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| **Subject** | **Year 9 Higher Threshold Concepts – Autumn Term** | **How to support students’ learning** |
| Mathematics | **Integers and Indices**   * Use negative and fractional indices * Calculate with roots and powers * Use index rules with positive and negative indices * Estimate roots and powers * Use standard form with positive and negative indices * Multiply and divide numbers in standard form * Add and subtract numbers in standard form * Use a calculator to perform calculations in standard form   **Factors and Multiples**   * Perform prime factor decomposition * Find the highest common factor and lowest common multiple using prime factor decomposition * Use order of operations   **Expressions and Formulae**   * Create and use formulae and expressions from real-world contexts * Substitute numbers into more complex formulae, including roots, powers, algebraic fractions and kinematics formulae. * Simplify algebraic products & quotients using the laws of indices * Expand double and triple brackets * Factorise quadratic expressions * Expand double and triple brackets * Recognise and use difference of two squares   **Equations and Inequalities**   * Construct and solve linear equations * Construct and solve two linear simultaneous equations * Construct and solve inequalities   **Angles**   * Review angles on parallel lines * Identify reflection and rotation symmetries of polygons * Calculate angles in polygons   **Fractions and Decimals**   * Review fraction calculations * Add, subtract, multiply and divide fractions and mixed numbers * Simplify algebraic fractions by factorising into one or two brackets * Add and subtract algebraic fractions * Convert fractions to recurring decimals * Convert recurring decimals to fractions   **Theoretical and Experimental Probability**   * Systematically list outcomes and use the product rule for counting * Create and interpret sample space diagrams * Calculate probabilities (including conditional) from Venn Diagrams * Create and interpret Venn Diagrams including the use of set notation | * Encourage your child to look at real-life examples of standard form numbers, e.g. very small (biological cells) and very large scientific numbers (astronomical weights and distances) * Encourage your child to learn their square numbers up to 225 (152) * 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 their times tables, prime numbers below 100 and square numbers up to 225 (152) * 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 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 practise their algebra skills and order of operations knowledge (BIDMAS) * 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 review the rules associated with the angle facts taught in previous years * Encourage your child to have the correct equipment for lessons, e.g. a protractor, 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 review their knowledge of fractions and how to divide without a calculator * 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 review their prior knowledge of probability * Discuss real-life applications of probability, e.g. weather forecasting, financial investment and everyday decision making * 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 |