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| **Year 1 pure unit 4: Further algebra** | **Road Map** |
| In this unit you will learn about pure mathematics. The aims are as follows:**LG1**: Knowledge**LG2**: Application**LG3**: Skills | Assessment Grades |  |  |
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| **Themes** | **Learning Goals/Outcomes/Content** |  |  |  |
| **4a. Algebraic division, factor theorem and proof** | be able to use algebraic division; |  |  |  |
| know and be able to apply the factor theorem; |  |  |  |
| be able to fully factorise a cubic expression; |  |  |  |
| understand and be able to use the structure of mathematical proof, proceeding from given assumptions through a series of logical steps to a conclusion; |  |  |  |
| be able to use methods of proof, including proof by deduction, proof by exhaustion and disproof by counter-example. |  |  |  |
| **4b. The binomial expansion** | understand and be able to use the binomial expansion of (*a* + *bx*)*n* for positive integer *n*; |  |  |  |
| be able to find an unknown coefficient of a binomial expansion. |  |  |  |

**Links:**

LG1: You should know how to construct an algebraic proof, and know different methods of proof and disproof. You should know how to find terms in a binomial expansion for positive integer powers.

LG2: You will be able to apply your knowledge of proof methodologies to select and use appropriate proof methodologies, understanding how to set up initial assumptions or to express numbers in appropriate algebraic forms before proceeding through a convincing Mathematical argument.

LG3: You should have sufficient mastery and understanding of the procedures in this topic that can can (for example) demonstrate links between using Pascal’s triangle, and expansion of brackets when exploring binomial expansion.