Year 11 Unit 2 Overview

Test window:

Target grade for tests:

You will learn about:

- Powers, roots and positive, negative and fractional indices, Surds.
- Accuracy and rounding.
- Algebraic manipulation- factorising and simplifying algebraic fractions
- Solving quadratic equations algebraically and graphically

Lesson Overview	Key Words
CALCULATING	**Refer to**
• Estimate squares and cubes of numbers up to 100	http://studymaths.co.uk/glossary.php
• Estimate powers of numbers up to 10	**for definitions of the key words**
• Estimate square roots of numbers up to 150	
• Estimate cube roots of numbers up to 20	Power, Root
• Know that $a^0 = 1$	Index, Indices
• Know that $a^{-n} = 1/a^n$	Surd
• Know that $a^{1/n} = \sqrt[n]{a}$	Simplify
• Calculate with negative powers	Rationalise
• Calculate with fractional powers	
• Use a scientific calculator when calculating with roots and powers	**Notation**
	$\sqrt{a}$ represents the 'positive square root of', and the bar should be used to enclose contents correctly
SURDS	
• Know that $\sqrt{a \times b} = \sqrt{a} \times \sqrt{b}$	Equivalent
• Identify a factor pair where one factor is square	Equation
• Use $\sqrt{a \times b} = \sqrt{a} \times \sqrt{b}$ to simplify a surd	Expression
• Multiply two binomials involving surds	Expand
• Rationalise the denominator of a surd expression	Linear
• Expand the product of two binomials involving surds	Quadratic
	Algebraic Fraction
	Difference of two squares
	Binomial
	Factorise
ALGEBRAIC PROFICIENCY: TINKERING	
• Add (subtract, multiply, divide) algebraic fractions	
• Simplify an algebraic fraction	
• Identify when it is necessary to find two linear expressions to factorise a quadratic expression	Term
• Factorise an expression involving the difference of two squares	nth term
• Factorise a quadratic expression of the form $ax^2 + bx + c$	Generate
• Identify when it is necessary to factorise the numerator and/or denominator in order to simplify an algebraic fraction	Quadratic
• Simplify an algebraic fraction that involves factorisation	First (second) difference
	Geometric Progression
SOLVING QUADRATIC QUATIONS	**Notation**
• Solve a quadratic equation of the form $x^2 + bx + c$ by factorising	T(n) is often used to indicate the 'nth term'
• Solve a quadratic equation of the form $ax^2 + bx + c$ by factorising	
• Solve a quadratic equation by rearranging and factorising	(Quadratic) equation
• Identify when a quadratic equation cannot be solved by factorising	Factorise
• Make connections between graphs and quadratic equations of the form $ax^2 + bx + c = 0$	Rearrange
• Make connections between graphs and quadratic equations of the form $ax^2 + bx + c = dx + e$	Variable
• Find approximate solutions to quadratic equations using a graph	Unknown
	Manipulate
	Solve
	Deduce
	x-intercept
	Root

Target 6/7/8 Stage 10

- Know and apply the formula for solving a quadratic equation of the form $ax^2 + bx + c = 0$

<u>EXTENSION</u>

- Complete the square for a quadratic function
- Know that 'in the form $(x + p)^2 - q$' implies that completing the square is required
- Deduce the turning point of a quadratic function by completing the square
- Deduce the roots of a quadratic function by factorising
- Deduce the roots of a quadratic function using the completed square form

Function
Complete the square
Deduce
Root
Turning point, minimum, maximum

Suggested reading or support/ challenge available

Support is available from a Maths teacher in '*MORALE*' in M1 daily from 1:30pm -1:45pm

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Research	Note-making	Group work & discussion	Memorisation	Precision & accuracy	Independence	Reflection

Target 6/7/8 Stage 10