

## GRADE 4

### Course Outline 2019-2020 Mathematics

#### Term 1

##### Number and Place Value

- Read and write numbers up to 10 000.
- Count on and back in ones, tens, hundreds and thousands from four-digit numbers.
- Understand what each digit represents in a three- or four-digit number and partition into thousands, hundreds, tens and units.
- Give a sensible estimate of up to 100 objects, e.g. choosing from 10, 20, 50 or 100.

##### Number Patterns and Properties

- Derive quickly pairs of two-digit numbers with a total of 100
- Recognize and use factor pairs and commutativity in mental calculations
- Order numbers to 100; compare 4-digit numbers using the > and < signs.
- Understand even and odd numbers.
- Sort numbers, e.g. odd/even, multiples of up to 100.

##### Number Pairs and Number Families

- Find and learn by heart all number pairs to 10 and pairs with a total of 20.
- Partition all numbers to 100 into pairs and record the related addition and subtraction facts.
- Recognise and begin to know multiples of 2, 3, 4, 5 and 10, up to the tenth multiple.
- Round two to three -digit numbers to the nearest multiple of 10 and 100.

##### Addition and Subtraction

- Recall and use addition and subtraction facts for 100
- Practise mental methods with increasingly large numbers to aid fluency
- Add pairs of three-digit numbers.
- Add three or four small numbers, finding pairs that equal 10 or 20
- Mentally subtract a two-digit number from a three-digit number
- Add and subtract near-multiples of 10 or 100 to or from three- digit numbers,
- Add any pair of two-digit numbers, choosing an appropriate strategy
- Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why
- Understand that addition can be done in any order, but subtraction cannot.
- Add numbers with up to 4 digits using the formal written method of columnar addition where appropriate.

##### Multiplication and Division

- Recall multiplication and division facts for multiplication tables up to  $12 \times 12$ .
- Count on in small constant steps such as threes and fours.
- Know multiplication for  $2 \times$ ,  $3 \times$ ,  $4 \times$ ,  $5 \times$ ,  $6 \times$ ,  $9 \times$  and  $10 \times$  tables and derive division facts.
- Understand multiplication as repeated addition and use the  $\times$  sign.
- Recognise and use factor pairs and commutativity in mental calculations count in multiples of 6 and 9.

- Understand division as grouping and use the  $\div$  sign.
- Use place value, known and derived facts to multiply mentally.
- Solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by one-digit
- Understand that division can leave some left over.

## **Geometry**

- Identify, describe, visualise, draw and make a wider range of 2D shapes including a range of quadrilaterals, the heptagon and tetrahedron; use methods to create a range of polygons.
- Classify polygons (including a range of quadrilaterals) using criteria such as the number of right angles, whether they are regular or not and their symmetrical properties.
- Identify lines of symmetry in 2-D shapes presented in different orientations.
- Complete a simple symmetric figure with respect to a specific line of symmetry.
- Make patterns by repeatedly reflecting shapes in vertical lines of symmetry.

## **Fractions and Decimals.**

- Extend understanding of the number system and decimal place value to tenths.
- Recognise and write decimal equivalents of any number of tenths.
- Round decimals with one decimal place to the nearest whole number.
- Compare numbers with the same number of decimal places up to two decimal places.
- Solve simple measure problems involving decimals to two decimal places.
- Order and compare two or more fractions with the same denominator (halves, quarters, thirds, fifths, eighths or tenths).
- Understand that  $\frac{1}{2}$  is equivalent to 0.5.
- Understand the relation between non-unit fractions and multiplication and division of quantities.

## **Position and coordinates.**

- Describe and identify the position of a square on a grid of squares where rows and columns are numbered and/or lettered
- Recognise where a shape will be after translations of a given unit to the left/right and up/down on square and triangular grids
- Use coordinates to describe the position of a point on a grid in the first quadrant
- Plot specified points on a coordinate grid in the first quadrant
- Recognise where a shape will be after translations of a given unit to the left/right and up/down on a coordinate grid in the first quadrant

## **Unit of Measure - Time**

- Read, write and convert time between analogue and digital 12- and 24-hour clocks
- Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.

## Term 2

### Number and Place Value

- Read and write numbers with one decimal place.
- Count on and back in 0.1s, 1s, 10s or 100s from any number up to 10,000.
- Read Roman numerals to 100 (I to C) and know that, over time, the numeral system changed to include the concept of zero and place value.
- Count in multiples of 6, 8, 25 and 1000.
- Count backwards through zero to include negative numbers.
- Order a set of random numbers to at least 10,000 including amounts of money and measures involving decimals.
- Count in fraction steps, e.g.  $\frac{1}{5}$ ,  $\frac{2}{5}$ ,  $\frac{3}{5}$

### Multiplication & division

- Recall multiplication facts for 2, 3, 4, 5, 6, 8 and 9x tables and derive associated division facts.
- Identify patterns of similar calculations, e.g. *if I know  $7 \times 8$ , I also know  $0.7 \times 0.8$ ,  $70 \times 8$ ,  $70 \times 80$  etc.*
- Multiply and divide numbers by 10, including those which have answers to one decimal place.
- Double any multiple of 10 or 100. Use estimation and inverse to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.

### Addition & subtraction

- Recall addition and subtraction facts for 100.
- Choose an appropriate strategy to solve a calculation based upon the numbers involved.
- Estimate and use inverse operations to check answers to a calculation.
- Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.

### Fractions

- Solve problems involving increasingly harder fractions to calculate quantities.
- Recognise, find and write fractions.

### Measurement: length, perimeter and area.

- Estimate, measure and compare lengths, weights and capacities, choosing and using suitable uniform non-standard and standard units and appropriate measuring instruments.
- Compare lengths, weights and capacities using the standard units: centimetre, metre, 100 g, kilogram, and litre.
- Understand that area is a measure of surface within a given boundary.
- Find the area of rectilinear shapes by counting squares.

## **Statistics:**

- Interpret discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.
- Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.

## **Decimals**

- Add and subtract numbers with up to 4 digits and decimals with one decimal place using the formal written methods of columnar addition and subtraction where appropriate.

## **Geometry**

- Describe positions on a 2-D grid as coordinates in the first quadrant.
- Describe movements between positions as translations of a given unit to the left/right and up/down.
- Plot specified points and draw sides to complete a given polygon.
- Complete a simple symmetric figure with respect to a specific line of symmetry.

## **Term 3**

### **Multiplication & division**

- Recall multiplication and division facts for the 12 times table.

### **Addition and subtraction: Money**

- Estimate, compare and calculate different measures including money in pence, pounds, Dirham and Dollar.
- Write amounts of money using decimal notation.
- Recognise that one hundred 1p coins equal £1 and that each coin is of £1.

### **Fraction**

- Understand that a fraction is one whole number divided by another (for example, can be interpreted as  $3 \div 4$ ).
- Divide numbers up to 3 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context.
- Solve problems involving increasingly harder fractions to calculate quantities.

### **Decimals**

- Identify the value of each digit to two decimal places.
- Recognise and write decimal equivalents of any number of tenths or hundredths.
- Recognise and write decimal equivalents to  $\frac{1}{4}$  ;  $\frac{1}{2}$  ;  $\frac{3}{4}$  .
- Find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths.
- Convert between different units of measure.
- Round decimals with one decimal place to the nearest whole number.
- Order and compare numbers with the same number of decimal places up to two decimal places.

## **Position and direction**

- Describe movements between positions as translations of a given unit to the left/right and up/down

## **Ongoing concepts**

### **Problem Solving**

#### **Using Techniques and Skills in Solving Mathematical Problems**

- Choose appropriate mental strategies to carry out calculations (addition, subtraction, multiplication and division) and explain how they worked out the answer.
- Explain methods and reasoning orally.
- Make sense of word problems (single and easy two-step), decide what operations (addition or subtraction, simple multiplication or division) are needed to solve them and, with help, represent them using a concluding statement.
- Check the answer to an addition by adding the numbers in a different order or by using a different strategy, e.g.  $35 + 19$  by adding 20 to 35 and subtracting 1, and by adding  $30 + 10$  and  $5 + 9$ .
- Check a subtraction by adding the answer to the smaller number in the original subtraction.
- Describe and continue patterns which count in 2's up to 1000's.
- Make a sensible estimate for the answer to a calculation.
- Consider whether an answer is reasonable.
- Reading and calculating time in both analogue and digital time.

## **Textbooks**

- Rising Star Audio Mental Math
- Collins Busy Ants Pupil Book 4A
- Collins Busy Ants Pupil Book 4B
- Collins Busy Ants Pupil Book 4C

## **Assessments:** Break down of 100% mark

The final grade for the course will be calculated based on:

Multiple forms of formal and informal assessments including CAT 4, GL Assessments, will be used to gain knowledge about a student's level of understanding. Assessments will be in the form of Mental Math, End of Unit Evaluations, Times Table Quiz, Problem Solving- (group task/written task) and Formal Assessments. All formal test dates will be posted on the communicator.