

## **Progression in Algebra**

### **Algebra: Finding an unknown**

Reception: Adds and subtracts, using quantities and objects, 2 single-digit numbers, and counts on or back to find the answer

Write mathematical statements involving addition (+), subtraction (-) and equals (=) signs.

Year 1: Solve one-step problems that involve addition, subtraction and missing numbers using concrete objects and pictorial representations.

Solve one-step problems involving multiplication by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.

Year 2: Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.

Solve missing number problems using addition and subtraction.

Year 3: Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.

Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which  $n$  objects are connected to  $m$  objects.

Year 4: Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.

Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as  $n$  objects are connected to  $m$  objects.

Year 5: Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign.

Year 6: Use simple formulae e.g. perimeter of a rectangle or area of a triangle.

Generate and describe linear number sequences.

Express missing number problems algebraically.

Find pairs of numbers that satisfy an equation with two unknowns.

Enumerate possibilities of combinations of two variables.

## **Progression in Ratio and Proportion**

### **Ratio: Using the relationship between numbers**

#### **Proportion: Sharing**

- Reception: Solves problems, including doubling, halving and sharing
- Year 1: Solve one-step problems involving division by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.
- Year 2: Solve problems involving multiplication and division, using concrete materials and mental methods.
- Year 3: Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which  $n$  objects are connected to  $m$  objects.
- Year 4: Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as  $n$  objects are connected to  $m$  objects.
- Year 5: Multiply and divide numbers mentally drawing upon known facts.
- Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.
- Year 6: Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts e.g. find  $\frac{7}{9}$  of 108.
- Solve problems involving the calculation of percentages e.g. of measures, and such as 15% of 360 and the use of percentages for comparison.
- Solve problems involving similar shapes where the scale factor is known or can be found.
- Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.