Fortuna Primary School
Stage 2 Maths (Equivalent to Y2 National Curriculum)

Prerequisite Knowledge

Before starting Stage 2 pupils should be secure at:

- Counting confidently forwards and backwards from values beyond 100.
- Answering 1 more/less questions for numbers to at least 100 quickly and accurately.
- Recalling by heart number bonds to 20.
- Using concrete objects to find the missing number in simple addition and subtraction maths stories.
- Mentally doubling numbers to 10.
- Halving and doubling sets of concrete objects.
- Counting in multiples of 2, 5 and 10.
- Showing multiplication as repeat addition using arrays.
- Using concrete objects to solve simple word problems involving number, shape and measures.
- Representing numbers in a variety of ways.
- Writing values to 100 in numerals and values to 20 in words.
- Recognising, naming and sorting common 2D and 3D shapes.
- Measuring length, mass and volume using non-standard measures

End of Stage Success Criteria

When a child has progressed through Stage 2 they should:

- Be able to write values to at least 1000 in numerals and words.
- Compare and order values to 100.
- Be able to count confidently forwards and backwards from values beyond 100 in 1s, 2s and 10s.
- Be able to answer 10 more/less questions for numbers to at least 100 quickly and accurately.
- Be able to use number bonds to derive related facts to 100.
- Be able to calculating non-tricky additions and subtractions using a vertical column method.
- Be able to count confidently in multiples of 2, 3, 5, 10, 50 and 100.
- Be able to recall their 2, 3, 5 and 10 timetables and related division facts by heart.
- Be able to derive related facts for all four functions using commutative law.
- Be able to split counters or shapes into 1/2, 1/3 & 1/4s.
- Be able to use objects, jottings and mental methods to solve problems for all four operations.
- Be able to choose and use standard units to measure length, mass and volume to carry out investigations and solve problems.
- Be able to tell the time to the nearest 5 minutes.
- Be able to recognise and make values with British coinage.
- Be able to name and describe 2D and 3D shapes in terms of number of sides/edges, corners/vertices and lines of symmetry.
- Be able to record data in tally charts and pictograms.

Key for Progression statements

(*) reworded from Programme of Study statement (+) new statements (^) split Programme of Study statements **NAHT Assessment Framework key performance indicators**

Arithmetic 1			
Objective	**Beginning**	**Developing**	**Secure**
2.1.a.1 (Counting) Count in tens from any number, forward and backward (^)	I can count forward in tens from 5. *and then…* I can count up in tens from 43.	I can count backward in 20s from 120.	
2.1.a.2 (Counting) Identify ten more or ten less than any given number (+)	I can pick the number 14 as being ten less than 24 from a set of two-digit numbers. *and then…* I can identify the numbers 96 and 116 as being ten less and ten more than 106. *and then…* I can explain how to work out the number ten less than 44.		
2.1.b.1 (Recognising Number) Recognise the place value of each digit in a two-digit number (tens, ones)	I can count out the number of counters represented by any two-digit number up to 20. *and then…* I can count out the number of counters represented by any two-digit number. *and then…* I can solve problems such as 'Find the two-digit number such that the tens digit is 7 more than the units digit and the units digit is an odd number'.		
2.1.b.2 (Recognising Number) Read and write numbers to at least 100 in numerals and words	I can find a given page in a book with 40 pages and write it in words. *and then…* I can form a two-digit number from two digit cards and write it in words.		I can make all the possible two-digit numbers using 2, 5 and 7 and arrange them in alphabetical order.
2.1.b.3 (Recognising Number) Identify, represent and estimate numbers to 100 using different representations, including the number line, and partitioning in different ways (+)	I can partition 54 as 50 + 4 and show this using at least one type of manipulative.	I can partition 54 as 50 + 4 and 40 + 14 and 52 + 2, showing these on a number line and using concrete objects.	I can find partitions of 54 and relate them to addition and subtraction, choosing the most efficient partition for a particular mental calculation, justifying my choice.
	Base Ten and Multilink Cubes are particularly useful at representing the place value of 2-digit numbers and are easy to partition.		
2.2.e.1 (Using Written Calculation) Record addition and subtraction in columns using an expanded format involving partitioning (+)		I can partition 17 + 12 to 10 + 7 + 10 + 2 in a vertical arrangement to get 20 + 9 = 29, with supporting equipment.	I can partition 27 + 12 to 20 + 7 + 10 + 2 in a vertical arrangement to get 30 + 9 = 39. *and then…* I can devise a variety of ways of recording addition and subtraction, some of which are in a vertical format.
		Starting with Base Ten would help the children understand the partition and recombining. Progressing to Arrow Cards will help children visualise the written calculation.	

2.2.b.1 (Calculate Mentally) Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: two two-digit numbers and adding three one-digit numbers (^)		I can correctly answer questions such as 3 + 5 + 2, 27 + 12 and 25 – 9 with the help of some jottings.	I can correctly answer questions such as 3 + 5 + 2, 27 + 12 and 65 – 29 with no jottings. *and then…* I can keep a mental running total of a sequence of two-digit numbers and correctly find their total.
2.2.d.1 (Recall) Recall addition and subtraction facts to 20 fluently, deriving related facts to 100 (^)	I can list the pairs of numbers that add to ten without prompting, and can solve missing number problems such as ? + 12 = 20 with prompting.	I can solve missing number problems such as 5 + ? = 20 and 17 = 8 + ?. *and then…* I can solve problems such as 'I am thinking of two numbers. Their sum is 20 and their difference is six. What are they?'	
	This would be a good opportunity to use Function Machines.		
2.2.c.2 (Solve Calculation Problems) Use the inverse relationship between addition and subtraction to solve missing number problems (^)		I can solve problems such as 'I think of a number, add five and get the answer 11. What is my number?' using subtraction, with prompting.	I can solve problems such as 15 = ? – 12 using addition. *and then…* I can solve problems such as 18 + ? = 28 – 9.

Geometry & Data			
Objective	**Beginning**	**Developing**	**Secure**
2.1.1 (Make and Visualise Shapes) Draw lines and shapes using a straight edge (+)	I can copy a simple shape. *and then…* I can copy a simple shape or draw one according to instructions given. *and then…* I can draw a shape from memory.		
2.2.2 (Classify Shapes) Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line	I can draw a line of symmetry on a drawing of a square.	I can identify that a rectangle has line symmetry but a triangle may not have line symmetry. *and then…* I can amend a design so that it has line symmetry.	
2.1.2 (Make and Visualise Shapes) Identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]	I can select from a set of 3-D shapes those with a rectangle as one of the faces. *and then…* I can sort 3-D shapes into a Carroll diagram according to the 2-D shapes that are faces of that 3-D shape. *and then…* I can create a 3-D shape with particular 2-D shapes forming its faces.		
2.2.1 (Classify Shapes) Identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]	I can sort 2-D shapes according to whether they have a curved edge, with prompting. *and then…* I can sort 2-D shapes according to whether they have a curved edge or whether they have more than three corners, and 3-D shapes according to how many faces they have. *and then…* I can sort shapes into a Carroll diagram according to two properties.		
2.2.3 (Classify Shapes) Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces		I can count the number of faces, edges and vertices of a triangular prism, with support. *and then…* I can state that a triangular prism has five faces, nine edges and six vertices. *and then…* I can state that a triangular prism has five faces, nine edges and six vertices using a representation of the prism.	
2.4.1 (Describe Position) Use mathematical vocabulary to describe position (^)		I can choose an object in the classroom and describe where it is using mathematical vocabulary, with prompts. *and then…* I can choose an object in the classroom and describe where it is using mathematical vocabulary. *and then…* I can choose pairs of objects in the classroom that can be described in relation to each other using mathematical vocabulary.	
2.4.2 (Describe Position) Order and arrange		I can arrange a selection of shapes such as squares, triangles, circles and rectangles	

combinations of mathematical objects in patterns and sequences		into a pattern, using different orientations, with support. *and then…* I can arrange a selection of shapes such as squares, triangles, circles and rectangles into a pattern, using different orientations. *and then…* I can arrange a selection of shapes such as squares, triangles, circles and rectangles into a pattern with sequences within it, using different orientations.	
2.4.3 (Describe Position) Use mathematical vocabularly to describe movement, including movement in a straight line (^)		I can arrange a selection of shapes such as squares, triangles, circles and rectangles into a pattern, using different orientations, with support. *and then…* I can arrange a selection of shapes such as squares, triangles, circles and rectangles into a pattern, using different orientations. *and then…* I can arrange a selection of shapes such as squares, triangles, circles and rectangles into a pattern with sequences within it, using different orientations.	
2.1.1 (Interpret Data) Interpret data from simple pictograms, tally charts, block diagrams and simple tables (^)			I can answer questions such as 'How many people had school lunch on Tuesday?' from an appropriate tally chart or pictogram, with prompting. *and then…* I can answer questions such as 'How many people had school lunch on Tuesday?' from an appropriate tally chart, table or pictogram. *and then…* I can answer questions such as 'How many more people had school lunch on Tuesday than on Monday?' from an appropriate tally chart, table or pictogram.
2.1.2 (Present Data) Present data in simple tables, simple pictograms, tally charts and block diagrams (*)			I can construct a tally chart to show how many children are in each class in the school. *and then…* I can construct a tally chart and a pictogram to show how many children are in each class in the school. *and then…* I can choose the most appropriate representation for data about the number of children in each class in the school, justifying my choice.
2.3.1 (Solve Data Problems) Ask and answer questions about totalling and comparing categorical data			I can use appropriate data to solve problems such as 'How many people choose blue as their favourite colour?' *and then…* I can use appropriate data to solve problems such as 'How many more people choose blue than yellow as their favourite colour?' *and then…* I can do the above indendently and I can explain how I know that is the answer.
2.3.2 Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity			I can solve problems such as 'Which category has the most objects in it?, with support. *and then…* I can do the above independently. *and then…* I can do the above and make up some questions of my own about the situation.

Measures			
Objective	**Beginning**	**Developing**	**Secure**
The objectives within the measures strand of the curriculum lend themselves particularly well to play and every effort should be made to incorporate play into the allocated maths lesson and maths into PSHE Play activities.			
2.2.3 (Make Measurements) 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	I can select a ruler marked in centimetres to measure the length of a pencil and interpret the scale to read the length. *and then…* I can select centimetres to measure the length of a pencil and read from the scale on a watering can that it contains 15 litres		

nearest appropriate unit, using rulers, scales, thermometers and measuring vessels	of water. *and then…* I can read scales on a wide range of measuring instruments and interpret the display beyond 100 to measure grams and millilitres.		
2.1.4 (Understand Units of Measure) Compare and order measurements and record the results using >, < and = as well as simple multiples (*)	I can select from a set of measurements, pairs of measurements that satisfy conditions such as 'is less than', 'is greater than' and 'is the same as' and record them using symbols, with prompting. *and then…* I can select from a set of measurements, pairs of measurements that satisfy conditions such as 'is less than', 'is greater than', 'is the same as' and 'is twice' and record them using symbols where appropriate. *and then…* I can create a set of four measurements from which pairs can be chosen that satisfy conditions such as 'is less than', 'is greater than', 'is the same as' and 'is twice'.		
2.3.4 (Solve Measurement Problems) Solve problems involving comparing measures of length, mass and capacity/volume (+)	I can compare the length of two pencils saying 'One is half the length of the other'. *and then…* I can compare the capacity of two jugs saying 'One holds twice as much as the other'. *and then…* I can compare the capacity of two jugs saying 'One holds five times as much as the other'.		
2.2.1 (Make Measurements) 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	I can tell when it is ten past two and twenty to two, interpreting the homophones of 'to' correctly with appropriate prompts.	I can tell when it is ten past two and twenty to two, interpreting the homophones of 'to' correctly. I can draw the hands on a clock face to show quarter past three or quarter to eleven.	I can confidently tell the time to within five minutes and work out how long it is (to within five minutes) to significant times such as lunchtime.
2.2.2 (Make Measurements) Record the time on an analogue clock in words (+)	I can record the time as 'six o'clock'.	I can record the time as 'quarter past three'. *and then…* I can record the time as 'twenty-five past five'.	
2.1.1 (Understand Units of Measure) Compare and sequence intervals of time		I can use my knowledge that there are five minutes between each number on a clock face for the minute hand to compare time intervals with some prompting.	I can work out the time between 'five past' and '20 past' an hour and know that it is shorter than from 'quarter to' until 'ten past' an hour. *and then…* I can work out time intervals for times expressed using multiples of five minutes and check my answer by considering the amount of turn of the minute hand.
2.1.2 (Understand Units of Measure) Know the number of minutes in an hour and the number of hours in a day		I can work out from an analogue clock face that there are 60 minutes in an hour by counting in fives with prompting, and be aware that the hour hand goes round twice during the course of a whole day. *and then…* I can work out that half an hour is 30 minutes and knows that two times 12 hours is one day because there are 24 hours in a day.	I can use my knowledge of minutes and hours to work out time intervals.
2.3.1 (Solve Measurement Problems) Calculate time intervals and develop a sense of the length of different units of time (+)		I can choose minutes as the appropriate unit for measuring the time taken to do a task. *and then…* I can make sensible estimates of time intervals such as 'I will spend ten minutes eating my lunch' and know that ten seconds is too short and ten hours is much too long.	I can estimate how long it will take to do a task and be reasonably accurate in my judgement.
2.1.3 (Understand Units of Measure) Recognise and use symbols for pounds (£) and pence (p) (^)		I can assemble the coins to match an amount of money written using £ and p, with prompts. *and then…* I can do the above independently and describe an amount of money in writing using £ and p. Check resources match the current coinage and bank notes used in the England.	I can assemble coins and notes to match a given amount of money expressed in £ and p using the minimum number of coins/notes and being able to explain why I am certain that it is the minimum number.

2.3.2 (Solve Measurement Problems) Combine amounts of money to make a particular value including different combinations of coins that equal the same amount of money (*)		I can solve problems such as 'It costs 50p to park a car for two hours. Show some of the ways you can make up 50p using coins'. *and then…* I can solve problems such as 'It costs £1 to park a car for two hours. Show all the ways you can make up £1 using six coins'.	I can solve problems such as 'It costs £1 or £1.50 or 90p or 75p to park a car for two hours depending which car park you go to. You need to take £1.50 in coins so that you can pay the exact money in any of the car parks. What coins do you need to do it with the minimum number of coins?'
2.3.3 (Solve Measurement Problems) Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change		I can solve problems such as 'I buy a pencil for 20p and a ruler for 45p. What do I pay altogether?'	I can solve problems such as 'I buy a pencil for 20p and a ruler for 45p. What change do I get from £1?' *and then…* I can make up problems involving giving change when several items are purchased.

Arithmetic 2			
Objective	**Beginning**	**Developing**	**Secure**
2.3.a.1 (Understand Fractions) Recognise, find, name and write fractions 1/3 and 1/4of a length, shape, set of objects or quantity (^)	I can arrange a set of 12 counters into four groups of three counters each and identify, with prompting, that each of them represents a quarter. *and then…* I can identify three equal parts of a rectangle and know that each of them represents 1/3. *and then…* I can divide a rectangle into three or four equal parts and explain how to represent 1/2, 1/4 and 1/3 using them.		
2.3.a.2 (Understand Fractions) Recognise, find, name and write fractions 2/4 and 3/4 of a length, shape, set of objects or quantity (^)		I can arrange a set of 12 counters into four groups of three counters each and identify, with prompting, that three of them represent 3/4. *and then…* I can identify four equal parts of a rectangle and know that two of them represent 2/4 and three of them represent 3/4. *and then…* I can divide a rectangle into three or four equal parts and explain how to represent 1/2, 2/4, 3/4, 1/3 and 2/3 using them.	
2.3.c.1 (Use Fractions as Numbers) Write simple fractions (^)	I can work out 1/2 of 8 with supporting diagrams. *and then…* I can work out 1/2 of 8 = 4 and 1/3 of 6 = 2 using objects or images as appropriate.	I can work out half of any even number up to 24 and a fifth of any multiple of 5 up to 60.	
2.3.b.1 (Convert Fractions) Recognise the equivalence of 2/4 and 1/2 (^)		I can arrange a set of 12 counters into four equal sets of three each and identify two of these sets as two quarters as well as one half. *and then…* I can count in steps of 1/4, saying half rather than 2/4 and 1 1/2 instead of 6/4. *and then…* I can explain that 2/4 is equivalent to 1/2 and give an example of when that might be used.	
2.1.a.3 (Count) Count in steps of 2, 3, and 5 from 0, forward and backward (^)	I can continue the sequence 2, 4, 6 … to determine whether 22 is an even number.	I can continue the sequence 3, 6, 9 … to determine whether the number 41 is in it.	I can count up in 3s from any number.
2.2.b.3 (Calculate Mentally) Calculate mentally using multiplication and division facts for the 2, 5 and 10 multiplication tables (+)	I can respond correctly when asked for answers to multiplication questions involving facts from the 2, 5 and 10 multiplication tables. *and then…* I can recognise even numbers and recognise the 10 multiplication table as even multiples of 5. I can also work out 40 ÷ 5 = 8 from 8 x 5 = 40.	I can recognise even numbers and recognise the 10 multiplication table as even multiples of 5. I also work out 40 ÷ 5 = 8 from 8 x 5 = 40 (Consolidating).	I can solve problems such as 'Using 2, 2, 5 and 10, make as many numbers from 1 to 20 as you can'.
2.2.d.2 (Recall) Recall multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers		I can recall multiplication table facts such as 4 x 5 = 20 and write down one of the associated division facts.	I can recall or deduce 5 x 7 = 35, 35 ÷ 5 = 7 and 35 ÷ 7 = 5 to solve problems. *and then…* I can predict whether the answer to a 2, 5 or 10 multiplication table question will be odd or even.

2.2.a.3 (Understand Calculation) Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot		I can demonstrate that 8 x 2 is the same as 2 x 8 but that 8 ÷ 2 is not the same as 2 ÷ 8, using appropriate images or manipulatives with appropriate questioning.	I can demonstrate that 8 x 2 is the same as 2 x 8 but that 8 ÷ 2 is not the same as 2 ÷ 8, using appropriate images or manipulatives. *and then…* I can provide a general argument that the result of multiplying two numbers does not depend on the order in which they are written, and a general argument that this does not work with division.
2.2.e.2 (Use Written Calculation) Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs			I can solve missing number problems involving multiplication facts such as 6 x ? = 30, and use manipulatives and images to demonstrate 2 x 5 = 10 with prompting. *and then…* I can solve missing number problems such as 45 ÷ ? = 9 and 2 x ? = 24, and use counters or other manipulatives to demonstrate the number sentence 2 x 5 = 10 and 10 ÷ 2 = 5. *and then…* I can solve problems such as 'Write an expression involving only multiplication and division of 2, 5 and 10 to make the numbers from 1 to 20' and any calculation involving two two-digit numbers and the four operations using the symbols +, –, x, ÷ and =.
2.2.a.4 (Understand Calculation) Use a variety of language to describe multiplication and division (*)	I can associate sharing with division, relating it to my own experience, and describe a multiplicative situation using 'lots of'. *and then…* I can associate the language of grouping and sharing with division, and of combining equal groups and 'lots of' for multiplication. *and then…* I can identify what language is associated with multiplication and division and realises that some applies to both.		

Reasoning			
Objective	**Beginning**	**Developing**	**Secure**
2.1.c.1 (Order and Compare) Compare and order numbers from 0 up to 100; use <, > and = signs	I can choose the larger number out of 28 and 64 and place the correct sign (< or >) between 8 and 32.	I can order the numbers 13, 31, 3 and 30 and place the correct sign (<, > or =) in statements such as between 34 and 17 and between 45 and 34 + 11. *and then…* I can solve problems involving ordering numbers in the context of measures and solve missing number problems such as '1 + 36 < 73, what values could I have?'	
2.1.d.1 (Solve Number Problems) Solve number problems with number facts and place value from the Year 2 curriculum (+)	I can solve problems such as 'I have two cards. One shows the digit 2 and the other shows the digit 5. What is the largest two-digit number I can make by putting them side by side?', with prompting. *and then…* I can solve problems such as 'I have two cards. One shows the digit 4 and the other shows the digit 8. What is the largest two-digit number I can make by putting them side by side?' *and then…* I can make up problems such as 'I have two cards. One shows the digit 4 and the other shows the digit 7. What is the largest two-digit number I can make by putting them side by side?', and justify my answer.		
2.2.b.2 (Calculate Mentally) Use addition and subtraction facts to 20 and derive related facts up to 100 (^)		I can correctly answer 6 + 12 = 18 and deduce that 16 + 12 = 28. *and then…* I can deduce that 20 + 70 = 90 and 42 + 37 = 79 from 2 + 7 = 9.	I can solve problems such as 'I am thinking of two numbers. Their sum is 87 and their difference is 17. What are the numbers?'
		These objectives are repeated at the start of Stage 3 to consolidate and secure learning.	
2.2.a.1 (Understand Calculation) Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot	I can demonstrate that 8 + 2 is the same as 2 + 8 but that 8 – 2 is not the same as 2 – 8, using appropriate images or manipulatives with appropriate supportive questioning. *and then…* I can demonstrate that 8 + 2 is the same as 2 + 8 but that 8 – 2 is not the same as 2 – 8, using appropriate images or manipulatives. *and then…* I can demonstrate that 8 + 2 is the same as		

	2 + 8 but that 8 – 2 is not the same as 2 – 8, using appropriate images or manipulatives.		
2.2.f.1 (Check) Check subtraction calculations using addition calculations by adding in a different order (*)		I can check my answer to 7 + 9 by working out 9 + 7 and, with prompting, notice that 9 + 7 is 'easier' when you count on.	I can check my answer to 47 – 10 = 37 by working out 37 + 10 to give 47. I can check my answer to 5 + 8 + 2 by working out 8 + 2 + 5 *and then…* I can explain why checking subtractions by subtracting the numbers in a different order does not work. I can select the most reliable method to work out 8 + 4 + 7 and then check it by adding in a different order.
2.2.a.2 (Understand Calculation) Understand that sum and difference indicate addition and subtraction respectively (+)		I can recognise that the sum of two numbers is found by adding them together, with appropriate supportive questioning.	I can interpret 'sum' as implying addition and 'difference' as implying subtraction. *and then…* I can interpret 'sum' as implying addition and 'difference' as implying subtraction and that, in the case of finding the difference, you subtract the smaller number from the larger one.
2.2.c.1 (Solve Calculation Problems) 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	I can solve problems such as 'Gemma has five more marbles than Bob. Bob has 12 marbles. How many does Gemma have?', with objects. *and then…* I can solve problems such as 'Jane's mother is 32 years older than her. Jane is 6 years old. How old is her mother?'	I can solve problems such as 'Jane's mother is 32 years older than her. Jane is 6 years old. How old is her mother?' (Consolidating). *and then…* I can make up questions that require addition or subtraction in context.	I can make up questions that require addition or subtraction in context (Consolidating).
2.2.c.3 (Solve Calculation Problems) Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts		I can solve problems such as 'Jon goes to the shop and buys five packs of apples. There are four apples in each pack. How many apples does he buy?', with supporting equipment.	I can solve problems such as 'Jon goes to the shop and buys five packs of apples. There are four apples in each pack. how many apples does he buy?' *and then…* I can make up questions that require multiplication or division in context.