Maths – sample scheme of work

An Example of KS3 Medium Term Planning:

Factors and Multiples Stage 6	8 hours	MENU
Content	**Extension**	**Knowledge Organisers**
Understand place value in numbers with up to three decimal places		GCSE Grade P KO
Multiply whole numbers by 10 (100, 1000)		GCSE Grade 1 KO
Divide whole numbers by 10 (100, 1000) when the answer is a whole number		Factors and Multiples
Multiply (divide) numbers with up to three decimal places by 10 (100, 1000)		Types of Number KO
Understand (order, write, read) place value in numbers with up to eight digits		
Understand and use negative numbers when working with temperature		**PREVIOUS TOPIC**
Understand and use negative numbers when working in other contexts		n/a
Know the meaning of a common multiple (factor) of two numbers		
Identify common multiples (factors) of two numbers		**NEXT TOPIC**
Know how to test if a number up to 120 is prime		Calculating 1 S6
Know the Prime Numbers to 50 (the first 15)		
Know the Square Numbers to from $1^2 – 15^2$ and 20^2	Know the corresponding roots	**Posters / Wall Displays**
Know the Cube Numbers to from $1^3 – 5^3$ and 10^3	Know the corresponding roots	number classification posters,
Know the Triangular Numbers to 30		negative number washing line
Pre-requisites	**Language**	**Pedagogical Notes**
Understand and use place value in numbers with up to seven digits	Place value	Zero is neither positive nor negative.
Multiply and divide whole numbers by 10, 100, 1000	Digit	
Multiply and divide numbers with one decimal place by 10, 100, 1000	Negative number	When multiplying and dividing by powers of ten, the decimal point is fixed and it is the
Know the meaning of 'factor' and 'multiple' and 'prime'	(Common) multiple	digits that move.
	(Common) factor	
	Divisible	
	Prime number, Composite number	Ensure that pupils can deal with large numbers that include zeros in the HTh and/or H
		column (e.g. 43 006 619)
		NCETM: Glossary
		Common approaches
		A prime number is a number with exactly two factors.
Reasoning opportunities and probing questions	**Possible activities / Starters / Starting Points**	**Possible misconceptions**
Convince me that 109 is a prime number	KM: Maths to Infinity: Directed numbers	Some pupils can confuse the language of large (and small) numbers since the prefix
	KM: Extend the idea of Eratosthenes' sieve to a 12 by 12 grid	'milli- means 'one thousandth' (meaning that there are 1000 millimetres in a metre for
Jenny writes 2.54 × 10 = 25.4. Kenny writes 2.54 × 10 = 25.40. who do you agree	KM: Exploring primes activities: Artistic Eratosthenes sieve	example) while one million is actually a thousand thousand.
with? Explain why.	KM: Use Powers of ten to demonstrate connections.	
		Some pupils may not realise that degrees (°) and degrees Celsius (°C) are two different
Look at this number (24 054 028). Show me another number (with 4, 5, 6, 7 digits) that	Prime Numbers – Divisibility and Primes – Mathigon	and distinct units of measurement
includes a 5 with the same value. And another. And another ...	Search results triangle numbers (maths.org)	
	Clever Carl	Some pupils may think that 1 is a prime number
	HOMEWORK / LEARNING REVIEW	
	6M1 BAM Task	
	NCETM CHECKPOINT: PLACE VALUE	
	NCETM CHECKPOINT: Properties of Number	

An Example of KS4 Medium Term Planning

Completing the Square and Quad Formula	8 Hours			MENU
Content	**Specification**			**Knowledge Organisers**
Find a Perfect Square	A11			Grade 8.3 8.4 Knowledge Organiser
Put a Quadratic of the form $x^2 + bx + c$ into Completed the Square form	Basic foundation content	Additional foundation content	Higher content only	
Solve an Equation of the form $x^2 + bx + c = 0$ by Completing the square.		identify and interpret roots, intercepts and turning points of quadratic functions graphically		Completing the Square KO
Solve an Equation of the form $ax^2 + bx + c = 0$ by Completing the square.				Quadratic Formula KO
Put a Quadratic of the form $ax^2 + bx + c$ into Completed the Square form		deduce roots algebraically	deduce turning points by completing the square	
Understand that the coordinates of the turning point can be found by examining a Quadratic in Completed Square Form.	A18			
Sketch the Graphs of Quadratics by finding the roots and / or using Completed Square form.	Basic foundation content	Additional foundation content	Higher content only	
Understand that the Quadratic Formula comes from solving $ax^2 + bx + c = 0$ using completing the square.		solve quadratic equations algebraically by factorising	including those that require rearrangement	
Learn the Quadratic formula			including completing the square and by using the quadratic formula	
Use the Quadratic formula to solve Quadratic Equations		find approximate solutions using a graph		
Use the Quadratic formula to solve problems involving Quadratic Equations				
Pre-requisites	**Language**			**Pedagogical Notes**
Know the algebraic form of a perfect square.	y intercept			The content list is in the order it should be taught.
be able to solve linear and Quadratic Equations	Equation			Explanation should be very clear and checked at every stage.
	Formula			
	Quadratic			MyMaths teaches a slight variation on the method normally taught and
	Roots, Solutions			should be avoided.
	Turning point			
	Coefficient			**Common approaches**
	Completed Square form			*Completing the Square Scripted Lesson*
	Sketch			
Reasoning opportunities and probing questions	**Possible activities / Starters / Starting Points**			**Possible misconceptions**
	Completing the Square Scripted Lesson			Pupils may get the coordinate positions the wrong way round from
Full Coverage - GCSE Completing The Square	Dr Frost GCSE Completing The Square			Square Form or forget to change the sign on the one in the bracket.
				Students may struggle to find the "correction" to make a perfect square when $y = ax^2 + bx + c$
	HOMEWORK / LEARNING REVIEW			
	AQA Higher Completing The Square Topic Test			