

YEAR 12 C1

Specification	Reference	Notes/Extra Material
1. Algebra and Functions <ul style="list-style-type: none"> The laws of indices for all rational exponents The use and manipulation of surds Quadratic Function and their graphs The discriminant of a quadratic function Completing the square Solution of quadratic equations Simultaneous equations Linear and Quadratic Inequalities Algebraic manipulation of polynomials 	<p>Heinemann Chapter 1 Section 1:2/1.6 - Exercises 1B & 1F Section 1.7/1.8 - Exercises 1G and 1H</p> <p>Heinemann Chapter 2 Section 2.1 Exercise 2A Section 2:5 Exercise 2E</p> <p>Section 2.3 Exercise 2C/2D Sections 2.2 – 2.5 Exercises 2B – 2E</p> <p>Heinemann Chapter 3 Section 3.1 - 3.3 Exercise 3A - 3C Section 3.4/3.5 Exercises 3D & 3E</p> <p>Heinemann Chapter 1 Sections 1.1 & 1:3 – 1.5 - Exercises 1A & 1C – 1E</p>	<p>The equivalence of $a^{m/n}$ and $\sqrt[n]{a^m}$ should be known Candidates should be able to rationalise denominators (Section 1.8) Mixed Exercise 1I Revision Exercise 1</p> <p>Candidates should be able to solve quadratic equations by factorisation, use of the quadratic formula and by completing the square. (Sections 2.2 – 2.5) Mixed Exercise 2G Revision Exercise 2</p> <p>Solution by substitution, where one equation is linear and one equation is quadratic (Section 3.3) Mixed Exercise 3F Revision Exercise 3</p> <p>Use of brackets The notation $f(x)$ may be used</p>

<ul style="list-style-type: none"> Graphs of functions Geometrical interpretation of algebraic solutions of equations Transformations of graphs 	Heinemann Chapter 4 Section 2.6/ 4.1/4.3 - Exercises 2F, 4A & 4C Sections 4.2/4.4 Exercise 4B & 4D Sections 4.5 – 4.7 Exercises 4E – 4G	Including simple cubic functions and the reciprocal function (Section 4.1/4.3) Knowledge of the term asymptote Mixed Exercise 4H Revision Exercise 4
2. Coordinate geometry in the (x,y) plane <ul style="list-style-type: none"> The equation of a straight line in different forms The condition for two straight line to be parallel or perpendicular 	Heinemann Chapter 5 Sections 5.1 – 5.4 - Exercises 5A – 5D Section 5.5 - Exercise 5E	To include; i) the equation of a line through two given points ii) The equation of a line parallel or perpendicular to a given line through a given point Mixed Exercise 5E Revision Exercise 5
3. Sequences and series <ul style="list-style-type: none"> Sequences Arithmetic series 	Heinemann Chapter 6 Sections 6.1 – 6.4 - Exercises 6A – 6D Sections 6.5 – 6.7 - Exercises 6E – 6G	The general term and the sum to n terms are required The proof of the sum formula should be known Understanding of \sum notation will be expected (Section 6.7) Mixed Exercise 6H Revision Exercise 6

<p>4. Differentiation</p> <ul style="list-style-type: none"> • The derivative of $f(x)$ as the gradient of the tangent to the graph of $y = f(x)$ • Interpretation as a rate of change • Second order derivatives • Differentiation of x^n and related sums and differences • Applications of differentiation to gradients, tangents and normals 	<p>Heinemann Chapter 7</p> <p>Sections 7.1 Exercise 7A</p> <p>Section 7.7 Exercise 7G Section 7.6 Exercise 7F</p> <p>Sections 7.2 – 7.5 - Exercises 7B – 7E</p> <p>Sections 7.8 Exercise 7H</p>	<p>Knowledge of the chain rule is not required</p> <p>The notation $f'(x)$ may be used</p> <p>Make reference to Key Stage 4 coursework 'The Gradient Function'</p> <p>Use of differentiation to find equations of tangents and normals at specific points on a curve</p> <p>Mixed Exercise 7I Revision Exercise 7</p>
<p>5. Integration</p> <ul style="list-style-type: none"> • Indefinite integration as the reverse of differentiation • Integration of x^n 	<p>Heinemann Chapter 8</p> <p>Sections 8.1 – 8.5 - Exercises 8A – 8E</p>	<p>Candidates should know that a constant of integration is required</p> <p>Given $f'(x)$ and a point on the curve, candidates should be able to find an equation of the curve in the form $y=f(x)$</p> <p>Mixed Exercise 8F Revision Exercise 8</p>