALGEBRA				ALGEBRA
	WHAT WE ARE STUDYING Simplifying expressions involving indices and surds			
LINKS TO EARLIER TOPICS Expanding brackets, collecting like terms, indices, surds	**WHAT IT WILL HELP US LEARN** Accuracy with algebraic problems			

Key Skills:	R	A	G
Expand terms over a single bracket			
Simplify an expression by collecting like terms			
Factorise an algebraic expression involving a single bracket.			
Expand and simplify expressions containing brackets, such as $(x+3)(x-2)$			
Factorise a quadratic expression of the form x^2+bx+c.			
Factorise a quadratic expression that is a difference of two squares, e.g. x^2-49			
Factorise a quadratic expression of the form ax^2+bx+c, e.g. $2x^2+11x+12$ (H)			
Add algebraic fractions. (H)			
Subtract algebraic fractions (H)			
Simplify algebraic fractions (H)			

WHY WE STUDY THIS	KEY WORDS	SPARX
Develop accuracy in manipulating expressions	Coefficient, expression, brackets, simplify, term, index laws, index notation, factorise, factor, variable, binomial expression, expand, quadratic	U105, U662 U179, U768 U606 (H) U365, U178 U858 (H) U103 U437 (H), U294 (H) U685 (H) U457 (H) U824 (H)
YOU WILL USE THIS IN… Air traffic controller, dietician, market research analyst, technology, engineering, science		

10.5b LINEAR ALGEBRA		ALGEBRA
	WHAT WE ARE STUDYING Modelling real-life situations as expressions, formulae or equations Finding the equations of straight lines Modelling situations as simultaneous equations	
LINKS TO EARLIER TOPICS Expanding brackets, collecting like terms, indices, surds	**WHAT IT WILL HELP US LEARN** Accuracy with algebraic problems	

Key Skills:	R	A	G
Write and solve an equation to a worded question			
Express a situation or procedure as a formula			
Substitute values into a formula			
Rearrange a formula			
Identify the gradient and *y*-intercept from a graph and from *y=mx+c*			
Find the gradient of a line given two points on the line			
Write the equation of a line given a point on the line and the gradient			
Identify parallel lines by recognising their gradients			
Write an equation for a line that is parallel			
Identify perpendicular lines by recognising their gradients (H)			
Write an equation for a line that is perpendicular to it (H)			
Solve simple simultaneous linear equations by substitution			
Solve simultaneous linear equations by elimination -no manipulation			
Solve simultaneous linear equations by elimination when one equation must be manipulated			
Solve simultaneous linear equations when I need to manipulate both equations.			
Translate problems into a pair of simultaneous linear equations.			
Interpret the solutions to a pair of simultaneous equations in context.			
Solve or estimate solutions to simultaneous equations graphically.			

WHY WE STUDY THIS Understand how we can use algebra to model graphs **YOU WILL USE THIS IN…** Financial analyst, computer programmer, research scientist, engineer, architect and builder, Budget analyst, auditors, accountants, insurance underwriters, loan officers	**KEY WORDS** Expression, equations, solve, formula, substitute, subject, intercept, coordinate, gradient, perpendicular, parallel, Linear, simultaneous equations, graph	**SPARX** U755, U325 U870, U505 U599, U789 U933, U889 U741, U315 U669, U477 U848, U377 U898 (H) U760 U757, U547 U836

10.5c LINEAR ALGEBRA (Higher only)		ALGEBRA
	WHAT WE ARE STUDYING Using Iteration to find approximate values	
LINKS TO EARLIER TOPICS Expanding brackets, collecting like terms, indices, surds	**WHAT IT WILL HELP US LEARN** Accuracy with algebraic problems	

Key Skills:	R	A	G
Solve an equation to a given degree of accuracy using trial and improvement. Use recursive formulae to find approximate solutions. Use suffix notation in recursive formulae.			

WHY WE STUDY THIS	**KEY WORDS**	**SPARX**
To understand different ways of approximating answers that develop a deeper understanding **YOU WILL USE THIS IN…** Engineers, scientists, product testing, marketing	Quadratic, equation, decimal places, approximation, function, formula, recursive formula	U434 U168

10.6a FUNCTIONS		ALGEBRA
	WHAT WE ARE STUDYING Working with number machines, function notation and composite and inverse functions Exact trigonometric values	
LINKS TO EARLIER TOPICS Dividing, formulae, manipulating expressions, Pythagoras and trigonometry, surds, fractions	**WHAT IT WILL HELP US LEARN** Composite and inverse functions, Solving trigonometry problems without a calculator	

Key Skills:	R	A	G
Complete a number machine given a function			
Write the function given a number machine			
Use inverse operations to find the input of a number machine.			
Express a function using function notation			
Substitute values into a function given in function notation			
Solve equations given using function notation			
Understand and use function notation to find the value of composite functions (H)			
Write expressions for inverse functions using function notation (H)			
Recall the exact values of sin, cos and tan for 0, 30, 45, 60, and 90 degrees			
Solve problems involving the exact values of sin, cos and tan for 0, 30, 45, 60, and 90 degrees			

WHY WE STUDY THIS	KEY WORDS	SPARX
Understanding how functions can be used to develop our understanding of algebra, Understanding the links to trigonometric graphs	Function, inverse operation, relationship, substitute, solve, Trigonometric function, tangent, sine, cosine, right angle	U637 U895 (H) U448 (H) U996 (H) U605 U627 U319 (H)
YOU WILL USE THIS IN…		
Software designer, web development, data science, UX/UI design, architects, surveyors, astronauts, physicists, engineers		

10.6b FUNCTIONS		ALGEBRA
	WHAT WE ARE STUDYING Sketching graphs (linear, quadratic, cubic, reciprocal, exponential, sin, cos, tan)	
LINKS TO EARLIER TOPICS Plotting graphs, substitution, table of values	**WHAT IT WILL HELP US LEARN** Sketching graphs of different functions	

Key Skills:	R	A	G
Create a table of values and plot graphs of quadratic functions			
Create a table of values and plot graphs of cubic functions			
Use quadratic and cubic graphs to find values			
Recognise simple translations of $y=x^2$ (H)			
Recognise simple translations of $y=x^3$ (H)			
Recognise reciprocal graphs and draw reciprocal graphs by plotting			
Interpret reciprocal graphs			
Recognise exponential graphs and draw exponential graphs by plotting			
Interpret exponential graphs			
Sketch the graph of $y=sin(x)$ (H)			
Sketch the graph of $y=cos(x)$ (H)			
Sketch the graph of $y=tan(x)$ (H)			
Use the graphs of sine, cosine and tangent to solve for multiples values of x in the range 0° to 360° (H)			

WHY WE STUDY THIS	KEY WORDS	SPARX
How different functions are represented and how they relate to real-life situations	Function, cubic, x-axis, y-axis, quadratic, table of values, graph, table, reciprocal, tangent, sine, cosine	U789 U741 U989 U667 U769 (H) U980 U593 U229 (H) U450 (H) U598 (H) U487 (H) U455 (H)
YOU WILL USE THIS IN…		
Aeronautical engineer, financial analyst, experimental physicist, computer programmer, research scientist, statistical analyst		

10.6c FUNCTIONS		ALGEBRA
	WHAT WE ARE STUDYING Finding approximate solutions from graphs and sketching translations and reflections of functions	
LINKS TO EARLIER TOPICS Plotting graphs, quadratic, cubic, reciprocal, exponential	**WHAT IT WILL HELP US LEARN** Model real-life problems using graphs	

Key Skills:	R	A	G
Plot and interpret graphs of reciprocal functions in context			
Plot and interpret graphs of exponential functions in context			
Plot a distance-time graph in context			
Interpret a distance-time graph in context			
Recognise a translation of a function (H)			
Translate a function in both the *x* and *y* direction given directions in words or vector form (H)			
Understand a translation in function notation (H)			
Write down the function of the translation given the original function (H)			
Reflect functions in the *x*- and *y*-axis (H)			
Recognise a reflection (H)			
Find the function of a reflection given the original function (H)			
Use function notation, $-f(x)$ and $f(-x)$, to represent reflections (H)			
Sketch the image of a function when asked to perform two transformations (H)			

WHY WE STUDY THIS	KEY WORDS	SPARX	
How different functions are represented and how they relate to real-life situations	Function, cubic, x-axis, y-axis, quadratic, table of values, graph, table, reciprocal, tangent, sine, cosine	U652 U638 U862 U896 U403 U914 U462 U966	U937 U980 U593 U229(H) U598(H) U487(H) U455(H)
YOU WILL USE THIS IN… Aeronautical engineer, financial analyst, experimental physicist, computer programmer, research scientist, statistical analyst			

10.7A CIRCLES (Higher only)		GEOMETRY
	WHAT WE ARE STUDYING Circle Theorems	
LINKS TO EARLIER TOPICS Circle properties, area and circumference of circles and sectors	**WHAT IT WILL HELP US LEARN** Geometrical reasoning and setting up proofs	

Key Skills:	R	A	G
Identify the circumference, radius and diameter on a circle, an arc, a chord, a tangent, a sector and segment on a circle			
Understand the difference between major arcs, segments and sectors and minor arcs, sectors and segments			

Construct a circle and draw a radius, diameter, chord or tangent on it Identify and use the circle theorem that states: Angles in the same sector are equal Angles subtended by an arc at the centre of the circle are twice the angle subtended at the circumference The angle subtended at the circumference in a semi-circle is a right angle Opposite angles in a cyclic quadrilateral are equal The perpendicular from the centre to a chord bisects the chord. A tangent at any point of a circle meets a radius at 90 degrees Tangents from an external point are equal in length Alternate segment circle theorem Construct simple proofs of circle theorems Solve problems that involve a combination of circle theorems within the same problem Recall and state, using correct mathematical terms, each of the circle theorems Construct an inscribed polygon by equal divisions of a circle			

WHY WE STUDY THIS Develop an understanding of geometrical proofs	**KEY WORDS** Chord, arc, segment, tangent, radius, semicircle, diameter, circumference, sector	**SPARX** U767 U459 U251 U489 U130 U808 U807
YOU WILL USE THIS IN… Engineer, CAD engineer, Urban planner, mechanical engineer		

107B CIRCLES (Higher only)				**GEOMETRY**
	WHAT WE ARE STUDYING Using the equation of a circle and finding the equation of the tangent			
LINKS TO EARLIER TOPICS Pythagoras, equations of parallel and perpendicular lines	**WHAT IT WILL HELP US LEARN** Finding the equation of a tangent			
Key Skills:		**R**	**A**	**G**
Draw the graph of a circle given its equation Identify the equation of a circle from its graph Solve simultaneous equations to identify the points of intersection between a line and a circle Calculate the length of chord between two points on a circumference Find the gradient of a radius when given the centre and a point on the circumference Find the gradient of a tangent, given the gradient of the radius Find the equation of a tangent through a point on the circumference in the form of $y=mx+c$ when given the centre of a circle				

WHY WE STUDY THIS	KEY WORDS	SPARX
Develop and algebraic link to a geometrical problem	Simultaneous equation, chord, line, quadratic, equation, intersection, radius, graph, circle, tangent, gradient	U567
YOU WILL USE THIS IN… Engineer, mathematician, architect,		

10.8a TRIGONOMETRY		GEOMETRY
	WHAT WE ARE STUDYING Trigonometry in right-angled triangles	
LINKS TO EARLIER TOPICS Pythagoras, sin, cos, tan	**WHAT IT WILL HELP US LEARN** Further trigonometry	

Key Skills:	R	A	G
Use Pythagoras' Theorem in 2-D to find missing lengths of right angled triangles			
Use Pythagoras' Theorem in 3-D to find missing lengths			
Use the sine ratio to find missing lengths in right-angled triangles			
Use the sine ratio to find missing angles in right-angled triangles			
Use the cosine ratio to find missing lengths in right-angled triangles			
Use the cosine ratio to find missing angles in right-angled triangles			
Use the tangent ratio to find missing lengths in right-angled triangles			
Use the tangent ratio to find missing angles in right-angled triangles			
Identify when to use Pythagoras' Theorem			
Use Pythagoras' Theorem accurately to find missing lengths in right-angled triangles			
Identify which trigonometric ratio or ratios is appropriate for use in solving a given problem			
Use *sin*, *cos* or *tan* to accurately solve problems			
Identify when to use Pythagoras' Theorem and which trigonometric ratio(s) to use in order to solve problems involving bearings			

WHY WE STUDY THIS	KEY WORDS	SPARX
Develop and advanced understanding of trigonometry	Pythagoras' Theorem, hypotenuse, sine, cosine, tangent, right-angle	U605 U283 U545 U627 U319 (H) U967 U170 (H) U164
YOU WILL USE THIS IN… Architects, surveyors, astronauts, physicists, engineers		

10.8B TRIGONOMETRY (Higher only)		GEOMETRY
	WHAT WE ARE STUDYING Sine and Cosine Rule and area of a triangle	
LINKS TO EARLIER TOPICS Pythagoras, sin, cos, tan	**WHAT IT WILL HELP US LEARN** Further trigonometry for non-right-angled triangles	

Key Skills:	R	A	G
Use the sine rule to find a missing angle in a triangle that is not right-angled Use the sine rule to find a missing side in a triangle that is not right-angled Use the cosine rule to find a missing angle in a triangle Use the cosine rule to find a missing side in a triangle Use the sine and cosine rules to solve problems involving triangles that are not right-angled Use the sine and cosine rule to solve problems involving bearings Find the area of a triangle using trigonometry Solve problems involving the area of a triangle using trigonometry. Identify similar shapes Use trigonometry to solve problems with similar shapes Solve problems involving trigonometry in similar shapes Use bearings to specify direction Make scale drawings using bearings Work out bearings from a given point			

WHY WE STUDY THIS	KEY WORDS	SPARX
Develop and advanced understanding of trigonometry	Scalene triangle, sine, cosine, sine rule, cosine rule, similar figures, degree, clockwise, bearing	U952 U591 U592 U790 U551 U525 U107 U471 U887
YOU WILL USE THIS IN… Architects, surveyors, astronauts, physicists, engineers		

10.10.9 MEASURES AND UNITS		GEOMETRY
	WHAT WE ARE STUDYING Converting between units of measure and compound measures	
LINKS TO EARLIER TOPICS Time, km to miles, length, area, mass and capacity	**WHAT IT WILL HELP US LEARN** Convert compound units and understand the S.I. system	

Key Skills:	R	A	G
Convert between metric units of length and between metric and imperial units of length Convert between metric units of area and between metric and imperial units of area Recognise the difference between a volume and a capacity Convert between metric units of volume and capacity and between metric and imperial units of volume and capacity Convert between units of time Explain what is meant by a compound measure Convert from one metric compound measure to another Convert some metric compound measures to imperial compound measures Describe the context from the compound measures used Explain my results in context from calculations using compound measures			

WHY WE STUDY THIS	KEY WORDS	SPARX
YOU WILL USE THIS IN… Measurement technician, instrumentation technician, controls	Gallon, kilogram, weight, milli-, centi-kilometre, square millimetre, hour, capacity, litre, metre, second, area, ounce, distance, imperial unit, length, yard, square metre,	U902 U102 U388

engineer, precision instrument and equipment repair technician, meteorologist,	convert, pint, mass, inch, pound, unit, gram, volume, day, year, foot	U248 U468 U663 U497 U151 U256 U910 U527 U842

Unit: 10.10a QUADRATIC EQUATIONS		**ALGEBRA**		
	WHAT WE ARE STUDYING Solving quadratic equations Understanding roots, intercept and turning points of quadratic functions			
LINKS TO EARLIER TOPICS Factorising, substituting, plotting	**WHAT IT WILL HELP US LEARN** Understanding of solving quadratic equations in different contexts			
Key Skills:		**R**	**A**	**G**
Recognise quadratic equations				
Solve a quadratic equation by factorising				
Solve a quadratic equation by factorising when it is necessary to rearrange the equation Find approximate solutions to a quadratic equation from a graph. Complete the square of a quadratic expression (H)				
Solve a quadratic equation by completing the square (H)				
Solve an equation using the quadratic formula when the equation is of the form $ax^2+bx+c=0$ (H)				
Rearrange an equation when necessary in order to find the values of a, b and c (H)				
Use the quadratic formula to solve an equation that has been rearranged (H) Write and solve a quadratic equation in context (H) Identify the y-intercept of a quadratic function				
Interpret the y-intercept of a quadratic function Interpret the x intercepts on a graph				
Interpret the roots of a quadratic function given a graph in context Find the x-intercepts of a quadratic function by setting $y=0$ Explain what the turning point of a quadratic function represents				
Interpret the turning point on a graph given in context Find the turning point of a quadratic function by completing the square (H)				
Sketch a quadratic function by finding the y-intercept, roots, and turning point				
WHY WE STUDY THIS To develop links to earlier learning and move towards more abstract	**KEY WORDS** Solve, quadratic, factorise, product, solution, roots, parabola	**SPARX** U228, U960 (H) U589 (H) U665 (H) U150 (H) U601, U989 U667, U769 (H)		
YOU WILL USE THIS IN… Engineers, mathematicians, physicists, astronomers, military and policing, risk analysts				

10.10B QUADRATIC EQUATIONS		ALGEBRA		
	WHAT WE ARE STUDYING Solving two simultaneous equations in two variables			
LINKS TO EARLIER TOPICS Graphing simultaneous equations, sketching quadratic graphs	**WHAT IT WILL HELP US LEARN** Solving no- linear relationships			
Key Skills:		**R**	**A**	**G**
Find solutions to simultaneous equations by identifying the intersection between lines on a graph Find approximate solutions to simultaneous equations involving a quadratic on a graph Graph a line and a parabola in order to approximate solutions to simultaneous equations involving a quadratic Solve simultaneous equations involving a quadratic in context graphically (H) Solve simultaneous equations involving a quadratic algebraically by factorising (H) Solve simultaneous equations involving a quadratic algebraically by completing the square (H) Solve simultaneous equations involving a quadratic algebraically by using the quadratic formula (H) Write and solve a pair of simultaneous equations where one is linear and one is quadratic (H)				
WHY WE STUDY THIS Links to higher order equations **YOU WILL USE THIS IN…** Engineers, mathematicians, physicists, astronomers, military and policing, risk analysts	**KEY WORDS** Linear, simultaneous equations, solve, quadratic, factorise, completing the square	**SPARX** U547 (H) U836 U875 (H) U137		