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| **Subject** | **Year 10 Foundation Threshold Concepts – Autumn Term** | **How to support students’ learning** |
| Mathematics | **Collecting, Organising, Presenting and Analysing Data**   * Understand terms sampling and bias * Calculate averages and range for ungrouped data in lists and frequency tables * Find averages from diagrams * Interpret and construct pie charts * Calculate averages and range for grouped data in lists and frequency tables * Interpret and construct line graphs for time series and identify trends * Understand the properties of populations or distributions from a sample or summary statistics. * Recognise graphical misrepresentation through incorrect scales, labels etc.   **Primes, Factors and Multiples**   * Find the lowest common multiple * Find the highest common factor * Find prime numbers * Perform prime factor decomposition * Find the highest common factor and lowest common multiple using prime factor decomposition   **Accuracy and Rounding**   * Round integers * Round decimals * Round integers using significant figures * Round decimals using significant figures * Find error intervals   **Algebraic Manipulation**   * Simplify expressions * Expand single brackets * Expand double brackets * Recognise and use difference of two squares * Factorise into one bracket * Factorise quadratic expressions * Substitute numbers into expressions and formulae * Substitute numbers into more complex formulae, including kinematic formulae * Rearrange formulae to change the subject * Formulate simple formulae and expressions from real-world contexts.   **Mensuration**   * Calculate perimeter * Calculate area * Calculate arc lengths and area of a sector * Calculate surface area and volume of cuboids and other prisms * Calculate surface area and volume of pyramids, spheres, cones and simple composite shapes * Use Pythagoras' theorem in 2D * Apply Pythagoras' theorem in 2D * Understand the terms sin, cos and tan * Find unknown sides in right-angled triangles * Find unknown angles in right-angled triangles   **Graphs**   * Find the equation of straight-line graphs graphically * Find the equation of straight-line graphs from one point and a gradient * Find the equation of straight-line graphs from two points * Recognise the shape of different types of non-linear graphs * Plot simple quadratic functions * Plot simple polynomial and reciprocal graphs using a table of values | * Encourage your child to look at real-life graphs and tables of data * Discuss applications of questionnaires * Encourage your child to have the correct equipment for lessons, e.g. a pencil, ruler, protractor * Use [www.sparx.com](https://sparxmaths.com/)for support if needed. Teachers will have provided your child with a login and password * Encourage your child to show all their working out. If they have homework online, then encourage them to write down all their working out in their exercise books * Encourage your child to learn their times tables, prime numbers below 100 and square numbers up to 225 (152) * Use [www.sparx.com](https://sparxmaths.com/)for support if needed. Teachers will have provided your child with a login and password * Encourage your child to show all their working out. If they have homework online, then encourage them to write down all their working out in their exercise books * Encourage your child to understand the base 10 decimal place value system * Discuss applications of the base 10 decimal system, e.g. using money * Discuss with them situations where numbers have been rounded, e.g. football crowds, newspaper headlines * Use [www.sparx.com](https://sparxmaths.com/)for support if needed. Teachers will have provided your child with a login and password * Encourage your child to show all their working out. If they have homework online, then encourage them to write down all their working out in their exercise books * Encourage your child to practise their algebra skills and multiples and factors of numbers * Discuss how to substitute and use real-life formulas, e.g. cooking instructions based on weight * Encourage your child to have the correct equipment for lessons, e.g. a calculator * Use [www.sparx.com](https://sparxmaths.com/)for support if needed. Teachers will have provided your child with a login and password * Encourage your child to show all their working out. If they have homework online, then encourage them to write down all their working out in their exercise books * Encourage your child to learn formulas for calculating the areas of basic 2D shapes, e.g. rectangles, triangles, parallelograms, trapeziums * Discuss 3d shapes in real-life, e.g., smarties tubes are hexagonal prisms, the Egyptian Pyramids * Encourage your child to look back at their notes and to learn Pythagoras’ Theorem * Encourage your child to learn the trigonometric ratios SOHCAHTOA and the special angles * Encourage your child to have the correct equipment for lessons, e.g. a calculator * Use [www.sparx.com](https://sparxmaths.com/)for support if needed. Teachers will have provided your child with a login and password. * Encourage your child to show all their working out. If they have homework online, then encourage them to write down all their working out in their exercise books * Encourage your child to use the website www.GeoGebra.org to plot functions to see what their graphs look like * Encourage your child to have the correct equipment for lessons, e.g. a pencil, ruler, calculator * Use [www.sparx.com](https://sparxmaths.com/)for support if needed. Teachers will have provided your child with a login and password * Encourage your child to show all their working out. If they have homework online, then encourage them to write down all their working out in their exercise books |