ACHIEVERS ARC

2027 SEC 3 A MATH LESSON PLAN

SEMESTER 1 (NOV – JAN)

LESSON	LESSON NAME	LEARNING OBJECTIVES
1	Quadratic Functions	1) Be able to recognise quadratic functions and their graphs. 2) Understand the conditions for quadratic functions to be always positive or always negative. 3) Be able to use quadratic functions to model application problems.
2		
3		
4	Equations and Inequalities	1) Understand the nature of roots of quadratic functions. 2) Be able to solve advanced simultaneous equations involving quadratic functions. 3) Be able to solve quadratic inequalities.
5		
6		
7	Surds	1) Be able to simplify expressions involving surds. 2) Be able to solve equations involving surds. 3) Be able to use surds to model various application problems.
8		
9		

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2027 SEC 3 A MATH LESSON PLAN

SEMESTER 2 (JAN – APR)

LESSON	LESSON NAME	LEARNING OBJECTIVES
1	Revision Chapters 1 to 3	
2		
3	Polynomials and Partial Fractions	1) Understand the four operations involving polynomials. 2) Understand and be able to apply the remainder and factor theorems. 3) Be able to simplify and solve cubic polynomials and equations. 4) Understand and be able to conduct partial fractions into their lower degree forms.
4		
5		
6	Exxponential and Logarithmic Functions and Equations	1) Understand and be able to recognise exponential functions. 2) Be able to solve exponential equations in applied scenarios. 3) Understand and be able to recognise logarithmic functions. 4) Be able to solve logarithmic equations in applied scenarios.
7		
8		
9	Revision Chapters 4 to 5	
10		
11	Mid Year Examination Mock Test	

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2027 SEC 3 A MATH LESSON PLAN

SEMESTER 3 (APR – AUG)

LESSON	LESSON NAME	LEARNING OBJECTIVES
1	Binomial Expansions	1) Understand the concept of binomial expansions involving powers of positive integers. 2) Be able to find the general term of bionmial expansions. 3) Be able to conduct binomial expansions in ascending or descending orders.
2		
3		
4	Coordinate Geometry of Lines and Rectilinear Figures	1) Be able to find the midpoint of a line segment. 2) Understand the relationship between perpendicular and parallel lines. 3) Be able to find the area of rectilinear figures. 4) Be able to transform non-linear relationships to linear form.
5		
6		
7	Coordinate Geometry of Circles	1) Understand and be able to find the equation of a circle. 2) Be able to find the intersection between a circle and a line.
8		
9		
10	Revision Chapters 6 to 8	
11		
12		

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2027 SEC 3 A MATH LESSON PLAN

SEMESTER 4 (AUG – OCT)

LESSON	LESSON NAME	LEARNING OBJECTIVES
1	Trigonometric Functions, Graphs and Equations	1) Understand and be able to define various trigonometric functions. 2) Be able to sketch graphs of various trigonometric functions. 3) Understand and be able to solve various forms of trigonometric equations.
2		
3		
4	Trigonometric Identities and Formulae	1) Be able to recognise and apply various basic trigonometric identities. 2) Understand the addition and double angle formula. 3) Be able to use the R-formulae to solve various applied problems in trigonometry.
5		
6		
7	Revision Chapters 9 to 10	
8		
9		
10	End of Year Examination Mock Test 1	
11	End of Year Examination Mock Test 2	

2027 中三年级 (进阶数学) 课程表

第 1 学期（11 月 至 1 月）

课	标题	教学目标
1	二次函数	**1)** 能够识别二次函数及其图像。 **2)** 理解二次函数恒为正或恒为负的条件。 **3)** 能够使用二次函数来建立实际应用模型。
2		
3		
4	方程与不等式	**1)** 理解二次方程根的性质。 **2)** 能够解含二次函数的进阶联立方程。 **3)** 能够解二次不等式。
5		
6		
7	根式	**1)** 能够化简含根式的代数式。 **2)** 能够解含根式的方程。 **3)** 能够使用根式来建立各种应用问题的数学模型。
8		
9		

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2027 中三年级 (进阶数学) 课程表

第 2 学期（1 月 至 4 月）

课	标题	教学目标
1	专题练习 1 - 3	
2		
3	多项式与部分分式	1) 理解多项式的四则运算。 2) 理解并能应用余数定理与因式定理。 3) 能够化简并求解三次多项式与三次方程。 4) 理解并能够将部分分式分解为低次多项式的形式。
4		
5		
6	指数与对数函数及方程	1) 理解并能够识别指数函数。 2) 能够在应用情境中求解指数方程。 3) 理解并能够识别对数函数。 4) 能够在应用情境中求解对数方程。
7		
8		
9	专题练习 4 - 5	
10		
11	年中考试模拟试卷	

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2027 中三年级 (进阶数学) 课程表

第 3 学期（4 月 至 8 月）

课	标题	教学目标
1	二项式展开	1) 理解正整数指数下的二项式展开概念。 2) 能够求二项式展开的一般项公式。 3) 能够进行二项式展开，并按升幂或降幂形式排列。
2		
3		
4	直线与矩形图形的坐标几何	1) 能够求线段的中点。 2) 理解垂直线与平行线之间的关系。 3) 能够求矩形图形（直线型图形）的面积。 4) 能够将非线性关系转换为线性形式。
5		
6		
7	圆的坐标几何	1)理解并能够求圆的方程。 2) 能够求圆与直线的交点。
8		
9		
10	专题练习 6 - 8	
11		
12		

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2027 中三年级 (进阶数学) 课程表

第 4 学期（8 月 至 10 月）

课	标题	教学目标
1	三角函数、图像与方程	1) 理解并能够定义各种三角函数。 2) 能够绘制不同三角函数的图像。 3) 理解并能够求解各种形式的三角方程。
2		
3		
4	三角恒等式与公式	1) 能够识别并应用各种基本三角恒等式。 2) 理解加角公式与倍角公式。 3) 能够使用 R-公式 解决三角学中的应用问题。
5		
6		
7	专题练习 9 - 10	
8		
9		
10	年终考试模拟试卷 1	
11	年终考试模拟试卷 2	