


Subject	Year	Month	
Mathematics	8	October	
Topic:			
INDEX LAWS, FACTORIZING AND CHANGING THE SUBJECT			10 LESSONS
Content (Intent)			
Prior Learning Y7 March: <ul style="list-style-type: none"> - expression, term, equation (maybe variable, coefficient) - rules of algebraic notation - collecting like terms - expanding brackets - substitution (positive and negative) FORMULAE (Science ?)		Future Learning Later in Y8 <ul style="list-style-type: none"> - Solving equations, which relates closely to changing the subject - Expanding brackets involved, which links to index laws Y9 <ul style="list-style-type: none"> - Expanding and factorising quadratics - Inequalities - Anything algebra related 	
Objectives <ul style="list-style-type: none"> • Use and interpret algebraic notation, including: $a^2 b$ in place of $a \times a \times b$, coefficients written as fractions rather than as decimals • Simplify an expression involving terms with combinations of variables (e.g. $3a^2b + 4ab^2 + 2a^2 - a^2b$) • Simplify expressions using the law of indices for multiplication, division and powers • Know and use the zero index • Factorise an algebraic expression by taking out common factors • Change the subject of a formula when one step is required • Change the subject of a formula when two steps are required 		For teaching purposes Possible Questions <ul style="list-style-type: none"> • Convince me $a^0 = 1$. • What is wrong with this statement: $5^2 \times 5^4 = 5^8$? Jenny thinks that if $y = 2x + 1$ then $x = (y - 1)/2$. Kenny thinks that if $y = 2x + 1$ then $x = y/2 - 1$. Who do you agree with? Explain your thinking. Misconceptions <ul style="list-style-type: none"> • may misapply the order of operation when changing the subject of a formula • may think that $a^0 = 0$ • may not consider $4ab$ and $3ba$ as 'like terms' 	
Pedagogical notes (implementation)		How will understanding be assessed & recorded (Impact)	
MINIMUM STANDARDS OF A MATHEMATICIAN: <i>Make sure that the variable x is always written curly, to avoid confusion with the multiplication symbol.</i> On computer : Use Times New Roman – Italic. <i>'same base multiplied, add the indices'</i> $a^m \times a^n = a^{m+n}$ <i>'same base divided, subtract the indices.'</i> $a^m \div a^n = a^{m-n}$ <i>changing the subject or rearranging →</i> <i>balancing method ; just like with solving equations</i> <i>flow diagram also acceptable</i>		8BAM3 Indices 8BAM4 Factorising expressions 8BAM5 Formulae End of term Assessment in December End of Year Assessment in June	
		How can parents help at home?	
		MathsWatch clips (Qualification KS3) A7a, A7b, A9, A13a, A13b	
Further reading/discussion			
Reading / Enrichment KM: Missing powers KM: Laws of indices . Some useful questions. KM: Maths to Infinity: Indices KM: Scientific substitution (Note that page 2 is hard) NRICH: Temperature	Literacy Product Variable Term Coefficient Common factor Factorise Power Indices Formula, Formulae Subject Change the subject	Numeracy Links	Careers Links Maths/science teachers cryptologists astronomers chemists physicists engineer architect