-DEVELOPED RESEARCH INTO MATHEMATICAL CURRICULUM FOR LOWER KEY STAGE 2-

**Year 3**

* Count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more/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 words
* Solve number problems and practical problems
* Add and subtract numbers mentally, including a three-digit number and 1s/10s/100s
* Add and subtract numbers with up to 3 digits, using formal written method 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 complex addition and subtraction
* Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables
* Write and work out statements for multiplication and division using the multiplication tables that they know
* Solve problems including missing number problems, involving multiplication and division, positive integer scaling problems and correspondence problems in which objects are connected to one another
* Count up and down in tenths and recognise that tenths arise from dividing something into ten equal parts
* Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators
* Recognise and show, using diagrams, equivalent fractions with small denominators
* Measure, compare, add and subtract lengths (m/cm/mm), mass (kg/g), volume/capacity (l/ml)
* Measure the perimeter of simple 2D shapes
* Add and subtract amounts of money to give change, using both £ and p
* Tell and write time from an analogue clock
* Estimate and read time to the nearest minute
* Know the number of seconds in a minute and the number of days in each month, year and leap year
* Compare durations of events
* Draw 2D shapes and make 3D shapes using modelling materials
* Be able to recognise 3D shapes and describe them
* Recognise angles as a property of shape
* Identify right angles and be able to identify whether angles are greater or less than a right angle
* Identify horizontal and vertical lines and pairs of perpendicular/parallel lines
* Interpret and present data using bar charts, pictograms and tables
* Solve one-step and two-step questions using information presented in bar charts, pictograms and tables

**Year 4**

* Count in multiples of 6, 7, 9, 25 and 1000
* Find 1000 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 (100s, 100s, 10s and 1s)
* Order and compare numbers beyond 1000
* Identify, represent and estimate numbers using different representations
* Round any number to the nearest 10, 100, or 1000
* Solve number and practical problems with increasingly large positive numbers
* Read Roman numerals to 100
* Add and subtract numbers with up to 4 digits using the formal written method of columnar addition and subtraction where appropriate
* Estimate and use inverse operations to check answers to a calculation
* Recall multiplication and division facts for tables up to 12x12
* Use place value, known and derived facts to multiply and divide mentally including multiplying by 0 and 1, dividing by 1 and 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 with written methods
* Solve problems involving multiplying and adding including using distributive law to multiply two-digit numbers by 1 digit, integer scaling problems and harder correspondence problems
* Recognise and show, using diagrams, families of common equivalent fractions
* Count up and down in hundredths and recognise that hundredths arise when dividing an object by 100 and dividing tenths by 10
* Solve problems involving increasingly harder fractions to calculate quantities
* Add and subtract fractions with the same denominators
* Recognise and write decimal equivalents of any number of tenths or hundreds
* Recognise and write decimal equivalents to ¼, ½ and ¾
* 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
* Convert between different units of measure e.g. Hours to minutes
* 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
* 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
* 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
* 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

Sources

<https://uk.ixl.com/math/year-3>

<https://uk.ixl.com/math/year-4>

<https://www.gov.uk/government/publications/national-curriculum-in-england-mathematics-programmes-of-study/national-curriculum-in-england-mathematics-programmes-of-study>

<http://www.satspapers.org.uk/Page.aspx?TId=7#MATHS_Y4_2_4>

Example Questions (based off of Year 4 SATs papers, as well as conducted research into Lower KS2 curriculum)

Addition

* 2069 + 5280

Subtraction

* 145-83

Multiplication

* 12\*8
* 37\*80
* 1.5\*100
* 12\*5
* 5\*13
* 44\*2

Division

* 36/12
* 120/12
* 108/12
* 72/8
* 60/5
* 63/7
* 96/6