



The Sutton Academy

Knowledge Rich Curriculum Plan

Year 12 Maths

Unit 2 – Quadratics

Maths Year 12	Unit: Quadratics			
Lesson/Learning Sequence	Intended Knowledge: <i>Students will know that...</i>	Tiered Vocabulary	Prior Knowledge: <i>In order to know this students, need to already know that...</i>	Assessment
Lesson 4: Solving quadratic equations Lesson Objective: To learn how to solve quadratic equations using factorising and the quadratic formula.	<ul style="list-style-type: none"> Students will know how to solve quadratic equations by factorising quadratic equations with a coefficient of x^2 equal to 1. Students will know how to solve quadratic equations by factorising quadratic equations with a coefficient of x^2 equal to more than 1. Students will know how to solve quadratic equations using the quadratic formula. Students will know how to rearrange an equation into quadratic form to then solve. 		<ul style="list-style-type: none"> <i>Students need to be able to identify a quadratic equation.</i> <i>Students need to know how to collect like terms.</i> <i>Students need to know how to rearrange formulae.</i> <i>Students need to know how to factorise into single and double brackets.</i> <i>Students need to know how to solve linear equations.</i> 	
Lesson 5: Completing the square Lesson Objective: To learn how to use completing the square to solve quadratic equations.	<ul style="list-style-type: none"> Students will know how to complete the square of an expression with a coefficient of x^2 equal to 1. Students will know how to complete the square of an expression with a coefficient of x^2 equal to more than 1. Students will know how to use completing the square to solve a quadratic equation with a coefficient of x^2 equal to 1. Students will know how to use completing the square to solve a quadratic equation with a coefficient of x^2 equal to more than 1. 		<ul style="list-style-type: none"> <i>Students need to know how to solve linear equations.</i> <i>Students need to know how to rearrange formulae.</i> <i>Students need to know how to factorise expressions.</i> <i>Students need to know how to expand double brackets.</i> 	
Lesson 6: Functions Lesson Objective: To learn how to use functions.	<ul style="list-style-type: none"> Students will know that the set of possible inputs is called the domain. Students will know that the set of possible outputs is called the range. Students will know how to substitute values into a function. Students will know how to solve quadratic functions. Students will know how to find the minimum or maximum range of a function and the domain at which it occurs. Students will know how to factorise a function with a power other than x^2. Students will know how to find the roots of a function with a power other than x^2. 		<ul style="list-style-type: none"> <i>Students need to know how to substitute into formulae.</i> <i>Students need to know how to rearrange formulae.</i> <i>Students need to know how to factorise expressions.</i> <i>Students need to know how to factorise using the difference of two squares.</i> <i>Students need to know how to solve quadratic equations by factorising.</i> <i>Students need to know how to solve quadratic equations by using the quadratic formula.</i> <i>Students need to know how to solve quadratic equations by completing the square.</i> 	

Maths Year 12	Unit: Quadratics			
Lesson/Learning Sequence	Intended Knowledge: <i>Students will know that...</i>	Tiered Vocabulary	Prior Knowledge: <i>In order to know this students, need to already know that...</i>	Assessment
Lesson 7: Quadratic graphs Lesson Objective: To learn how to sketch quadratic graphs.	<ul style="list-style-type: none"> Students will know that any quadratic equation has a curved shape called a parabola. Students will know how to recognise whether the parabola is a 'U' shape or a '∩' shape. Students will know that a quadratic graph crosses the x-axis when $y=0$ and the x-coordinates are roots of the function. Students will know that a quadratic graph crosses the y-axis when $x=0$. Students will know how to find the turning point of a quadratic graph by completing the square. Students will know that a turning point is either the minimum or maximum point of the quadratic equation. Students will know how to sketch a quadratic graph. 		<ul style="list-style-type: none"> <i>Students need to know how to factorise a quadratic expression.</i> <i>Students need to know how to solve a quadratic equation.</i> <i>Students need to know how to substitute into formulae.</i> <i>Students need to know how to complete the square.</i> <i>Students need to know how to draw a simple set of axes.</i> 	
Lesson 8: The discriminant Lesson Objective: To learn how to find and use the discriminant.	<ul style="list-style-type: none"> Students will know how to find the discriminant. Students will know that the quadratic has two distinct real roots when the discriminant has a value greater than 1. Students will know that the quadratic has one repeated root when the discriminant has a value equal to 1. Students will know that the quadratic has no real roots when the discriminant has a value less than 1. Students will know how to find an unknown in a quadratic equation using the discriminant. 		<ul style="list-style-type: none"> <i>Students need to know how to substitute into formulae.</i> <i>Students need to know how to use the quadratic formula.</i> <i>Students need to know how to expand brackets.</i> <i>Students need to know how to collect like terms.</i> <i>Students need to know how to solve quadratic equations.</i> 	
Lesson 9: Modelling with quadratics Lesson Objective: To learn how to model problems using quadratic graphs.	<ul style="list-style-type: none"> Students will know how to solve quadratic equations in a real life context using factorising, the quadratic formula and completing the square. Students will know how to sketch a quadratic model. Students will know how to interpret a quadratic model in the context of the problem. Students will know how to interpret the solutions of a quadratic model in the context of the problem. 		<ul style="list-style-type: none"> <i>Students need to know how to factorise a quadratic expression.</i> <i>Students need to know how to solve a quadratic equation using factorising, the quadratic formula and completing the square.</i> <i>Students need to know how to sketch a quadratic graph.</i> 	