



# Primary Mathematics Curriculum

## Expressions and equations

Children should be given opportunities to demonstrate how the knowledge and skills gained in this strand can be used to link, reinforce and progress learning across the other four interconnected strands.

	a The learner	b The learner	c The learner	d The learner	e The learner	f The learner	g The learner	h The learner	i The learner	j The learner	k The learner
<b>Elements</b>	<b>Expressions and equations</b>										
<b>Understanding and Connecting</b>					<p>Uses symbols for equals to, not equals to, less than and greater than, as relational symbols.</p> <p>Uses number facts and/or simple computation to find the missing value in a number sentence.</p>	<p>Explores multiple structures for number sentences (For example: <math>c=a+b/ a+b=c</math>).</p> <p>Investigates and tests the 'trueness' of number sentences.</p> <p>Breaks pattern into component parts and compares how each term changes as the pattern progresses.</p>	<p>Explores the concept of a variable in the context of simple shape-based or story-based expressions, patterns and tables.</p> <p>Explores and describes the relationship between sets of numbers in a growing or shrinking pattern (It might be useful to use examples based upon a real-life situation, numerical or shape-pattern).</p>	<p>Substitutes values for variables and tabulates and investigates how change in one variable can impact change in results or outputs.</p>	<p>Constructs expressions and equations by using letters as unknowns that are variable or constant.</p> <p>Evaluates or finds the value of an unknown in a given equation.</p>	<p>Explores how expressions can be equivalent even when their symbolic forms differ (For example: <math>2x + 4</math> and <math>2(x+2)</math>).</p> <p>Identifies common factors and applies them to simplify expressions (For example: <math>4x+4=4(x+1)</math>).</p> <p>Evaluates algebraic expressions by substituting natural numbers for unknowns (Unknowns can be either variable or constant).</p>	<p>Identifies multiple versions of expressions, by combining like terms, identifying factors, and applying the commutative, distributive and associative properties where appropriate.</p>
<b>Communicating</b>					<p>Translates verbal one-step problems into written addition or subtraction number sentences or expressions [and vice versa].</p>	<p>Uses a symbol or picture to represent an unknown value in a number sentence.</p> <p>Translates verbal problems involving addition and subtraction of increasing complexity into written number sentences or expressions [and vice versa].</p>	<p>Translates verbal problems involving unknown elements into written number sentences or expressions [and vice versa].</p> <p>Compiles a table of values for elements of a pattern. Uses a table to extend, and describe the pattern, and to predict future values.</p>	<p>Translates word and verbal problems into written multiplication or division number sentences or expressions [and vice versa].</p> <p>Generates a pattern in shapes from a function.</p> <p>Generates a table and a graph from a function.</p>	<p>Uses letters to stand for unknown numbers in equations.</p> <p>Draws models that represent problems that involve more than one variable.</p> <p>Uses symbols to express generalisations (For example: For the zero or commutative properties of multiplication).</p>	<p>Generates expressions for contexts. If relevant, simplifies expressions by grouping like terms and identifying common factors.</p> <p>Translates word and verbal problems into written equations [and vice versa].</p> <p>Writes equations with more than one unknown (Unknowns can be either variable or constant), to arrive at a solution to a problem.</p>	<p>Writes equations and model problems to represent mathematical situations or structures of increasing complexity.</p>

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Elements	Expressions and equations										
Reasoning					<p>Recognises the function of operational symbols [+ , -] and relational symbols [= , &gt; , &lt; , ≠] and how this function remains the same in all contexts.</p> <p>Selects appropriate operational or relational symbols to make an expression true.</p>	<p>Recognises that symbols can also be used to stand for or represent a variable which can be known or unknown, and which can include a range of values (For example: Peter's age = my age + 6).</p>	<p>Describes the structure of a function, using words or symbols (For example: output = 1 + 2 times the input).</p> <p>Recognises growing or shrinking patterns as functions (i.e. a sequence of inputs and outputs) and uses this structure to make predictions about further outputs/inputs.</p>	<p>Deduces patterns and rules that emerge from substituting values for variables.</p> <p>Determines the meaning of a variable depending on its context or purpose.</p>	<p>Uses and interprets expressions to answer questions about quantities and their relationships.</p> <p>Uses words, diagrams and tables as appropriate to show the logic of expressions.</p>	<p>Explore and describe how different operations produce different graphs.</p>	<p>Completes a table to explain the structure underpinning a two-variable relationship.</p>
Applying and Problem-Solving					<p>Tells the story of simple number sentences or expressions, verbally or using appropriate models (For example: diagrams or concrete materials).</p>	<p>Solves a problem to determine an unknown value.</p> <p>Applies addition and subtraction facts to find an unknown value.</p>	<p>Models and solves problems using various representations such as tables, words, diagrams and expressions.</p>	<p>Solves problems by using inverse operational relationships and factorisation.</p> <p>Applies multiplication and division properties to find an unknown value.</p>	<p>Solves for unknown numbers using properties of the four operations.</p> <p>Solves problems involving the functional relationship between two quantities.</p>	<p>Models and represents problem situations of increasing complexity using graphs, tables and equations.</p> <p>Uses appropriate methods to solve a range of simple equations, within a context.</p>	<p>Solves word problems involving two variable equations.</p> <p>Generates and applies expressions to solve problems.</p> <p>Applies knowledge of notational representations of numbers and operations (For example: Fraction notation or exponents) to interpret and solve problems with unknowns.</p>