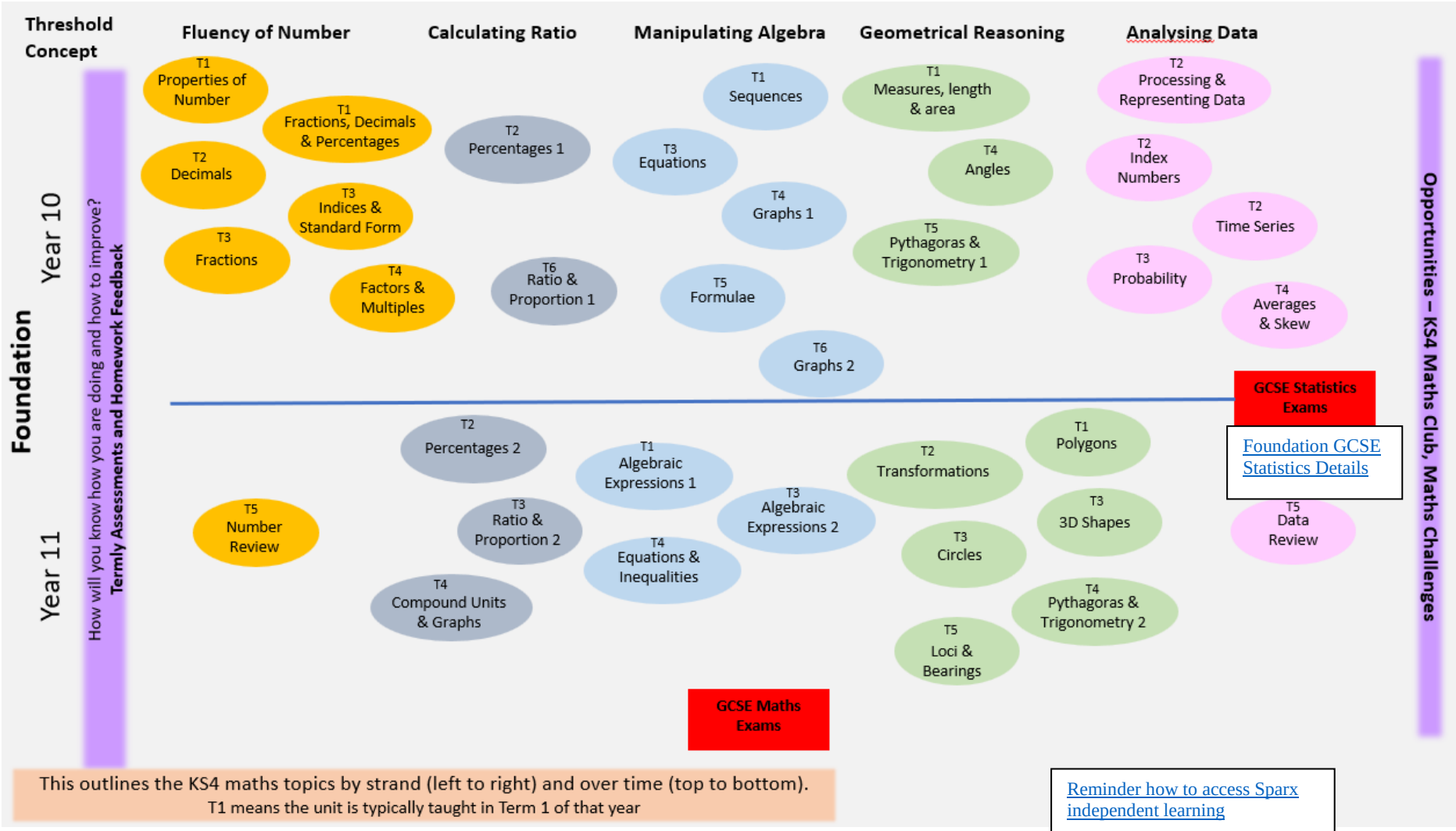
GCSE Maths Foundation – Click the topic for details



N-10 Properties of Number

• Identify the value of digits in a decimal or whole number. • Understand and use positive numbers and negative integers, both as positions and translations on a number line. • Interpret scales on a range of measuring instruments. • Indicate given values on a scale. • Round to the nearest integer. • Round numbers to a given power of 10. • Round to a given number of decimal places. • Round to any given number of significant figures. • Estimate answers to calculations using rounding. • Use inequality notation to specify simple error intervals due to rounding.	Sparx Codes: U108 U225 U298 U435 U480 U600 U657 U731 U922 U965

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N-11 Fractions, Decimals and Percentages

• Find equivalent fractions • Write a fraction in its simplest form. • Find a fraction of a quantity. • Convert between fractions, decimals and percentages. • Recognise that recurring decimals are exact fractions and that some exact fractions are decimals.	Sparx Codes: U163 U594 U646 U679 U704 U746 U881 U888 U916

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N-12 Decimals

• Understand place value. • Identify the value of digits in a decimal. • Add, subtract, multiply and divide decimals. • Round to a given number of decimal places.	Sparx Codes: U293 U478 U868

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N13 -Indices & Standard Form

• Use index notation for squares, cubes and powers of 10. • Use index notation for multiplication and division of integer powers. Must be confident with numerical and algebraic base numbers and negative powers. • Simplify expressions with powers of zero and negative powers. • Writing large numbers in standard form • Writing small numbers in standard form. • Multiply and Divide in Standard Form	U235 U694 U851 U330 U534 U264 U161

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N - 14 Fractions

• Find equivalent fractions. • Write a fraction in its simplest form. • Convert between mixed numbers and improper fractions. • Compare fractions. • Add, subtract, multiply and divide fractions. • Able to complete fraction calculations on a calculator including converting from mixed to improper and the four operations. • Find reciprocals	Sparx Codes: U163 U224 U439 U475 U538 U544 U646 U679 U692 U704 U736 U746 U793 U874 U881 U916

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N-15 Factors & Multiples

• Find the prime number decomposition of positive integers. • Find the HCF and LCM of two numbers.	Sparx Codes: U221 U236 U476 U529 U739 U751 U250

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R7- Percentages 1

• Finding a percentage of a quantity using a non-calculator approach. • Finding percentage increases and decrease using a non-calculator approach. • Use a multiplier to increase or decrease by a percentage in any scenario where percentages are used.	Sparx Codes: U278 U349 U554 U671 U773

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R8 Ratio & Proportion

• Use ratios. • Write ratios in their simplest form. • Divide a quantity in a given ratio. • Solve a ratio problem in context. • Able to use the unitary method to solve real-life proportion problems. • Identify and work with fractions in ratio problems.	Sparx Codes: U687 U557 U921 U865 U721 U357 U640 U364

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R9- Percentages 2

• Use percentages to solve problems. • Use percentages in real-life situations (VAT, value of profit or loss, simple interest, income tax calculations). • Write a number as a percentage of another. (non calc and calc) • Using percentages to calculate simple interest. • Calculating compound interest including depreciation using the formula. • Comparing deals involving both simple and compound interest. • Reverse Percentages	Sparx Codes: U339 U554 U671 U773 U278 U533 U332 U286

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R10- Ratio & Proportion 2

• Use ratios. • Write ratios in their simplest form. • Divide a quantity in a given ratio. • Solve a ratio problem in context. • Able to use the unitary method to solve real-life proportion problems. • Identify and work with fractions in ratio problems. • Solving inverse proportion problems •	Sparx Codes: U687 U557 U176 U921 U865 U721 U357 U640 U364 U238

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R11- Compound units & graphs

• Interpret straight-line graphs for real-life situations. • Interpret distance-time graphs. • Interpret information presented in a range of linear and non-linear graphs. • Calculate speed and density in numerical and algebraic contexts. • Interpret the gradient as a rate of change. • Find the density of a shape. • Calculate the pressure on an area by a force.	Sparx Codes: U151 U462 U966 U910 U527 U842

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A9 Sequence

Generate arithmetic sequences of numbers, squared integers and sequences derived from diagrams. Write the term-to-term definition of a sequence in words. Identify which terms cannot be in a sequence. Find the n^{th} term of an arithmetic sequence. Use the n^{th} term of an arithmetic sequence. Continue a Fibonacci sequence. Continue a simple geometric sequence.	Sparx Codes: U213 U498 U530 U680 U958

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A10- Equations

• Solve linear equations, with integer coefficients, in which the unknown appears on either side or on both sides of the equation. • Solve linear equations in one unknown, with integer or fractional coefficients.	Sparx Codes: U325 U505 U755 U870

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A11- Graphs 1

• Use the axes and coordinates to specify points in all four quadrants in 2D. • Find the coordinates of the midpoint of a line segment. • Draw, label and scale axes. • Plot and draw straight lines of the form y = ax + b. • Plot and draw straight lines of the form y = -ax + b (y = b – ax). • Find the gradient of the straight line from the graph.	Sparx Codes: U315 U377 U477 U669 U741 U789 U848 U933

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A12- Formulae

• Use formulae from mathematics and other subjects expressed initially in words and then using letters and symbols. • Substitute positive and negative numbers into expressions such as $3x^2 + 4$ and $2x^3$. • Select an expression / equation / formula from a list. • Interpret simple expressions as functions with inputs and outputs.	Sparx Codes: U144 U201 U585 U976

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A13- Graphs 2

• Interpret straight-line graphs for real-life situations. • Interpret information presented in a range of linear and non-linear graphs. • Generate points and plot points of simple quadratic functions. • Find approximate solutions of linear and quadratic equations from the graph of the corresponding function. • Interpret the gradient as a rate of change.	Sparx Codes: U315 U477 U593 U667 U848 U980 U989

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A14 - Algebraic Expressions 1

• Manipulate algebraic expressions by collecting like terms. Manipulate algebraic expressions by collecting like terms • Multiply a single algebraic term over a bracket • Factorise algebraic expressions by taking out common factors • Distinguish between equation, formula, expression and identity • Factorise quadratic expressions of the form x^2+bx+c • Factorise quadratic expressions that are the difference of two squares.	Sparx Codes: U105 U178 U179 U365 U768

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A15 Algebraic Expressions 2

• Manipulate algebraic expressions by collecting like terms. Manipulate algebraic expressions by collecting like terms • Multiply a single algebraic term over a bracket • Factorise algebraic expressions by taking out common factors • Distinguish between equation, formula, expression and identity • Factorise quadratic expressions of the form x^2+/-bx+/-c • Factorise quadratic expressions that are the difference of two squares. • Solving equations by factorisation	Sparx Codes: U178 U228 U963

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A16- Equations & Inequalities

• Solve simple linear inequalities in one variable and represent the solution set on a number line. • Use the correct notation to show inclusive and exclusive inequalities. • Change the subject of a formula where the variable appears once. • Solve a pair of simultaneous equations using an algebraic approach	Sparx Codes: U137 U145 U181 U191 U337 U509 U675 U738 U757 U759 U760 U836

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G12- Measures & Area

- Convert metric units to metric units (equivalents should be known). - Find the perimeter of rectangles, triangles and shapes - Find the area of rectangles, triangles and compound shapes - Find the area of a trapezium. - Find the area of a parallelogram. - Find the surface area of a prism. - Volume and Surface Area of Cuboids	Sparx Codes: U902 U388 U226 U945 U575 U424 U265 U993 U970 U343 U786 U929

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G13- Angles

• measure and draw lines and angles. • angle types and estimating angle sizes including • identifying parallel and perpendicular lines. • Distinguish between acute, obtuse, reflex and right angles. • Distinguish between scalene, equilateral, isosceles and right-angled triangles. Recall and use properties of: • Estimate sizes of angles. • Mark perpendicular and parallel lines on a diagram. • Understand and use angle properties of parallel lines. • Give reasons for angle calculations.	***Sparx Codes:*** ***U730*** ***U390*** ***U628*** ***U732*** ***U655*** ***U826*** ***U329***

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G14- Pythagoras' Theorem & Trigonometry 1

• Understand, recall and use Pythagoras' theorem in 2D. • Calculate the length of a line segment. • Able to find a missing angle using trigonometry	Sparx Codes: U385 U828 U605 U283 U545 U627

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G15- Polygons

• Calculate the sums of the interior angles of a polygon • Properties of angles on a straight line, in a triangle and in a quadrilateral. • Calculate and use sum of exterior angles in regular polygons. Use this to find the interior angle. • Understand congruent shapes and able to identify congruent triangles using SSS/ASA/SAS/RHS criteria • Find missing sides and angles in shapes that are mathematically similar.	Sparx Codes: U390 U628 U732 U427 U790 U866 U112 U578

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G16-

• Describe and transform 2D shapes using single rotations, reflections, translations, enlargements using a positive scale factor. • Describe and transform 2D shapes using combined rotations, reflections, translations or enlargements. • Distinguish properties that are preserved under particular transformations.	Sparx Codes: U196 U799 U696 U519 U766 U632 U903 U564

Transformations

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G17- 3D Shapes

• Find the volume and surface area of a prism, including a triangular prism, cube and cuboid.
• Know the terms face, edge and vertex.
• Draw sketches of shapes.
• Identify and name common solids.
• Use 2D representations of 3D shapes.
  - Using isometric grids.
  - Be able to find the surface area of any cube and cuboid. Compare the surface area of two different cuboids.
	Sparx Codes:
	U719U743
	U786
	U174
	U543
	U468
	U929

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G18- Circles

• Recall the definition of a circle and name and draw parts of a circle. • Draw a circle given the radius or diameter. • Recall and use the formulae for the circumference and areas enclosed by a circle. • Use π = 3.142 or use the π button on a calculator. • Find the perimeters and areas of semi-circles and quarter circles. • Find the volume and surface area of a cylinder. • Working in terms of pi. • Finding the surface area and volume of pyramids, cones and spheres from a given formula.	Sparx Codes: U767 U604 U950 U221 U373 U174 U484 U915 U116 U617 U929 U259 U871 U523 U893

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G19-Pythagoras and Trigonometry 2

• Able to find a missing angle using trigonometry • Able to find a missing side using trigonometry • Know exact values of sin, cos and tan for 0°, 30°, 45°, 60° and 90°.	Sparx Codes: U385 U828 U605 U283 U545 U627

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G20- Loci

- Be able to construct SSS, SAS and ASA type triangles from given information. • Find and describe regions satisfying a combination of loci (restricted to two dimensions only). • Use straight edge and a pair of compasses to do standard constructions. • Draw and construct diagrams from given instructions. - Know that the perpendicular distance is the shortest distance - Know how to use a compass to work out bearings to 3 figures. - Be able to work out bearings using angles on parallel lines.	Sparx Codes: U187 U787 U245 U979 U820 U525 U107

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S-10 Processing and Representing Data (Year 10)

• Draw and interpret cumulative frequency step polygons for discrete data • • Draw and interpret cumulative frequency diagrams for grouped data • Calculate and use frequency density to draw histograms with equal class widths. • Interpret and compare data sets displayed in histograms with equal class widths. • Draw and interpret Frequency Polygon Graphs and be able to spot misconceptions.	Sparx Codes: U840 U182 U642 U185

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S-12 Time Series (Year 10)

• Draw and interpret line graphs and time series graphs. • Know that a trend line shows the general trend of data and interpret a rising, falling or level trend Identify general trends and explain this by using seasonal variation on a time series graph (e.g. patterns that occur during the week, or patterns that occur during each quarter of the year) • Be able to calculate moving averages (3, 4 or more point moving averages). • Draw trend lines through moving averages on a time series graph and use inspection to interpret them.	Sparx Codes: No Sparx Codes – See separate Stats link

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S-11 Index Numbers (Year 10)

• Calculate and interpret simple index numbers; • Have an understanding of the retail price index (RPI), consumer price index (CPI) and gross domestic product (GDP) and other index numbers in context; • Calculate and interpret rates of change over time such as birth and death rates. • Interpret data related to rates of change over time when given in graphical form • Calculate and interpret rates of change over time from tables using context specific formula	Sparx Codes: No Sparx Codes See separate Stats link

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S-13 Probability (Year 10)

• Compare expected frequencies and actual frequencies • Understand that experimental probability will tend towards theoretical probability as the number of trials increases • Comment on the differences between experimental and theoretical probabilities • Use sample space diagrams to represent all the different outcomes. • Use sample space diagrams to calculate probabilities. • Determine and interpret relaive and absolute risk as a probability • Draw a tree diagram • Use a tree diagram to calculate probabilities • Understand what it means for two events to be conditional • Calculate conditional probabilities using a tree diagram • Calculate conditional probabilities using a Two-way Table or using a Venn Diagram. • Use the formula for conditional probability	Sparx Codes: U408 U510 U683 U166 U104 U280 U558 U729 U580 U476 U748 U699 U821

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S-14 – Averages and Skew (Year 10)

• Calculate Averages and Spread from discrete data. • Calculate the range, quartiles and interquartile range of grouped data • Calculate percentiles • Drawing box plots • Interpreting box plots including skew • Determine skewness	Sparx Codes: U526 U456 U260 U291 U879 U837 U507 U185

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