Key Learning in Key Stage 2

Mathematics in Year 3

During the years of lower Key Stage 2 (Year 3 and Year 4), the focus of mathematics is on the mastery of the four operations (addition, subtraction, multiplication and division) so that children can carry out calculations mentally, and using written methods. In Year 3 your child is likely to be introduced to the standard written column methods of addition and subtraction.

Number and Place Value

• Count in multiples of 4, 8, 50 and 100

• Recognise the place value of digits in three-digit numbers (using 100, 10s and 1s)

• Read and write numbers up to 1,000 using digits and words

• Compare and order numbers up to 1,000

Calculations

• Add and subtract numbers mentally, including adding either 1s, 10s or units to a 3-digit number

• Use the standard column method for addition and subtraction for up to three digits

• Estimate the answers to calculations, and use inverse calculations to check the answers

• Learn the 3x, 4x and 8x tables and the related division facts, for example knowing that 56 ÷ 8 = 7

• Begin to solve multiplication and division problems with two-digit numbers Fractions Equivalent fractions are fractions which have the same value, such as 1/2 and 3/6 or 1/4 and 2/8.

• Understand and use tenths, including counting in tenths

• Recognise and show equivalent fractions with small denominators

• Add and subtract simple fractions worth less than one, for example 5 /7 + 1 /7 = 6 /7

• Put a sequence of simple fractions into size order

Measurements

• Solve simple problems involving adding and subtracting measurements such as length and weight

• Measure the perimeter of simple shapes

• Add and subtract amounts of money, including giving change

• Tell the time to the nearest minute using an analogue clock

• Use vocabulary about time, including a.m. and p.m., hours, minutes and seconds

• Know the number of seconds in a minute and the number of days in a year or leap year

Shape and Position

• Draw familiar 2-d shapes and make familiar 3-d shape models

• Recognise right angles, and know that these are a quarter turn, with four making a whole turn

• Identify whether an angle is greater than, less than or equal to a right angle

• Identify horizontal, vertical, perpendicular and parallel lines

Parallel lines are those which run alongside each other and never meet. Perpendicular lines cross over each other meeting exactly at right angles.

Graphs and Data

• Present and understand data in bar charts, tables and pictograms

• Answer questions about bar charts that compare two pieces of information

Parent Tip Most schools will have a calculation policy which sets out the order in which calculation strategies are taught. Check on your child's school's website to see if they have one for parents that shows what methods are used in school and when they are usually introduced.

English in Year 3 and Year 4

In lower Key Stage 2, your child will build on their work from the infants to become more independent in both their reading and their writing. Most children will be confident at decoding most words – or will have extra support to help them to do so – and so now they will be able to use their reading to support their learning about other subjects. They will begin to meet a wider range of writing contexts, including both fiction and non-fiction styles and genres.

Speaking and Listening

The Spoken Language objectives are set out for the whole of primary school, and teachers will cover many of them every year as children's spoken language skills develop. In Years 3 and 4, some focuses may include:

• Use discussion and conversation to explore and speculate about new ideas

• Begin to recognise the need to use Standard English in some contexts

• Participation in performances, plays and debates

• Explain thinking and feeling in well-structured statements and responses

Reading skills

• Extend skills of decoding to tackle more complex words, including with unusual spelling patterns

• Read a wide range of fiction, non-fiction and literary books

• Recognise some different forms of poetry

• Use dictionaries to find the meanings of words

• Become familiar with a range of traditional and fairy tales, including telling some orally

• Identify words which have been chosen to interest the reader

• Ask questions about what they have read

• Draw simple inferences about events in a story, such as how a character might be feeling

• Make predictions about what might happen next in a story

• Summarise ideas from several paragraphs of writing

• Find and record information from non-fiction texts

• Take part in discussions about reading and books

Children begin to identify how authors choose words for effect, for example by selecting 'wailed' instead of 'cried', or 'enraged' rather than 'cross'. They may begin to make such choices in their own writing, too.

Writing skills

• Write with joined handwriting, making appropriate join choices

• Spell words that include prefixes and suffixes, such as anticlockwise

• Spell some commonly misspelt words correctly, taken from the Y3/4 list

• Use a dictionary to check spellings

• Use possessive apostrophes correctly in regular and irregular plurals, such as children's and boys'

• Use examples of writing to help them to structure their own similar texts

• Plan out sentences orally to select adventurous vocabulary

• Use paragraphs to organise ideas

• Use description and detail to develop characters and settings in story-writing

• Write interesting narratives in stories

• In non-fiction writing, use features such as sub-headings and bullet points

• Review their own work to make improvements, including editing for spelling errors

• Read others' writing and suggest possible improvements

• Read aloud work that they've written to be clearly understood

• Extend sentences using a wider range of conjunctions, including subordinating conjunctions

• Use the present perfect verb tense

• Use nouns and pronouns with care to avoid repetition

• Use conjunctions, adverbs and prepositions to add detail about time or cause

• Use fronted adverbials

• Use direct speech, with correct punctuation

Young children have a tendency to repeat nouns or pronouns, leading to several sentences containing 'He' or 'They'. They can use alternatives to make writing more interesting. For example, alternatives for describing an individual character might include: he, the burglar, Mr Smith, John, the criminal, the villain, etc.

To add information to a sentence about its location, children might use conjunctions ("Although it was still early..."), adverbs ("Early that morning...") or prepositions ("At about six-thirty that morning..."). Often these techniques allow children to write more complex sentences.

Grammar Help

For many parents, the grammatical terminology used in schools may not be familiar. Here are some useful reminders of some of the terms used:

• Present perfect tense: a tense formed using the verb 'have' and a participle, to indicate that an action has been completed at an unspecified time, e.g. The girl has eaten her ice-cream

• Fronted adverbial: a word or phrase which describes the time, place or manner of an action, which is placed at the start of the sentence, e.g. "Before breakfast,..." or "Carrying a heavy bag,..."

• Direct speech: words quoted directly using inverted commas, as opposed to being reported in a sentence

Parent Tip When children are writing outside of school – or when you are looking at school work with them – why not discuss their choices of vocabulary? Some common words, such as 'went' and 'said' can often be replaced by more specific words that give a sense of the action, such as 'raced' or 'yelled'. You can also take opportunities to look at words like this that crop up in books you read with your child, considering how the choice of word affects your understanding of a story.

Science in Year 3

During Key Stage 2 (Years 3 to 6), the strands of science begin to become more recognisable as biology, chemistry and physics, although they will usually be grouped together in primary school. Children will continue to carry out their own experiments to find out about the world around them, and to test their own hypotheses about how things work.

Scientific Investigation

Investigation work should form part of the broader science curriculum. During Year 3, some of the skills your child might focus on include:

• Set up simple comparative tests, ensuring that they are carried out fairly

• Make systematic observations, using appropriate equipment and standard units

• Gather and record information to help to answer scientific questions

• Use results to draw simple conclusions or to raise further questions

• Use straightforward scientific evidence to answer questions

Plants

• Identify the basic functions of a plant's roots, stem/trunk, leaves and flowers

• Understand that plants need air, light, water, nutrients and room to grow

• Understand the role of flowers in the life cycle, including pollination and seed dispersal

Pollination is the act of reproduction in which pollen is transferred – usually to another plant – to make seeds. Seed dispersal is the distribution of seeds by actions such as sprinkling, through the wind, or by being eaten as part of a fruit.

Animals including Humans

• Know that animals get their nutrition from food, and need the right types and amounts of nutrition

• Identify that humans and some other animals have skeletons and muscles, and know their basic functions Rocks

• Compare and group different types of rocks based on their appearance and properties

• Describe how fossils are formed

• Recognise that soils are made from rocks and organic material

At this level, rocks are often grouped into one of three categories: Igneous: rocks formed from magma under the Earth's surface, often after a volcano, or deep underground. Metamorphic: rocks formed under great heat or pressure under the Earth's surface, such as slate or marble. Sedimentary: rocks formed where sediment builds up in deposits under lakes or oceans.

Light

• Recognise that we need light to see things

• Notice that light is reflected from surfaces

• Know how shadows are formed, and identify how the size of a shadow changes

Forces and Magnets

• Notice that some forces need contact to act, but that magnetic forces can act at a distance

• Observe how magnets attract or repel each other, describing magnets as having two poles

• Compare and group objects according to whether or not they are magnetic

Parent Tip Many families will have a magnet of some form about the house, and this makes a great tool for scientific investigation. A fun experiment is to compare whether household objects are attracted to magnets, such as keys, tins, cans, and even different denominations of coin.

Mathematics in Year 4

By the end of Year 4, children will be expected to know all of their times tables up to 12 x 12 by heart. This means not only recalling them in order but also being able to answer any times table question at random, and also knowing the related division facts. For example, in knowing that 6 x 8 = 48, children can also know the related facts that 8 x 6 = 48 and that 48 ÷ 6 = 8 and 48 ÷ 8 = 6. This expertise will be particularly useful when solving larger problems and working with fractions.

Number and Place Value

• Count in multiples of 6, 7, 9, 25 and 1,000

• Count backwards, including using negative numbers

• Recognise the place value in numbers of four digits (1000s, 100s, 10s and 1s)

• Put larger numbers in order, including those greater than 1,000

• Round any number to the nearest 10, 100 or 1,000

• Read Roman numbers up to 100

Roman Numerals' Basics: I = 1 ; V = 5 ; X = 10 ; L = 50 ; C = 100 Letters can be combined to make larger numbers. If a smaller value appears in front of a larger one then it is subtracted, e.g. IV (5 – 1) means 4. If the larger value appears first then they are added, e.g. VI (5 + 1) means 6.

Calculations

• Use the standard method of column addition and subtraction for values up to four digits

• Solve two-step problems involving addition and subtraction

• Know the multiplication and division facts up to 12 x 12 = 144

• Use knowledge of place value, and multiplication and division facts to solve larger calculations

• Use factor pairs to solve mental calculations, e.g. knowing that 9 x 7 is the same as 3 x 3 x 7

• Use the standard short multiplication method to multiply three-digit numbers by two-digit numbers

Fractions

• Use hundredths, including counting in hundredths

• Add and subtract fractions with the same denominator, eg 4/ 7 + 5 /7

• Find the decimal value of any number of tenths or hundredths, for example 100 7 is 0.07

• Recognise the decimal equivalents of ¼, ½ and 3 /4

• Divide one- or two-digit numbers by 10 or 100 to give decimal answers

• Round decimals to the nearest whole number

• Compare the size of numbers with up to two decimal places

Measurements

• Convert between different measures, such as kilometres to metres or hours to minutes

• Calculate the perimeter of shapes made of squares and rectangles

• Find the area of rectangular shapes by counting squares

• Read, write and convert times between analogue and digital clocks, including 24-hour clocks

• Solve problems that involve converting amounts of time, including minutes, hours, days, weeks and months

Shape and Position

• Classify groups of shapes according to the properties, such as sides and angles

• Identify acute and obtuse angles

• Complete a simple symmetrical figure by drawing the reflected shape

• Use coordinates to describe the position of something on a standard grid

• Begin to describe movements on a grid by using left/right and up/down measures

Parent Tip Playing traditional games, such as battleships or even draughts and chess, is great for exploring coordinates and movements across the coordinate grid.

Graphs and Data

• Construct and understand simple graphs using discrete and continuous data

Discrete data is data which is made up of separate values, such as eye colour or shoe size. Continuous data is that which appears on a range, such as height or temperature.

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Science in Year 4

During Year 4, children begin to use more scientific vocabulary to describe objects and processes, such as describing solids, liquids and gases, or erosion. Vocabulary is a key part of any area of study, and particularly in science. Learning new words – and their spellings – can often be fun when they relate to experiments and science investigations.

Scientific Investigation

Investigation work should form part of the broader science curriculum. During Year 4, some of the skills your child might focus on include:

• Carry out fair tests, using control tests where appropriate

• Take accurate measurements using a range of scientific equipment, including thermometers

• Organise and presenting data to help answer scientific questions

• Record findings using scientific vocabulary, diagrams, charts and tables

• Report on findings using oral and written explanations of results and conclusions

Living Things and their Habitats

• Use classification keys to group, identify and name a variety of living things

• Recognise that environments can change

A common example of classification is the grouping of vertebrates into fish, amphibians, reptiles, mammals and birds.

Animals including Humans

• Describe the basic functions of the parts of the digestive system, such as mouth, oesophagus, stomach and intestines

• Identify the different types of teeth in humans, and their functions

• Construct a variety of food chains to show producers, predators and prey

States of Matter

• Group materials as solids, liquids and gases

• Observe that some materials change state when heated or cooled

• Know the part of evaporation and condensation in the water cycle

The water cycle is the process of water being evaporated from the Earth's surface, and then condensing to form clouds and rain before falling back to Earth.

Sound

• Understand that sounds are caused by vibrations reaching the ear

• Find what affects the pitch and volume of a sound

Parent Tip Children may make simple musical instruments in school to explore sound. You could also make some at home using elastic bands stretched over an open box, seeds or grains in a sealed box, or even a simple drum from a saucepan!

Electricity

• Construct a simple electrical circuit using cells, wires, bulbs and switches

• Understand that a complete circuit is needed to power a lamp or buzzer

• Recognise some common conductors and insulators