Cranbrook Primary School- Progression in Algebra

Purpose of study –Mathematics is a creative and highly interconnected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.

Aims

The national curriculum for mathematics aims to ensure that all pupils:

- become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately
- reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- can solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions

Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. The programmes of study are, by necessity, organised into apparently distinct domains, but pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They should also apply their mathematical knowledge to science and other subjects.

The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.

Intent

We want our children to become **confident and articulate communicators** by enriching their mathematical vocabulary. We aim to enrich our pupils learning with a deep and confident understanding in fluency and reasoning. We aspire for our children to appreciate the power of mathematics and build a **life-long passion for maths** by exploring their curiosity through **memorable learning experiences**. As the children progress we aim to build confidence, **widen their horizons** and attain a positive growth mind set. Through our enterprise scheme we will provide children with an opportunity to develop their **global identity** through working with the local community. We want them to know that mathematics is essential to succeed in life and necessary for financial responsibilities and most forms of employment.

Algebra

Area of Study	EYFS	1	2	3	4	5	6
EQUATIONS		*Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as* *7 = □ - 9* (copied from Addition and Subtraction)	*Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and missing number problems.* (copied from Addition and Subtraction)	Solve problems, *including missing number problems, using number facts, place value, and more complex addition and subtraction.* (copied from Addition and Subtraction)		*Use the properties of rectangles to deduce related facts and find missing lengths and angles* (copied from Geometry: Properties of Shapes)	Express missing number problems algebraically

				Solve problems, including missing number problems, involving multiplication and division, including integer scaling (copied from Multiplication and Division)			
			Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 (copied from Addition and Subtraction)				Find pairs of numbers that satisfy number sentences involving two unknowns
		Represent and use number bonds and related subtraction facts within 20					Enumerate all possibilities of combinations of two variables

		(copied from Addition and Subtraction)					
Area of Study	EYFS	1	2	3	4	5	6
FORMULAE					*Perimeter can be expressed algebraically as 2(a + b) where a and b are the dimensions in the same unit. (Copied from NSG measurement)*		Use simple formulae *Recognise when it is possible to use formulae for area and volume of shapes* (copied from Measurement)
Area of Study	EYFS	1	2	3	4	5	6

SEQUENCES		*Sequence events in chronological order using language such as: before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening* (copied from Measurement)	*Compare and sequence intervals of time* (copied from Measurement) *Order and arrange combinations of mathematical objects in patterns* (copied from Geometry: position and direction)				Generate and describe linear number sequences
Key Vocabulary							
Areas	R	Y1	Y2	Y3	Y4	Y5	Y6
Algebra							formulae linear number sequences algebraically equation unknowns combinations variables