


Subject	Year	Month	
Mathematics	9	Oct/Nov	
Topic:			
EXPANDING AND FACTORISING QUADRATICS			6 LESSONS
Content (Intent)			
<p>Prior Learning</p> <p>Y7</p> <ul style="list-style-type: none"> Intro to algebra collecting like terms Know that $x \times x = x^2$ Expand over a simple single bracket Perimeter and area of 2D shapes <p>Y8</p> <ul style="list-style-type: none"> Algebraic notation Index law Factorising a two-term expression 	<p>Future Learning</p> <ul style="list-style-type: none"> Solving quadratic equations, with x^2 coefficient >1 Quadratic formula Completing the square Expand three binomials Difference of two squares 		
<p>Objectives</p> <ul style="list-style-type: none"> Multiply two linear expressions of the form $(x+a)(x+b)$ Multiply two linear expressions of the form $(ax\pm b)(cx\pm d)$ Expand the expression $(x\pm a)^2$ Factorise a quadratic expression of the form $x^2 + bx$ Factorise a quadratic expression of the form $x^2 + bx + c$ Create an expression or a formula to describe a situation (link algebra to worded questions and geometrical shapes) Solve questions worded "Show that / prove that ..." e.g. Algebraic expression of the area to a compound shape. 	<p>For teaching purposes</p> <p>Possible Questions</p> <ul style="list-style-type: none"> The answer is $x^2 + 10x + c$. Show me a possible question. And another Convince me that $(x + 3)(x + 4)$ does not equal $x^2 + 7$. What is wrong with this statement? $(x + 3)(x + 4) \equiv x^2 + 12x + 7$. Jenny thinks that $(x - 2)^2 = x^2 - 4$. Do you agree with Jenny? Explain your answer. <p>Possible Misconceptions</p> <ul style="list-style-type: none"> After factorising a quadratic expression, students might overcomplicate the simpler case of factorising an expression may think that $(x + a)^2 \equiv x^2 + a^2$ may think that, for example, $-2 \times -3 = -6$ may think that $x^2 + 12 + 7x$ is not equivalent to $x^2 + 7x + 12$, and therefore think that they are wrong if the answer is given as $x^2 + 7x + 12$ 		
Pedagogical notes (implementation)	How will understanding be assessed & recorded (Impact)		
<p>Students should be taught to use the equivalency symbol '\equiv' when working with identities.</p> <p>During this unit students could construct (and solve) equations in addition to expressions and formulae.</p> <p>Common approaches</p> <p><i>the grid method</i> \rightarrow Can be used in reverse for factorising</p> <p><i>FOIL method</i> \rightarrow Factorising will require "two values that multiply to be ... and add up to be ..."</p>	<p>9BAM3 Manipulating expressions I 9BAM4 Manipulating expressions II End of Term assessment in December Exams in May</p> <p>How can parents help at home?</p> <p>MathsWatch clips (Qualification GCSE) 134b, 178, 175 (only first half), 192</p>		
Further reading/discussion			
<p>Reading / Enrichment</p> <p>NCETM: Algebra</p> <p>NCETM: Departmental workshops: Deriving and Rearranging Formulae</p> <p>NCETM: Glossary</p> <p>KM: Stick on the Maths: Multiplying linear expressions</p> <p>KM: Maths to Infinity: Brackets</p> <p>KM: Maths to Infinity: Quadratics</p> <p>NRICH: Pair Products</p> <p>NRICH: Multiplication Square</p> <p>NRICH: Why 24?</p>	<p>Literacy</p> <p>Inequality</p> <p>Identity</p> <p>Equivalent</p> <p>Equation</p> <p>Formula, Formulae</p> <p>Expression</p> <p>Expand</p> <p>Linear</p> <p>Quadratic</p>	<p>Numeracy Links</p>	<p>Careers Links</p> <p>Engineer</p> <p>Computing engineer</p>