Maths Curriculum Summary, Reception—Year 4, UK National Curriculum

Reception/Pre-K

(Taken from Oxford Owl)

- Count reliably from 1 to 20, place them in order and say which number is one more or one less than a given number.
- Use quantities and objects to add and subtract 2 single-digit numbers and count on or back to find the answer.
- Use everyday language to talk about size, weight, capacity, position, distance, time, and money to compare quantities and objects and to solve problems.
- Recognise, create, and describe patterns.
- Explore characteristics of everyday objects and shapes and use mathematical language to describe them.

Year 1/Kindergarten

(Everything that follows is taken from the [UK National Curriculum](#))

<u>Number - number and place value</u>

Pupils should be taught to:
- count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number
- count, read and write numbers to 100 in numerals; count in multiples of 2s, 5s and 10s
- given a number, identify 1 more and 1 less
- identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least
- read and write numbers from 1 to 20 in numerals and words

<u>Number - addition and subtraction</u>

Pupils should be taught to:
- read, write and interpret mathematical statements involving addition (+), subtraction (−) and equals (=) signs
- represent and use number bonds and related subtraction facts within 20
- add and subtract one-digit and two-digit numbers to 20, including 0
- solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ? − 9

<u>Number - multiplication and division</u>

Pupils should be taught to:
- solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher

<u>Number - fractions</u>

Pupils should be taught to:
- recognise, find and name a half as 1 of 2 equal parts of an object, shape or quantity
- recognise, find and name a quarter as 1 of 4 equal parts of an object, shape or quantity

<u>Measurement</u>

Pupils should be taught to:
- compare, describe and solve practical problems for:
  - lengths and heights [for example, long/short, longer/shorter, tall/short, double/half]

- ○ mass/weight [for example, heavy/light, heavier than, lighter than]
    - ○ capacity and volume [for example, full/empty, more than, less than, half, half full, quarter]
    - ○ time [for example, quicker, slower, earlier, later]
- measure and begin to record the following:
    - ○ lengths and heights
    - ○ mass/weight
    - ○ capacity and volume
    - ○ time (hours, minutes, seconds)
    - ○ recognise and know the value of different denominations of coins and notes
    - ○ sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]
- recognise and use language relating to dates, including days of the week, weeks, months and years
- tell the time to the hour and half past the hour and draw the hands on a clock face to show these times

Geometry - properties of shapes

Pupils should be taught to:
- recognise and name common 2-D and 3-D shapes, including:
    - ○ 2-D shapes [for example, rectangles (including squares), circles and triangles]
    - ○ 3-D shapes [for example, cuboids (including cubes), pyramids and spheres]

Geometry - position and direction

Pupils should be taught to:
- describe position, direction and movement, including whole, half, quarter and three-quarter turns

Year 2/First Grade

Number - number and place value

Pupils should be taught to:
- count in steps of 2, 3, and 5 from 0, and in 10s from any number, forward and backward
- recognise the place value of each digit in a two-digit number (10s, 1s)
- identify, represent and estimate numbers using different representations, including the number line
- compare and order numbers from 0 up to 100; use <, > and = signs
- read and write numbers to at least 100 in numerals and in words
- use place value and number facts to solve problems

Number - addition and subtraction

Pupils should be taught to:
- solve problems with addition and subtraction:
  - using concrete objects and pictorial representations, including those involving numbers, quantities and measures
  - applying their increasing knowledge of mental and written methods
- recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100
- add and subtract numbers using concrete objects, pictorial representations, and mentally, including:
  - a two-digit number and 1s
  - a two-digit number and 10s
  - 2 two-digit numbers
  - adding 3 one-digit numbers
- show that addition of 2 numbers can be done in any order (commutative) and subtraction of 1 number from another cannot
- recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems

Number - multiplication and division

Pupils should be taught to:
- recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers
- calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs
- show that multiplication of 2 numbers can be done in any order (commutative) and division of 1 number by another cannot

- solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts

Number - fractions

Pupils should be taught to:
- recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape, set of objects or quantity
- write simple fractions, for example $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$

Measurement

Pupils should be taught to:
- choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels
- compare and order lengths, mass, volume/capacity and record the results using >, < and =
- recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value
- find different combinations of coins that equal the same amounts of money
- solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change
- compare and sequence intervals of time
- tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times
- know the number of minutes in an hour and the number of hours in a day

Geometry - properties of shapes

Pupils should be taught to:
- identify and describe the properties of 2-D shapes, including the number of sides, and line symmetry in a vertical line
- identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces
- identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]
- compare and sort common 2-D and 3-D shapes and everyday objects

Geometry - position and direction

Pupils should be taught to:

- order and arrange combinations of mathematical objects in patterns and sequences
- use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise)

<u>Statistics</u>

Pupils should be taught to:
- interpret and construct simple pictograms, tally charts, block diagrams and tables
- ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity
- ask-and-answer questions about totalling and comparing categorical data

Year 3/Second Grade

Number - number and place value

Pupils should be taught to:
- count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number
- recognise the place value of each digit in a 3-digit number (100s, 10s, 1s)
- compare and order numbers up to 1,000
- identify, represent and estimate numbers using different representations
- read and write numbers up to 1,000 in numerals and in words
- solve number problems and practical problems involving these ideas

Number - addition and subtraction

Pupils should be taught to:
- add and subtract numbers mentally, including:
  - a three-digit number and 1s
  - a three-digit number and 10s
  - a three-digit number and 100s
- add and subtract numbers with up to 3 digits, using formal written methods of columnar addition and subtraction
- estimate the answer to a calculation and use inverse operations to check answers
- solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction

Number - multiplication and division

Pupils should be taught to:
- recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables
- write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods
- 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

Number - fractions

Pupils should be taught to:
- count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10
- recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators

- recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators
- recognise and show, using diagrams, equivalent fractions with small denominators
- add and subtract fractions with the same denominator within one whole [for example, $\frac{5}{7}$ + $\frac{1}{7}$ = $\frac{6}{7}$]
- compare and order unit fractions, and fractions with the same denominators
- solve problems that involve all of the above

Measurement
Pupils should be taught to:
- measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)
- measure the perimeter of simple 2-D shapes
- add and subtract amounts of money to give change, using both £ and p in practical contexts
- tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks
- estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, am/pm, morning, afternoon, noon and midnight
- know the number of seconds in a minute and the number of days in each month, year and leap year
- compare durations of events [for example, to calculate the time taken by particular events or tasks]

Geometry - properties of shapes

Pupils should be taught to:
- draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them
- recognise angles as a property of shape or a description of a turn
- identify right angles, recognise that 2 right angles make a half-turn, 3 make three-quarters of a turn and 4 a complete turn; identify whether angles are greater than or less than a right angle
- identify horizontal and vertical lines and pairs of perpendicular and parallel lines

Statistics

Pupils should be taught to:
- interpret and present data using bar charts, pictograms and tables
- solve one-step and two-step questions [for example 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables

Year 4/Third Grade

Number - number and place value

Pupils should be taught to:
- count in multiples of 6, 7, 9, 25 and 1,000
- find 1,000 more or less than a given number
- count backwards through 0 to include negative numbers
- recognise the place value of each digit in a four-digit number (1,000s, 100s, 10s, and 1s)
- order and compare numbers beyond 1,000
- identify, represent and estimate numbers using different representations
- round any number to the nearest 10, 100 or 1,000
- solve number and practical problems that involve all of the above and with increasingly large positive numbers
- read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of 0 and place value

Number - addition and subtraction

Pupils should be taught to:
- add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate
- 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

Number - multiplication and division

Pupils should be taught to:
- recall multiplication and division facts for multiplication tables up to 12 × 12
- use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together 3 numbers
- recognise and use factor pairs and commutativity in mental calculations
- multiply two-digit and three-digit numbers by a one-digit number using formal written layout
- solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by 1 digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects

Number - fractions (including decimals)

Pupils should be taught to:
- recognise and show, using diagrams, families of common equivalent fractions

- count up and down in hundredths; recognise that hundredths arise when dividing an object by 100 and dividing tenths by 10
- solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number
- add and subtract fractions with the same denominator
- recognise and write decimal equivalents of any number of tenths or hundreds
- 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
- round decimals with 1 decimal place to the nearest whole number
- compare numbers with the same number of decimal places up to 2 decimal places
- solve simple measure and money problems involving fractions and decimals to 2 decimal places

Measurement

Pupils should be taught to:
- convert between different units of measure [for example, kilometre to metre; hour to minute]
- measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres
- find the area of rectilinear shapes by counting squares
- estimate, compare and calculate different measures, including money in pounds and pence
- 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

Geometry - properties of shapes

Pupils should be taught to:
- compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes
- identify acute and obtuse angles and compare and order angles up to 2 right angles by size
- 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

Geometry - position and direction

Pupils should be taught to:
- 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

<u>Statistics</u>

Pupils should be taught to:
- interpret and present 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