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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
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* 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
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* 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
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* 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
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* 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
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