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 **Mathematics Faculty**

 **Year 10 Higher – Autumn Term 1**

 **Unit 1 Overview - Indices and Surds**

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| **Topic** | **Key Ideas** | **Progress** |
| **R** | **A** | **G** |
| **Indices and Surds** | I can apply systematic listing strategies. |  |  |  |
| I can calculate with positive, negative and fractional indices and apply the index laws. |  |  |  |
| I can order numbers written in standard form. |  |  |  |
| I can use the four operations with numbers written in standard form. |  |  |  |
| I can simplify surds. |  |  |  |
| I can rationalise the denominator of a fraction. |  |  |  |
| I can expand brackets involving surds. |  |  |  |
| I can solve equations involving surds. |  |  |  |

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| **Lesson** | **Learning Focus** | **Assessment** | **Key Words** |
| **1** | Applying systematic listing strategies including use of the product rule for counting (CM clip 383) | Formative assessment strategies e.g. MWBs, whole class questioning, Diagnostic Questions, SLOP time with self-assessment, Live Marking etc.Assessment is also supported with our use of ILOs, set through Century Learning, Corbettmaths, Dr Frost Maths and Justmaths.Finally, units are assessed through skills checks and half termly assessments, as part of our Assessment Calendar in Mathematics. | combination, systematic, product |
| **2** | **Calculating with** positive and **negative integer indices** (CM clip 175) | index, power, positive, negative, reciprocal, square, cube |
| **3** | **Calculating values using fractional indices** (CM clip 173) | index, power, fraction, unitary, root |
| **4** | Using the index laws for multiplication and division of positive, negative and fractional indices (CM clip 174) | index, law, base, positive, negative, fractional, multiplication, division, bracket |
| **5** | Ordering numbers written in standard form (CM clip 300) | standard form, index, ordinary number, order, ascending, descending |
| **6** | **Calculating with numbers written in standard form** (CM clips 301 - 303) | standard form, index, addition, subtraction, multiplication, division |
| **7** | Solving standard form problems with and without a calculator (CM clips 301 - 303) | standard form, index, addition, subtraction, multiplication, division |
| **8** | **Simplifying surds** (CM clip 305) | surd, rational, irrational, simplify, root, square, product |
| **9** | **Simplifying expressions using the rules of surds** (CM clips 305 & 306) | surd, simplify, root, square, product, addition, subtraction, multiplication, division |
| **10** | Rationalising a denominator of the form √a or b√a (CM clip 307) | surd, root, numerator, denominator, rationalise |
| **11** | Expanding brackets where the terms are written in surd form (CM clip 308) | surd, bracket, expand, simplify |
| **12** | Solving equations involving surds. | surd, equation, solve, inverse, root, square |