Chapter 2: Simple Algebra

Number of lessons (between 6&8)	**Content of the unit**	**Assumed prior learning (**tested at the beginning of the unit)
	• Algebraic Expressions • Simplifying Expressions • Substitution • Formulae	Simplify simple expressions. Multiply and divide simple terms. Recognise equivalent expressions. Calculate with negative numbers and terms.
Assessment points and tasks	**Written feedback points**	**Learning Outcomes (tested at the end and related to subject competences)**
Pre test Post test (half term exams/ mock exams)	Diagnostic marking (TF)-(green sticker)-(PF)/(SF) yellow and orange stickers Traffic lighting of exam papers	Use correct algebraic notation Write and Simplify expressions Use the index laws Multiply and divide expressions Substitute numbers into expressions Recognise the difference between a formula and an expression

Lesson	Clear learning intentions	Clear success criteria	Hook	Presentation of content	Guided practice	Independent practice (homework)	Closure
1 2.1. Algebraic Expressions Lesson Plan	Understand the vocabulary and notation of algebra	Use correct algebraic notation Write and simplify expressions	Cats and Dogs Activity *An apple is represented by the letter a. Write an expression to represent 2 apples.* *I have 2 apples. I buy another 3 apples. Write an expression to represent this.* *I have 6 apples. Tom takes 4 of the apples. Write an expression to represent this.* *I have 10 apples. I share them equally between 5 friends. Write an expression to represent this.*	Active teach pages 33 -34 Key Point 1 and Example 1 Collecting Like terms video Using letters to represent numbers video Mathswatch Clip 102a	GCSE Foundation Book Pg 33-34 Warm Up – Q1/2 Q3-Q5 (+ -) Q6-Q7 (* /) Q8-Q11 (letters as numbers) Strengthen – pg 50, q1-q5 Extend – pg 53, q1-q3		Working in groups, students write four questions and their answers on simplifying simple algebraic expressions and terms (including adding, subtracting, multiplying and dividing). They make sure they know the answers, and then give them to other groups to solve.
2 2.2. Simplifying Expressions Lesson Plan	Simplify algebraic expressions	Use the index laws Multiply and divide expressions	You've got the power! Instruct students to work in pairs or small groups. Each pair or group of students makes a set of 20 cards which they lay	Active teach Pages 35-36 Index Laws video Index Laws 2 video Multiplying	GCSE Foundation Book Pg 35-36 Warm Up – Q1-3 Q4-q6 (multiplying powers)	Active Learn: Homework, Practice and support: Foundation 2.2	Write four expressions that will give the answer $12x^{10}$, two made by multiplying two *x* terms and two made by dividing two *x* terms.

			face down. Ten cards have expressions with powers (such as 1^0, 1^1, 2^1, 2^2, 3^2, 3^3, 4^2, 4^3, 5^2, 5^3) and ten cards have equivalent expressions (in this case: 0, 1, 2, 4, 9, 27, 16, 64, 25, 125). Each person can turn over two cards on their go. The aim is to make a matching pair. If they do, they keep them and get another go. If they don't have a matching pair they replace the cards in the same position, face down. Continue taking turns until all the cards are matched. When they do not get a matching pair, they should try to remember the values on the cards and where they are. The person with the most pairs at the end is the winner.	Algebra video Mathswatch clip 102b 102c	Q7-q8 (dividing powers) Q9-q14 (x / algebra) Strengthen – pg 50, q6-q9 Extend – pg 53, q4-q5		Write an expression with three terms that will multiply or divide to give the same answer. Discuss.

3 2.3. Substitution Lesson Plan	Substitute numbers onto an expression	Calculate with negative numbers and terms.	'Answers from the future' Draw a square with side length *s* cm. Write an expression and work out the perimeter of the square if *s* = 3. (answer: perimeter 4*s* = 12 cm) Change the side length to 5*s* cm. Write an expression and work out the perimeter if *s* = 4 . (answer: perimeter 20*s* = 80 cm)	Active teach pages 37-38 Example 4 Using substitution video Using letters to represent numbers video Mathswatch clip 66	GCSE Foundation Book Pg 37-38 Warm Up – Q1-3 Q4-Q5 (Writing simple algebraic statements). Q6-Q8 (Substitution) Q9-q13 (writing statements then sub) Strengthen – pg 51, q9-q11 Extend – pg 53, q6-q8		Q8 (Exam question) Write these expressions on the board. a^2 $a-3$ $2a+1$ $a+1$ Think of different values of *a*, one at a time, and substitute them into the expressions. Put the expressions in order of size, according to the answers, for each substitution. *Is it possible to find values of a so that the order of the expressions is the same every time?* (answer: Values of *a* = 3 and above will give the same order.)
4 2.4. Formulae Lesson Plan	Recognise the difference between a formula and expression	Write a formula as an expression. Substitute	'Is it ready yet?' *Write a rule for working out P, the perimeter of a*	Active teach pages 39-40 Key Point 8	GCSE Foundation Book Pg 39-40 Warm Up – Q1-3	Active Learn: Homework, Practice and support: Foundation 2.4	Write two examples of formulae, and say what each of the terms and

		numbers into simple formula.	*rectangle with base b and height h. The rule should start with 'P ='* (answer: *P* = 2(*b* + *h*)). *Does your rule work when b* = 3 *and h* = 5*??* *Check whether this rule works for various lengths of sides. Change P, b and h in your formula to X, s and t. Does the rule still work?*	Example 5	Q4-Q15		variables represent. Use examples of formulae used in real-life, if possible. Students can use formulae they have seen in science lessons.