

Landgate School Long Term Planning 2019-2021

Key-Stage 2

Intent: We aim for our Learners to become maths-positive problem-solvers and to have ideas, to develop vocabulary and reasoning skills and so better understand mathematical concepts in the world around them. We aim to ensure learners can confidently apply their mathematics skills when out in the community to provide them both with the love of mathematics and the independent skills to support them into adulthood.

Emphasis at KS2 is on **developing mastery** through:

- **fluency** in using fundamental mathematical skills through varied and frequent practice over time, develop conceptual understanding, mental recall and apply their knowledge.
- **reasoning** by following a line of enquiry and begin to give simple justification or proof using mathematical language
- **solving problems** by applying their mathematics to a variety of questions and persevering in seeking solutions.

This overview is not definitive but has starting points for teachers to use in conjunction with the National Curriculum, White Rose and Willow Dene schemes of learning, Landgate Learning Ladders and the Engagement Model for assessment as well as their own professional judgement in providing a broad, balanced and meaningful maths curriculum.

Opportunities: Mathematics throughout KS2 builds on the 5 principles of counting established at KS1 and the practice, vocabulary and confidence of learners to encourage greater independence and resilience. Learners have opportunity to make mathematical links with their own interests and cross-curricular activities and topics through access to daily maths lessons, outdoor learning, online programmes (ie: RM Easimaths), games and apps, community visits and theme days using this approach:

1. **Concrete** – use of real-life objects and manipulatives to help learners understand mathematical concepts
2. **Pictorial** – representations used alongside concrete objects to help reasoning and problem solving
3. **Abstract** – more formal written strategies linked to pictorial and concrete activities to develop independence and consolidate mental strategies.

Number underpins all maths and is approximately 80% of the coverage (including 3 discrete number lessons per week and cross-curricular links) to ensure time to reinforce understanding and competency. Learners will develop 'number sense': a deeper understanding of place value, the four operations and associated symbols involving increasing numbers up to 1000, commutative and inverse laws, and opportunities to learn multiplication tables.

Each class has a weekly maths 'topic' lesson on geometry/measures to explore and describe the properties of 2D shapes and 3D objects, and learn to use instruments of measures linked to real-life situations of areas and space. Key vocabulary is explicitly taught and modelled to encourage learners to describe, draw, compare, sort and reason using 'mathematical talk', developing reading and spelling of numbers and mathematical language where appropriate.

		Key-Stage 2
KS2 Focus 1 (Autumn 1)	Key Focus/ Opportunities:	<p style="text-align: center;">Number and Place value (0-20)</p> <p style="text-align: center;">Continuous provision, outdoor and community visits, cross curricular links. World Maths Day 15th October 2020 (3P Digital Learning of mental maths strategies)</p>
	Vocabulary and Knowledge:	<p>Rising Stars Vocabulary p13, p17 Incl: 0-20, number, numeral, digit, count on/back, how many? same as, equal to, smallest, biggest, teens, tens, ones, place value, array, sequence, pattern, order</p> <ul style="list-style-type: none"> instantly recognise the number of objects in a small group (subitise) and identify on a numberline know how to identify and represent quantities in pictures and numerals
	Key Skills:	<p>Stage 1-8 Learners should be taught to:</p> <ul style="list-style-type: none"> engage and respond to the sequence of numbers in games, rhymes, songs and rote counting, count to find a quantity, begin to recognise and match numerals, sequence and order within 10 (record in tokens/lines/arrays/pictures/over-write numerals). <p>Stage 9-12 Learners should be taught to:</p> <ul style="list-style-type: none"> Rote count to/past 20, forwards and backwards using objects, numberline, 100 square, starting from any given number Sort and count objects accurately incl number bonds to 10, by placing them in a line/array, incl pictorial arrays in 1s, 2s, 5s, 10s. Estimate and identify small groups of objects and represent numbers using pictorial representations, read and write numeral and words
	Key Focus/ Opportunities:	<p style="text-align: center;">Measure: Time and Calendar</p> <p style="text-align: center;">Continuous provision, outdoor and community visits, cross curricular links. timetable, birthdays, events, celebrations..</p>
	Vocabulary and knowledge:	<p>Rising Stars Vocabulary p15, p19 Incl: time, routine and positional language (<i>first, next, then, now, before, yesterday, today, tomorrow, morning, afternoon, dinner time, playtime, bedtime..</i>), days of the week, months of the year, birthday, holiday, clock, hour, minutes, o'clock, quarter past/to, half past, start, stop, timer</p> <ul style="list-style-type: none"> develop a sense of time and sequence daily routines and events in chronological order recognise vocabulary related to time and ways/equipment in which time is recorded in words and numbers
	Key skills:	<p>Stage 1-8 Learners should be taught to:</p> <ul style="list-style-type: none"> join in with rhymes and songs linked to days, seasons, events, sequence two or more familiar events and recognise vocabulary/symbols linked to passing of time and daily routines. <p>Stage 9-12 Learners should be taught to:</p> <ul style="list-style-type: none"> recognise and use language relating to dates, sequencing events, telling the time measure, and record time (eg timetables, dates, timers, analogue and digital clocks..) estimate, measure and compare durations of time eg how long an activity, challenge or event takes show/write hands on a clock for o'clock, quarter/half-past, quarter past/to and 5 minute increments where appropriate.

KS2 Focus 2 (Autumn 2)	Key Focus/ Opportunities:	Number: Place Value (0-20) and Statistics Continuous provision, outdoor and community visits linked to subjects, STEM Enterprise Week Dec 2020 – Christmas Markets
	Vocabulary and Knowledge:	Rising Stars Vocabulary p13, p16-17, p21 Incl: <i>0-20, number, numeral, count, 1s, how many? same as, equal to, smallest, biggest, more than, less than, most, least, altogether, group, set, belong, same, different, chart</i> , related to matching, sorting, classifying, handle data <ul style="list-style-type: none"> • know how to identify, represent and compare quantities of objects in a small group • develop fluency and understanding of number and number sequence • know how to carry out a practical investigation, follow a line of enquiry, use trial and improvement, systematically collect, represent and interpret data in simple ways linked to real-life situations.
	Key Skills:	Learners should be taught to: Stage 1-8 Learners should be taught: <ul style="list-style-type: none"> • Match, sort, classify according to criteria; count and handle data in simple ways using objects and pictograms. Stage 9-12 Learners should be taught: <ul style="list-style-type: none"> • Count to 20 using objects, arrays, numberline, 100 square, by rote, starting from any given number, forwards and back • Recognise the place value of each digit in a two-digit number (10s, 1s) using part-whole model / place value frame and how many 'total / altogether'. • Ask questions and construct simple tally charts, pictograms and block diagrams and tables for 1-1 correspondence. Extend to 2s, 5, 10s where appropriate. • Interpret data by sorting, comparing and ordering quantities/numbers along a number line/ten frame/chart/pictogram and use signs $<$ $>$ $=$ to solve problems.
	Key focus/ Opportunities:	Geometry: 2D and 3D Shape (including fractions and angles) Christmas Maths, continuous provision, outdoor and community visits linked to subjects. PE, Computing, STEM, Food tech
	Vocabulary and knowledge:	Rising Stars Vocabulary: p11, p15 Incl: <i>2D shape, circle, triangle, square, rectangle, match, pattern, flat, curved, straight, corner, side, symmetry, 3D shape, sphere, cone, cylinder, cube, pyramid, size, whole, half</i> <ul style="list-style-type: none"> • Develop spatial thinking, recognise and name 2D and 3D shapes in the environment as wholes • Start to consider the 2D shapes they can recognise on the faces of 3D objects and begin to describe their properties.
	Key Skills:	Stage 1-8 Learners should be taught to: <ul style="list-style-type: none"> • Manipulate, sort, match, build/draw, recognise and name 2D 3D shapes, in different variations of size and colour, orientations, repeating and tessellating patterns. Stage 9-12 learners should be taught (in addition to the above) to: <ul style="list-style-type: none"> • Sort shapes by similar/different properties, including if they roll or not, considering surface as 'flat' or 'curved'. • Explore lines of symmetry (halves and quarters), find a 'half' as one of two equal parts of a 'whole' object or shape • Where appropriate, identify right angles on shapes, measure angles and say which are greater than or less than a right angle $<$ $>$ $=$ 90 degrees; identify horizontal/vertical lines, pairs of parallel/perpendicular lines.

KS2 Focus 3 (Spring 1)	Key Focus/ Opportunities:	Number: Place value (0-100) and Addition Activities, continuous provision, outdoor and community visits linked to subjects, problem-solving theme day
	Vocabulary and Knowledge:	Rising Stars Vocab p17, p18-19, Incl: <i>how many, add, more, and, make, equals, total, altogether, count on in 2s,5s,10s, tens, ones, groups,</i> <ul style="list-style-type: none"> • Subitise number/quantities bonds to 10, 20, 50, 100 and recognise the place value of each digit in a two-digit number • Begin to recognise the commutative law (e.g. $3 + 2 = 5$, therefore $2 + 3 = 5$) • Know the + symbol for addition and = equal to and associated vocabulary
	Key Skills	Stage 1-8 Learners should be taught to: <ul style="list-style-type: none"> • recognise 'one' and 'lots', add one more, count to find a quantity incl spot patterns, recognise associated numeral and use 1-6 in familiar activities and games Stage 9-12 Learners should be taught to: <ul style="list-style-type: none"> • Count to and across 100, using objects, arrays, numberline, 100 square, by rote, starting from any given number, forward/back • use real-life objects to add 1 to a group and indicate how many there are now, combine groups to find a whole upto 20 • use the commutative law to work out number bonds to 10, 20, 50, 100 (use a ten frame/ numberline/ 100 square/ part-whole model/ number sentences and written calculation eg column addition where appropriate) • identify, represent and estimate numbers using different practical representations, including the number line
	Key focus/ Opportunities:	Measure: Weight, Mass and Capacity Activities, continuous provision, outdoor and community visits linked to subjects.
	Vocabulary and knowledge	Rising Stars Vocab p14, p19 Incl: <i>mass, weight, weigh, balances, heavy, light, heavier than, lighter than heaviest, lightest, scale, container, capacity, volume, full, empty, half, quarter, three-quarters full, holds, estimate, guess, more than, less than, almost, equal to</i> <ul style="list-style-type: none"> • experience weight and capacity and begin to recognise associated vocabulary • explore misconceptions eg larger objects are always heavier, taller containers hold most liquid.. • use measuring equipment carefully.
	Key skills	Stage 1-8 Learners should be taught to: <ul style="list-style-type: none"> • to investigate concepts of weight/mass, volume and capacity using familiar objects and equipment in practical ways Stage 9-12 Learners should be taught (in addition to the above)to: <ul style="list-style-type: none"> • compare, describe and solve practical problems for mass/weight, for example, heavy/light, heavier than, lighter than; capacity and volume, for example, full/empty, more than, less than, almost, half, half full, quarter using vocab and signs $< > =$ • estimate and begin to record mass/weight, capacity and volume use non-standard and standard units of measure as appropriate to reason and problem-solve by choosing appropriate standard units. • begin to use other measuring equipment, such as thermometers in degrees Celsius

KS2 Focus 6 (Spring 2)	Key Focus/ Opportunities:	Number: Place Value (0-100) and Subtraction Activities, continuous provision, outdoor and community visits linked to subjects.
	Vocabulary and Knowledge:	Rising Stars Vocab p13-14, p17-18 Incl: <i>how many, one less, take away, how many are gone/left/left over? equals, total, altogether</i> <ul style="list-style-type: none"> recognise the inverse relationships involving addition and subtraction (e.g. if $3 + 2 = 5$, then $5 - 2 = 3$) Know that the total number of objects changes when objects are added or taken away Know the $-$ symbol for subtraction and $=$ equal to
	Key Skills	Stage 1-8 Learners should be taught to: <ul style="list-style-type: none"> Use real-life objects to take away 1 (or more) from a group and indicate how many there are now Order groups/quantities/numbers into biggest/more/most/less/least/fewest Partition a set of 10 into number bonds (use part-whole model and number lines where appropriate) linked to meaningful situations, role-play, songs, rhymes and games introducing signs for subtraction $-$ and equal to $=$ Stage 9-12 Learners should be taught to: <ul style="list-style-type: none"> Count to and across 100, forwards and backwards from a given number Represent and use number bonds and related subtraction facts within 20, including 0, using objects/ part-whole mode/, bar mode/ numberline/ 100 square/ number sentences using signs for subtraction $-$ and equals $=$ and column subtraction. Subtract by counting on/back, not crossing 10 boundary, then crossing 10, solve missing number problems such as $7 = \square - 9$
	Key Focus/ Opportunities:	Measure: Money and Finance Activities, continuous provision, outdoor and community visits linked to subjects.
	Vocabulary and Knowledge:	Rising Stars Vocab p11, p15 Incl: <i>money, coin, penny, pence, pound, notes, price, cost, buy, sell, spend, spent, pay value, total, altogether, change,</i> <ul style="list-style-type: none"> concept of transaction (e.g. by exchanging a coin for an item, or one item for another, during a role-play activity) apply knowledge of place value, number bonds addition and subtraction strategies to begin to solve problems with small amounts of money
	Key Skills:	Stage 1-8 Learners should be taught to: <ul style="list-style-type: none"> manipulate, recognise, sort, match and exchange real coins and notes and recognise the value of different denominations Stage 9-12 Learners should be taught (in addition to the above) to: <ul style="list-style-type: none"> use $<$ $>$ $=$ to compare small amounts of money up to 10 pence to £1.00 and find the difference combine knowledge of money and counting in 2s 5s 10s to count money more efficiently. Convert pounds and pence, add small amounts together and give change using addition and subtraction strategies.

KS2 Focus 7 (Summer 1)	Key Focus/ Opportunities:	Number: Place Value (0-1000) and Multiplication Activities, continuous provision, outdoor and community visits linked to subjects.
	Vocabulary and Knowledge:	Rising Stars Vocab p13-14, p18 Incl: <i>multiply, groups of, sets of, array, equal, count in steps of, pair, doubles, sequence, odd, even,</i> <ul style="list-style-type: none"> recognise number patterns awareness of equal groups that are arranged differently so understand that the groups look different but can still be equal in number
	Key Skills	Stage 1-8 Learners should be taught to: <ul style="list-style-type: none"> make and recognise equal sets and unequal sets, including various arrays of objects (eg pairs of, sets of 4..), pictures, dot pattern cards. make and recognise patterns odd/even, jumps of 2 Stage 9-12 Learners should be taught to: <ul style="list-style-type: none"> count to and across 100, forwards and backwards, read and write numbers to 100 in numerals/words where appropriate recognise, make and add equal groups recall and count in multiples of twos, fives and tens (upto 12x12 where appropriate) recognising odd and even numbers. create mathematical statements using multiplication sign x and equals = for problem solving in contexts using materials, repeated addition, mental methods and multiplication facts.
	Key Focus/ Opportunities:	Measure: Length, Height, Distance Activities, continuous provision, outdoor and community visits linked to subjects, PE sports.
	Vocabulary and Knowledge:	Rising Stars Vocab p14. p19 Incl: <i>measure, length, height, long, short, tall, high, far, near, (-er, -est comparatives). (metre, centimetre, millimetre, equipment)</i> <ul style="list-style-type: none"> begin to make direct comparisons (that height is a type of length, make indirect comparisons, non/standard units of measure) estimate and recognise that number can be a measure of length/height and area
	Key Skills:	Stage 1-8 Learners should be taught to: <ul style="list-style-type: none"> make direct comparisons of everyday items sort items according to characteristics of length (including fractions 'half of', if appropriate) understand and use simple comparative language to describe length begin to make indirect comparisons with non-standard units of measure (eg blocks for counting) Stage 9-12 Learners should be taught (in addition to the above) to: <ul style="list-style-type: none"> choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm) and compare < > add lengths to measure and calculate perimeter of simple 2D shapes (cm/mm) Estimate and use measuring equipment to measure, compare, add and subtract lengths (m/cm/mm)

KS2 Focus 8 (Summer 2)	Key Focus/ Opportunities:	Number: Place value (0-1000 and beyond), Division and Fractions Activities, continuous provision, outdoor and community visits linked to subjects.
	Vocabulary and Knowledge:	Rising Stars Vocab p13-14, p18 Incl: <i>share, divide, half/halving, number patterns, inverse, multiplication facts, equal, unequal, groups, sets of, odd/even, twos, fives, tens, whole, fraction, quarter, three-quarters, thirds, fifths, tenths..</i> <ul style="list-style-type: none"> • explore sharing as a model of division and number patterns • know how to use 1 : 1 correspondence to share concrete objects into equal groups • recognise when a number of objects cannot be shared equally into equal groups • develop rapid recall of times table facts and apply the inverse
	Key Skills:	Stage 1-8 Learners should be taught to: <ul style="list-style-type: none"> • explore the concept of division of quantities informally • focus on sharing out equal groups of two, five, ten, accurately as part of role-play and real-life situations Stage 9-12 Learners should be taught to: <ul style="list-style-type: none"> • count to and across 100, forwards and backwards, from any given number, read and write numbers to 100 in numerals/ words • partition a set into sub-sets, share and halve (odd/even) groups of objects using one-to-one correspondence and inverse of multiples of twos, fives, tens etc, then count on to find total (eg 30 shared into 10 groups of 3) • solve problems, including missing number problems • where appropriate, write and calculate mathematical statements for division using the multiplication tables they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods. • recognise, find, name and write fractions $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of quantities, work out equivalents where appropriate.
	Key Focus/ Opportunities:	Geometry: Position and Direction Activities, continuous provision, outdoor and community visits linked to subjects. Algorithms, instructions, Geography, Orienteering/scavenger hunts, PE, Sports Day
	Vocabulary and Knowledge:	Rising Stars Vocab p16, p20 Incl: <i>position, over, under, above, below, top, bottom, side on, in, out, front, back beside, next to, opposite, direction, left, right, up, down, forwards, backwards, sideways, right angle, whole/ half /quarter/ three-quarter turn, rotation, clockwise, anti-clockwise</i> <ul style="list-style-type: none"> • Awareness of position, direction and movement, including whole, half, quarter and three-quarter turns
	Key Skills:	Stage 1-8 Learners should be taught to: <ul style="list-style-type: none"> • practically turn objects, shapes and themselves in different directions and describe position, movement and directions • Order and arrange combinations of mathematical objects in patterns and sequences Stage 9-12 Learners should be taught (in addition to the above) to: <ul style="list-style-type: none"> • recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn. • follow directions and create own simple instructions, correcting errors.

Notes: