

# **Mathematics**

## **Scheme of Work**

### **Year 12**

### **Core 1**

**Note :**

**All Chapters refer to the Heinemann Modular Mathematics for Edexcel AS/A2 Level**

Topic	Hours	Objectives	Text Book Reference	Exercise
<b>Chapter 1 Algebra and Functions</b> (5 Hours)	1	Simplifying an expression by collecting like terms Expanding an expression Factorising an expression	1.1 1.3 1.4	1A 1C 1D
	1	Factorising a quadratic expression	1.5	1E
	1	The laws of indices The laws of indices for all rational exponents	1.2 1.6	1B 1F
	1	The use and manipulation of surds	1.7	1G
	1	Rationalising the denominator of a fraction when it is a surd	1.8	1H
			<b>Summary of Key Points</b>	
<b>Chapter 2 Quadratic Functions</b> (5 Hours)	1	Plotting the graphs of quadratic functions Solving quadratic equations by factorisation	2.1 2.1	2A 2B
	1	Completing the square	2.3	2C
	1	Solving quadratic equations by completing the square	2.4	2D
	1	Solving quadratic equations by using the formula	2.5	2E
	1	Sketching graphs of quadratic formulae	2.6	2F
			<b>Summary of Key Points</b>	

Topic	Hours	Objectives	Text Book Reference	Exercise
<b>Chapter 3</b> <b>Equations and inequalities</b> (5 Hours)	1	Solving simultaneous linear equations by elimination	3.1	3A
	1	Solving simultaneous linear equations by substitution	3.2	3B
	1	Using substitution when one equation is linear and the other is quadratic	3.3	3C
	1	Solving linear inequalities	3.4	3D
	1	Solving quadratic inequalities	3.5	3E
			<b>Summary of Key Points</b>	
<b>Chapter 4</b> <b>Sketching curves</b> (6 Hours)	1	Sketching the graphs of cubic functions	4.1	4A
		Interpreting graphs of cubic functions	4.2	4B
	1	Sketching the reciprocal function	4.3	4C
	1	Using the intersection points of graphs of functions to solve equations	4.4	4D
	1	The effect of the transformations $f(x + a)$ and $f(x - a)$	4.5	4E
	1	The effect of the transformations $f(ax)$ and $af(x)$	4.6	4F
	1	Performing transformations on the sketches of curves	4.7	4G
		<b>Summary of Key Points</b>		<b>Mixed 4H</b>

Topic	Hours	Objectives	Text Book Reference	Exercise
<b>Chapter 5</b> <b>Coordinate geometry</b> <b>in the (x,y) plane</b> (4 Hours)	1	The equation of a straight line in the form $y = mx + c$ or $ax + by + cz = 0$	5.1	5A
	1	The gradient of a straight line	5.2	5B
	1	The equation of a straight line of the form $y - y_1 = m(x - x_1)$ The formula for finding the equation of a straight line	5.3 5.4	5C 5D
	1	The conditions for two straight lines to be parallel or perpendicular	5.5	5E
		<b>Summary of Key Points</b>		
<b>Chapter 6</b> <b>Sequences and series</b> (6 Hours)	1	Introduction to sequences	6.1	6A
		The $n$ th term of a sequence	6.2	6B
	1	Sequences generated by a recurrence relationship	6.3	6C
	1	Arithmetic sequences	6.4	6D
	1	Arithmetic series	6.5	6E
	1	The sum to $n$ of an arithmetic series	6.6	6F
	1	Using $\Sigma$ notation	6.7	6G
	<b>Summary of Key Points</b>			<b>Mixed 6H</b>

Topic	Hours	Objectives	Text Book Reference	Exercise
<b>Chapter 7 Differentiation</b> (6 Hours)	1	The derivative of $f(x)$ as the gradient of the tangent to the graph $y=f(x)$ Finding the formula for the gradient of $x^n$	7.1 7.2	7A 7B
	1	Finding the gradient formula of simple functions	7.3	7C
	1	The gradient formula for a function when the powers of $x$ are real numbers Expanding or simplifying functions to make them easier to differentiate	7.4 7.5	7D 7E
	1	Finding second order derivative	7.6	7F
	1	Finding the rate of change of a function at a particular point	7.7	7G
	1	Finding the equation of the tangent and normal to a curve at a point	7.8	7H
			<b>Summary of Key Points</b>	
<b>Chapter 8 Integration</b> (5 Hours)	1	Integrating $x^n$	8.1	8A
	1	Integrating simple expressions	8.2	8B
	1	Using the integral sign	8.3	8C
	1	Simplifying expressions before integrating	8.4	8D
	1	Finding the constant of integration	8.5	8E
			<b>Summary of Key Points</b>	

**Total 42 Teaching Hours**