

## **Year 5 Math Overview 2017-18**

**By the end of the academic year the children will cover the following strands and develop related skills.**

### **Number and place value**

Pupils identify the place value in large whole numbers.

They continue to use number in context, including measurement. Pupils extend and apply their understanding of the number system to the decimal numbers and fractions that they have met so far. They should recognise and describe linear number sequences, including those involving fractions and decimals, and find the term-to-term rule.

They should recognise and describe linear number sequences (for example, 3,  $3\frac{1}{2}$ , 4,  $4\frac{1}{2}$  ...), including those involving fractions and decimals, and find the term-to-term rule in words (for example, add  $\frac{1}{2}$ ).

### **Addition and subtraction**

Pupils practise using the formal written methods of columnar addition and subtraction with increasingly large numbers to aid fluency. They practise mental calculations with increasingly large numbers to aid fluency (for example,  $12\,462 - 2300 = 10\,162$ ).

### **Multiplication and division**

Pupils practise and extend their use of the formal written methods of short multiplication and short division. They apply all the multiplication tables and related division facts frequently, commit them to memory and use them confidently to make larger calculations. They use and understand the terms factor, multiple and prime, square and cube numbers.

Pupils interpret non-integer answers to division by expressing results in different ways according to the context, including with remainders, as fractions, as decimals or by rounding (for example,  $98 \div 4 = 98/4 = 24\text{ r }2 = 24\frac{1}{2} = 24.5 \approx 25$ ).

Pupils use multiplication and division as inverses to support the introduction of ratio in year 6, for example, by multiplying and dividing by powers of 10 in scale drawings or by multiplying and dividing by powers of a 1000 in converting between units such as kilometres and metres. Distributivity can be expressed as  $a(b + c) = ab + ac$ .

They understand the terms factor, multiple and prime, square and cube numbers and use them to construct equivalence statements (for example,  $4 \times 35 = 2 \times 2 \times 35$ ;  $3 \times 270 = 3 \times 3 \times 9 \times 10 = 92 \times 10$ ).

Pupils use and explain the equals sign to indicate equivalence, including in missing number problems (for example,  $13 + 24 = 12 + 25$ ;  $33 = 5 \times$ ).

## Fractions

Pupils should be taught throughout that percentages, decimals and fractions are different ways of expressing proportions. They extend their knowledge of fractions to thousandths and connect to decimals and measures.

Pupils connect equivalent fractions  $> 1$  that simplify to integers with division and other fractions  $> 1$  to division with remainders, using the number line and other models, and hence move from these to improper and mixed fractions. Pupils connect multiplication by a fraction to using fractions as operators (fractions of), and to division, building on work from previous years. This relates to scaling by simple fractions, including fractions  $> 1$ .

Pupils practise adding and subtracting fractions to become fluent through a variety of increasingly complex problems. They extend their understanding of adding and subtracting fractions to calculations that exceed 1 as a mixed number. Pupils continue to practise counting forwards and backwards in simple fractions.

Pupils continue to develop their understanding of fractions as numbers, measures and operators by finding fractions of numbers and quantities. Pupils extend counting from year 4, using decimals and fractions including bridging zero, for example on a number line.

Pupils say, read and write decimal fractions and related tenths, hundredths and thousandths accurately and are confident in checking the reasonableness of their answers to problems.

They mentally add and subtract tenths, and one-digit whole numbers and tenths.

They practise adding and subtracting decimals, including a mix of whole numbers and decimals, decimals with different numbers of decimal places, and complements of 1 (for example,  $0.83 + 0.17 = 1$ ).

Pupils should go beyond the measurement and money models of decimals, for example, by solving puzzles involving decimals.

Pupils should make connections between percentages, fractions and decimals (for example, 100% represents a whole quantity and 1% is  $1/100$ , 50% is  $50/100$ , 25% is  $25/100$ ) and relate this to finding 'fractions of'.

## Measurement

Pupils use their knowledge of place value and multiplication and division to convert between standard units.

Pupils calculate the perimeter of rectangles and related composite shapes, including using the relations of perimeter or area to find unknown lengths. Missing measures questions such as these can be expressed algebraically, for example  $4 + 2b = 20$  for a rectangle of sides 2 cm and  $b$  cm and perimeter of 20cm.

Pupils calculate the area from scale drawings using given measurements.

Pupils use all four operations in problems involving time and money, including conversions (for example, days to weeks, expressing the answer as weeks and days).

### **Geometry- properties of shapes**

Pupils become accurate in drawing lines with a ruler to the nearest millimetre, and measuring with a protractor. They use conventional markings for parallel lines and right angles.

Pupils use the term diagonal and make conjectures about the angles formed between sides, and between diagonals and parallel sides, and other properties of quadrilaterals, for example using dynamic geometry ICT tools. Pupils use angle sum facts and other properties to make deductions about missing angles and relate these to missing number problems.

### **Geometry-position and direction**

Pupils recognise and use reflection and translation in a variety of diagrams, including continuing to use a 2-D grid and coordinates in the first quadrant. Reflection should be in lines that are parallel to the axes.

### **Statistics**

Pupils connect their work on coordinates and scales to their interpretation of time graphs. They begin to decide which representations of data are most appropriate and why.