Fortuna Primary School
Stage 4 Maths (Equivalent to Y4 National Curriculum)

Prerequisite Knowledge

Before starting Stage 4 pupils should be secure at:

- Writing values to at least 1000 in numerals and words.
- Counting forwards and backwards from values to 1000 in 10s and 100s.
- Answering 10 or 100 more/less questions for numbers to at least 1000.
- Adding and subtracting mentally ones, tens or hundreds values to/from a mixed number.
- Counting in multiples of 2, 3, 4, 5, 8, 10, 50 and 100.
- Recalling 2, 3, 4, 5, 8 and 10 times table facts and related division facts by heart.
- Finding a given fraction of a set of concrete objects, explaining how this relates to the numerator and denominator.
- Identifying when addition, subtraction, multiplication or division are required to solve a mathematical problem.
- Using a formal written method to calculate for all four operations.
- Using commutative law and associativity to derive related facts for all four functions.
- Choosing a standard unit of measure and make accurate measurements to carry out investigations or solve problems.
- Reading the time to the nearest minute and calculate durations for different units of time.
- Calculating monetary totals and work out different ways to use coins to create these totals.
- Using a ruler to draw polygons with sides measured in cm.
- Naming and describing shapes in terms of parallel sides/edges, perpendicular sides/edges, lines of symmetry and right angles.
- Representing and interpreting data in tables, pictograms and bar charts.

End of Stage Success Criteria

When a child has progressed through Stage 4 they should:

- Be able to recognise place value to at least 1000, including tenths, and use this to order and compare numbers.
- Be able to count backwards through zero into negative numbers.
- Be able to count backwards and forwards in multiples of 1000.
- Be able to round numbers up to 4–digit to the nearest 10, 100 or 1000 as well as round numbers with one decimal place to the nearest whole number.
- Be able to use addition to undo subtraction and vice versa.
- Be able to use columns for addition and subtraction with 4-digit numbers, including those that create 'tricky' columns.
- Be able to mentally calculate the difference and/or totals of pairs of 3-digit numbers.
- Be able to solve 2-step word problems involving addition and subtraction.
- Be able to count in multiples of 6, 7, 9 and 25 as well as those numbers taught at Stage 3.
- Be able to recall all times table and related division facts to 12 x 12.
- Be able to identify factor pairs for a given number.
- Be able to use commutative, associative and distributive laws to solve multiplication problems mentally.
- Be able to use grid method to solve UxHTU problems, and use rounding to check the answer.
- Be able to solve THU÷U using short division.
- Be able to explain the meaning of the numerator and denominator in fractions.
- Be able to identify equivalents to common fractions.
- Be able to perform calculations with fractions containing the same denominator.
- Be able to read time in the 12 and 24-hour clock.
- Be able to calculate durations and convert units of time.
- Be able to solve word problems that require converting units of measure.
- Be able to explain how to calculate the perimeter of rectangles.
- Be able to calculate area using multiplication arrays.
- Identify and name acute, right and obtuse angles in polygons.
- Describe movement and position in the first quadrant.
- Be able to represent and interpret data in tables, bar charts and line graphs using discrete or continuous data.

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**
4.1.a.1 (Count) Count in multiples of 1000; count backwards through zero to include negative numbers (^)	I can chant the sequence 1000, 2000, 3000 … and 3, 2, 1, 0, –1 ..., with prompting. *and then…* I can chant the sequence 3000, 6000, 9000, 12,000 … and 2, 1, 0, –1, –2 … *and then…* I can count backwards in thousands from 2500 to include negative numbers.		
4.1.a.2 (Count) Find 1000 more or less than a given number	I can work out 1000 more than 432. *and then…* I can work out 1000 more than 3468. *and then…* I can reduce any four-digit number to zero by subtracting the appropriate number of thousands, hundreds, tens and ones.		
4.1.b.1 (Represent Numbers) Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, ones)	I can identify the thousands digit when presented with a three-digit number. *and then…* I can arrange four digit cards showing 3, 4, 6 and 7 to make the smallest possible number and can justify my choice of 3467 using the language of thousands,		

	hundreds, tens and ones. *and then…* I can solve problems such as 'Arrange the digit cards 1, 4, 5 and 8 to make the number closest to 6000' and can justify my choice using the language of place value.		
4.1.e.1 (Round Numbers) Round whole numbers to 10,000 to the nearest 10, 100 or 1000 (*) See Stage 3 Reasoning: 3.2.f.1 A reasoning using rounded numbers objective is included in Stage 3 ahead of the actual teaching of rounding. This gap will likely need covering and also provides a useful application for rounding.		I can round 678 to the nearest ten. *and then…* I can round 8076 to the nearest hundred.	I can round 8074 to the nearest 50.
4.1.b.3 (Represent Numbers) Identify, represent and estimate numbers to 10 000 using different representations	I can choose between 60 and 6000 to estimate the number of people in a crowd. *and then…* I can choose between 6, 60, 600 and 6000 to estimate the size of a crowd. *and then…* I can solve problems such as 'Write in order of size: the number of people watching Arsenal play at the Emirates stadium; the number of cubic centimetres in a cubic metre and the distance in miles to the moon'.		
4.2.a.2 (Understanding Calculation_ Understand the inverse relationship between addition and subtraction (+)	I can 'undo' adding 7 by subtracting 7. *and then…* I can 'undo' adding 23 by subtracting 23 and vice versa. *and then…* I can explain using manipulatives that addition and subtraction are inverse operations.		
4.2.b.1 (Calculate Mentally) Mentally add and subtract pairs of three-digit and four-digit numbers (+)	I can calculate the difference between 850 and 640 mentally. *and then…* I can calculate the difference between 1348 and 745 mentally.	I can add a sequence of numbers mentally such as 243 + 179 + 606 + 192.	
4.2.c.1 (Solve Calculation Problems) Solve calculation problems involving two-step addition and subtraction in context, deciding which operations to use and why (^)		I can solve problems such as 'Sarah buys a pen for 40p and a ruler for 80p. How much change does she get from £2?' Check resources match the current coinage and bank notes used in the England.	I can solve problems such as 'Sarah buys five pens at 99p each. How much change does she get from £5?' *and then…* I can solve problems such as 'Sarah buys five pens at £1.25 each, three pencils at 38p each and a ruler for 85p. How much change does she get from £10?'
4.2.e.1 (Use Written Calculation) Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate		I can calculate 6078 + 1934 and 6078 – 1934, choosing whether to use a mental method or a more formal written layout with prompting. *and then…* I can do the above independently. *and then…* I can calculate 6078 + 1934 and 6078 – 1934, choosing between a variety of mental methods or a more formal written layout. Tricky columns were introduced during Stage 3 Arithmetic 1: 3.2.e.1	
4.2.c.2 (Solve Calculation Problems) Solve calculation problems involving two-step addition and subtraction in context, deciding which methods to use and why (^) See Stage 3 Reasoning: 3.2.f.1 for previous learning which may need to be secured due to a quirk in the way rounding is organised in the Rising Stars curriculum.		I can solve calculation problems such as 154 + 23 by considering the numbers involved and choosing an appropriate mental or written method, e.g. partitioning 23 and adding 20 to 154 to get 174 then adding 3 to get 177. *and then…* I can solve calculation problems such as 283 + 119 by considering the numbers involved and choosing an appropriate mental or written method, e.g. rounding to 280 + 120 to give 400 and then adjusting by adding 3 and subtracting 1 to give 402. *and then…* I can solve calculation problems such as 786 + 247 by considering the numbers involved and choosing from a variety of mental or written methods.	
4.3.a.3 (Understand F/D/P) Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten		I can continue the sequence 1/100, 2/100, 3/100 and use a 10 by 10 square to identify one-tenth and one-hundredth and, with supporting diagrams, relate the two so that one-tenth of one-tenth is one-hundredth. *and then…* I can continue the sequence 1/100, 7/100, 13/100 for another five terms and draw a	

		10 by 10 square to demonstrate that one-hundredth of it is one square and one-tenth of it is ten squares I deduce one-tenth of the ten squares is one-hundredth. *and then…* I can continue the sequence 1/100, 7/100, 13/100 and write the terms as tenths when appropriate and draw a 10 by 10 square to demonstrate that one-hundredth of it is one square and one-tenth of it is ten squares. I deduce one-tenth of the ten squares is one-hundredth and relate it to other contexts such as measurement and money.	
4.3.c.5 (Use F/D/P as Numbers) Compares numbers with the same number of decimal places up to two decimal places		I can identify the larger number out of 0.6 and 0.64 with the support of a decimal scale.	I can identify the larger number out of 3.02 and 3.2, explaining my reasoning. *and then…* I can write instructions for ascertaining the larger number out of 4.28 and 4.08.
4.3.c.4 (Use F/D/P as Numbers) Rounds decimals with one decimal place to the nearest whole number		I can round 3.2 to 3 and 3.8 to 4 because those are the whole numbers they are nearest to. *and then…* I can round 3.2 to 3 and 3.5 to 4, explaining that rounding 3.5 to 4 is a convention rather than because it is nearer to 4.	I can list the numbers to one decimal place that round to a number such as 4, explaining how I know and why 3.5 is included but 4.5 is not included.

Geometry & Data			
Objective	**Beginning**	**Developing**	**Secure**
4.2.2 (Classify Shapes) Use the vocabulary of the different types of triangle and quadrilateral (+) Note that right angle can be a property of both scalene and isosceles triangles, so is not a type of triangle in itself.		I can use words such as 'equilateral' and 'kite', with prompting. *and then…* I can use words such as 'equilateral' and 'kite', with prompting. *and then…* I can recall and use the vocabulary for all three of the different types of triangle and the six quadrilaterals.	
4.2.1 (Classify Shapes) Compare and classify geometric shapes, including different types of quadrilaterals and triangles, based on their properties and sizes (*)		I can sort simple geometric shapes such as squares and rectangles or triangles into a Carroll diagram according to two different criteria, with support. *and then…* I can sort geometric shapes such as types of quadrilateral or triangles into a Carroll diagram according to two different criteria. *and then…* I can devise extra shapes to place in the categories in Carroll diagram.	
4.1.3 (Make and Visualise Shapes) Continue to recognise 3-D shapes, using the correct language (+)	I can select cubes from a collection of 3-D shapes. *and then…* I can match a selection of 3-D shapes to their names. *and then…* I can research the names of unfamiliar 3-D shapes.		
4.2.3 (Classify Shapes) Continue to make and classify 3-D shapes, including by the 2-D shapes that form their surface (+)	I can select shapes with a triangle on their surface from a collection of 3-D shapes. *and then…* I can sort shapes into a Venn diagram that has one set labelled 'has a circle as part of its surface' and another set labelled 'has a rectangle as part of its surface'. *and then…* I can devise various strategies for sorting the shapes, justifying them by reference to their properties.		
4.1.1 (Make and Visualise Shapes) Complete a simple symmetric figure with respect to a specific line of symmetry, and measure angles using a protractor (+)		I can complete a simple design so that it has one line of symmetry.	I can complete a design so that it has two lines of symmetry. *and then…* I can complete a design so that it has more than two lines of symmetry.
4.1.2 (Make and Visualise Shapes) Identify lines of symmetry in 2-D shapes presented in different		I can identify the lines of symmetry for some simple shapes made up of identical squares joined edge to edge.	I can identify the lines of symmetry for shapes made up of identical squares joined edge to edge. *and then…*

orientations, including where the line of symmetry does not dissect the original shape (+)			I can identify extra squares to add to shapes made up of identical squares joined edge to edge so that they have line symmetry.
4.3.2 (Solve Shape Problems) Compare and order angles up to two right angles by size (^)	I can compare two angles and decide which is bigger. *and then…* I can place a set of angles in ascending order of size. *and then…* I can place a set of angles in ascending order of size, describing how I know that one angle is larger than another.		
4.3.1 (Solve Shape Problems) Identify acute and obtuse angles (^)	I can use the words 'obtuse' and 'acute' to describe angles that are greater than or less than a right angle, with prompting. *and then…* I can use the language above independently. *and then…* I can use the language of 'obtuse' and 'acute' to justify a conjecture that a quadrilateral cannot have more than two obtuse angles.		
4.3.3 (Solve Shape Problems) Continue to identify types of angles and to reason about their sizes (+)	I can compare angles in order to decide whether an acute angle is greater or smaller than 45^{o}. *and then…* I can compare angles in order to order them or estimate their size. *and then…* I can compare angles in order to decide whether a polygon is regular.		
4.4.1 (Describe Position) Describe positions on a 2-D grid as coordinates in the first quadrant Note the difference and make explicit the difference between coordinates and grid references. Click for Explanation			I can locate a point in the first quadrant such as (3, 5), knowing that it marks the intersection of two gridlines and that 3 represents the distance moved 'along' and 5 the distance moved 'up', with prompts. *and then…* Do the above independently. *and then…* Do the above and explain that this process will locate any point on the plane.
4.4.2 (Describe Position) Plot specified points and draw sides to complete a given polygon			I can plot points to mark the vertices of a polygon and joins them in the correct order to form the polygon, with prompting. *and then…* Do the above independently. *and then…* I can decide for myself where to place the points that will join to make a polygon.
4.5.1 (Describe Movement) Describe movement between positions as translations of a given unit to the left/right and up/down Computing CC links: A good opportunity to use control devices such as Beebots or primary level coding tools			I can describe a change of position but not orientation in terms of distance moved to the left or right and up or down, with prompts. *and then…* Do the above independently. *and then…* Do the above and describe the left and down using negative signs.
4.1.1 (Interpret Data) Interpret discrete and continuous data using appropriate graphical methods, including time graphs (^)	I can answer questions such as 'What was the temperature at noon on the 12th October?' from an appropriate time series graph. *and then…* I can answer questions such as 'How much warmer was it at noon on the 12th October than it was at 8 a.m.?' from an appropriate time series graph. *and then…* I can make up a series of questions about given graphs and time graphs.		
4.2.1 (Present Data) Present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs (^)		I can construct a line graph to show change over time, realising that it is not appropriate to use a bar graph for this, with support. *and then…* Do the above independently. *and then…*	

		I can justify my choice of a line graph to show change over time instead of a bar graph by referring to the difference between continuous and discrete data.	
4.3.1 (Solve Data Problems) Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs (^)		I can conduct a survey to collect information about how the children in the class get to school in the morning. I draw an appropriate graph and comment on the means of travel. *and then…* Do the above and draw conclusions about the journey times. *and then…* I can conduct a survey to collect information about how long the children in the class take to get to school in the morning and their means of transport. I devise an appropriate graph to show all of this information and draw conclusions about the journeys to school.	
4.3.2 (Solve Data Problems) Begin to solve problems involving information presented in tables (+)		I can extract information from tables such as the cost of swimming for a child at the local pool. *and then…* I can extract information from tables such as the cost of particular items. *and then…* I can extract information from tables and compare to find the best deal.	

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. Additionally cross-curricular should be made to the Science Curriculum.			
4.2.4 (Make Measurements) Measure the perimeter of a rectilinear figure (^)	I can draw a shape made up of squares on a square grid and measure its perimeter, with support. *and then…* I can do the above independently. *and then…* I can draw a shape made up of squares on a square grid with a given perimeter.		
4.3.4 (Solve Measurement Problems) Continue to solve problems involving mixed units of length, mass and capacity/volume (+)	I can measure and record the lengths of the pencils in my pencil case to see how much work I do during a term. *and then…* I can measure and record the heights of Is in the class in metres and centimetres to see how much they grow during the year. *and then…* I can measure and record the heights of seedlings each week to check their progress.		
4.3.5 (Solve Measurement Problems) Calculate the perimeter of a rectilinear figure (^)		I can work out the perimeter of a rectangle by adding up the four sides. *and then…* I can work out the perimeter of a rectangle, knowing the length and width, without counting up all of the sides. *and then…* I can write down a rule for calculating the perimeter of a rectangle using words.	
4.2.5 (Make Measurements) Find the area of rectilinear shapes by counting squares and relate it to multiplication arrays (+)		I can draw a rectangle on a square grid and count the squares within it to measure its area, with prompting. *and then…* I can do the above independently. *and then…* I can draw a rectangle on a square grid and count the squares within it to measure its area, using efficient strategies such as multiplication or repeated addition.	
4.1.4 (Understand Units of Measure) Convert from larger to smaller units of metric measure (*)	I can convert 3 kg to 3000 g by multiplying 3 by 1000 with prompting. *and then…* I can apply my knowledge of multiplying by 10, 100 and 1000 and the relationship between metric units to convert 3 kg to 3000 g. *and then…*		

	I can apply my knowledge of multiplying by 10, 100 and 1000 and the relationship between metric units to convert from larger to smaller units and begin to explore how to do the reverse process.		
4.3.2 (Solve Measurement Problems) Calculate with different measures (^)	I can solve problems such as 'I have 1 litre of orange juice. I pour a glass of 250 ml. How much orange juice is left?' and then… I can solve problems such as 'I have 2 litres of orange juice. How many 200 ml drinks of orange juice can be poured?' *and then…* I can solve problems such as 'How many 150 ml glasses of orange juice can I pour from four 1-litre cartons?'		
4.1.1 (Understand Units of Measure)Read, write and convert time between analogue and digital 12- and 24-hour clocks		I can write quarter past three in the afternoon as 3:15 p.m. and, with prompting, as 15:15. *and then…* I can write quarter past three in the afternoon as 3:15 p.m. or 15:15 and can read 10:45 as 'a quarter to 11'. *and then…* I can explain the connection between analogue clocks and 12- and 24-hour clock times.	
4.2.1 (Make Measurements) Read time from analogue and digital 12- and 24-hour clocks (^)		I can write down the time to watch a programme on the television. *and then…* I can write the order of events for a class presentation with times in 12- and 24-hour clock versions. *and then…* I can write down when it is time to go for a music lesson.	
4.2.2 (Make Measurements) Write time from analogue and digital 12- and 24-hour clocks (^)		I can write down one of the versions of the time for my parents or carers to attend a consultation with my teacher. *and then…* I can write the order of events for a class presentation with times in 12- and 24-hour clock versions. *and then…* I can write down the times for a day trip by bus or train to the nearest large town in all the three formats.	
4.1.2 (Understand Units of Measure) Convert from larger to smaller units of time (*)			I can work out how many minutes in an hour and a half or how many days until the end of term, with prompting. *and then…* I can apply my knowledge of multiplication to convert from larger to smaller units of time, selecting the appropriate multiplier and method to perform it. *and then…* I can work out how many days I have been alive.
4.3.1 (Solve Measurement Problems) Continue to solve problems relating to the duration of events (+)			I can work out how long it is until the next break in school. *and then…* I can work out how long it is from the beginning of school to lunchtime. *and then…* I can work out the duration of journeys from a bus or train timetable.
4.3.3 (Solve Measurement Problems) Calculate with money in pounds and pence (^) Check resources match the current coinage and bank notes used in the England.			I can solve problems such as 'I have £5. How many cups of tea at £1.20 can I afford?' *and then…* I can solve problems such as 'I have £20. How many pencils at 45p can I buy?' *and then…* I can solve problems such as 'What combination of teas and coffees could I buy to cost £5 exactly if tea costs 80p and coffee costs £1?'
4.2.3 (Make Measurements) Estimate and compare different measures, including	I can sometimes judge whether I have enough money to pay for an item. *and then…* I can judge when there is enough money to pay for an item or enough string to measure the perimeter of an object.		

money (^)	*and then…* I can arrange a series of similar objects in ascending order of weight.
	The success criteria for this objective cover multiple aspects of measures and should be linked to other objectives as appropriate.

Arithmetic 2			
Objective	**Beginning**	**Developing**	**Secure**
4.3.b.2 (Convert F/D/P) Recognise that the denominator of a fraction always tells you the number of equal parts that make one whole (+)	I can identify that there are five-fifths in one whole one using diagrams to support. *and then…* I can identify that there are seven-sevenths in one whole. *and then…* I can solve problems such as 'Five cards form one-third of my set. How many are there in the whole set?' by multiplying by three.		
4.3.a.1 (Understand F/D/P) Make connections between fractions of a length, of a shape and as a representation of one whole or a set of quantities (+)	I can sort a set of representations of 1/2 and 1/4 into two groups according to which fraction they represent. *and then…* I can sort a set of representations of 1/2, 1/4 and 3/4 into two groups according to which fraction they represent. *and then…* I can do the above and add further items to each group.		
4.3.b.1 (Convert F/D/P) Recognise and show, using diagrams, families of common equivalent fractions	I can draw a 3 by 4 rectangle and demonstrate that 1/2 is equivalent to 2/4 and 3/6 and 6/12 by appropriate shading. *and then…* I can draw a 3 by 4 rectangle and demonstrate that 2/12 is equivalent to 1/6 and that 3/12 is equivalent to 1/4. *and then…* I can draw a 4 by 6 rectangle and use it to illustrate several families of equivalences, explaining why certain fractions cannot be shown using the rectangle.		
4.3.c.1 (Use F/D/P as Numbers) Continue to compare and order unit fractions, and fractions with the same denominators (+)		I can identify the larger of 1/3 and 1/4 and the larger of 2/7 and 3/7, with supporting diagrams. and then… I can identify the larger of 1/6 and 1/7 and identify the smaller out of 2/9 and 5/9. and then… I can give a general rule for identifying the smaller of two unit fractions and the larger of two fractions with the same denominator, explaining why they work.	
4.3.a.2 (Understand F/D/P) Use factors and multiples to recognise equivalent fractions and simplify where appropriate (+)		I can recall some multiplication table facts to write down some fractions equivalent to 1/3. *and then…* I can apply my knowledge of multiplication table facts to write down a set of fractions equivalent to 2/5.	I can recognise common factors between the numerator and denominator of a fraction and divide to simplify the fraction.
4.3.c.2 (Use F/D/P as numbers) Add and subtract fractions with the same denominator		I can calculate 3/4 + 3/4 = 6/4, with supporting diagrams. *and then…* I can calculate 3/9 + 8/9 = 11/9 and 11/9 – 8/9 = 3/9.	I can do the preceding and I realise that 11/9 is greater than one and can suggest ways to record this.
4.3.c.3 (Use F/D/P as numbers) Understand the relation between non-unit fractions and multiplication and division of quantities (+)		I can interpret 3/4 as 3 x 1/4, with the support of diagrams.	I can interpret 3/5 as 3 x 1/5 and as 3 ÷ 5. *and then…* I can interpret 6/7 as 6 x 1/7 and 1/7 of 6 and 6 ÷ 7.
4.3.a.4 (Understand F/D/P) Divide a one- or two-digit numbers by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths (^)		I can calculate 4 ÷ 10 = 0.4 and, with prompting, identify the 4 in 0.4 as four-tenths.	I can calculate 23 ÷ 100 = 0.23, identifying the 2 in 0.23 as two-tenths and the 3 as three-hundredths. *and then…* I can explain why dividing ones by ten or one hundred results in tenths or hundredths and how this might extend into thousandths.

4.2.c.3 (Solve Calculation Problems) Solve calculation problems involving multiplying and adding, including integer scaling and harder correspondence problems such as n objects are connected to m objects. (^) N.B Also listed as Ratio 4.1.1 in Rising Stars			I can solve problems such as 'Three cakes are shared equally between ten children. How much do they have each?'
4.3.b.3 (Convert F/D/P) Recognise and write decimal equivalents of any number of tenths or hundredths and 1/4; 1/2; 3/4 (^)		I can write 7/10 as 0.7 and extend this to 7/100 as 0.07 and write 1/2 as 0.5 with prompting.	I can write 7/10 as 0.7 and 7/100 as 0.07. I recognise that 0.7 is also 70/100 and write 1/4 as 0.25, 1/2 as 0.5 and 3/4 as 0.75. *and then…* I can extend writing 6/10 and 60/100 as 0.6 to converting 3/5 to tenths and so 3/5 = 0.6 as well. I write 1/4 as 0.25, 1/2 as 0.5 and 3/4 as 0.75. I can deduce that 1/8 = 0.125 and that 3/8 is 0.375.
4.1.a.3 (Count) Count in multiples of 6, 7, 9 and 25 (^)	I can count up in 6s using my knowledge of counting up in 3s and can begin the sequences for 7, 9 and 25.	I can decide whether a number is a multiple of 6 by counting up in 6s or a multiple of 7, 9 or 25 by counting up in 7s, 9s or 25s. *and then…* I can identify whether numbers are in more than one of the sequences of 6, 7, 9, 25 and others with which I am familiar.	
4.2.d.2 (Recall) Recall multiplication and division facts for multiplication tables up to 12 × 12	I can respond to any question on multiplication or division facts up to 12 x 12 and 144 ÷ 12, when given time to think and with the support of jottings and prompts.	I can respond promptly and correctly to any question on multiplication or division facts up to 12 x 12 and 144 ÷ 12. *and then…* I can respond promptly and correctly to any question such as 'I am thinking of two numbers. They multiply to give 72 and have a difference of 1. What are they?'	
4.1.2 (**Algebra –** Understand Formulae) Use the distributive law and associative law to perform mental calculations (+)		I can work out 3 x 5 x 2 as 3 x 10 = 30. *and then…* I can work out 39 x 7 as 30 x 7 + 9 x 7.	I can devise a variety of strategies involving these laws to do mental arithmetic.
4.2.c.3 (Solve Calculation Problems) Solve calculation problems involving multiplying and adding, including integer scaling and harder correspondence problems such as n objects are connected to m objects. (^) N.B Also listed as Ratio 4.1.1 in Rising Stars	I can solve problems such as 'Eggs are sold in boxes of six. How many eggs are there in nine boxes?' *and then…* I can solve problems such as 'A stick is 8 cm long. Another stick is 12 times longer. How long is the second stick?' and 'You have four cards each with a different digit on it. How many different two-digit numbers can you make?'		
4.2.d.1 (Recall) Recognise factor pairs (^)	I can recognise that 2 and 6, and 3 and 4 are both pairs of numbers that multiply to make 12.	I can list the factor pairs of numbers such as 24. *and then…* I can solve problems such as finding the number with the most factors below 30.	
4.2.e.2 (Use Written Calculation) Multiply two-digit and three-digit numbers by a one-digit number using formal written layout	I can calculate 6 x 283 using jottings to support progress towards a formal written layout such as the grid method. *and then…* I can calculate 6 x 283 using a formal written layout such as the grid method.		I can calculate 6 x 283 using a formal written layout such as the grid method and relate it to the formal methods of long multiplication.
4.2.f.2 (Check) Check answers to multiplication and division calculations using rounding (+)		I can check my answer to 68 x 3 by rounding 68 to 70 and working out 70 x 3 = 210. *and then…* I can check my answer to 478 x 3 by rounding 478 to 500 and working out 500 x 3 = 1500. *and then…* I can check my answer to 478 x 3 by rounding 478 to 500 and working out 500 x 3 = 1500, knowing this will be an over-estimate.	
4.2.e.3 (Use Written Calculation) Divide two-digit and three-digit numbers by a one-digit number using formal written layout (+)		I can calculate 1698 ÷ 6 using jottings to support progress towards a formal written layout such as chunking. *and then…* I can calculate 1698 ÷ 6 using a formal written layout such as chunking.	I can calculate 1698 ÷ 6 using a formal written layout such as chunking and relate it to the formal methods of long division.

Reasoning			
Objective	**Beginning**	**Developing**	**Secure**
4.1.c.1 (Order and Compare) Order and compare numbers beyond 1000	I can choose the smaller number out of 3000 and 1300. *and then…* I can place the correct sign (=, < and >) in statements such as between 3004 and 3040 and between 4500 and 4050 + 450.		

	and then… I can solve problems in the context of measurement such as ordering the lengths of rivers.		
4.1.d.1 (Solve Number Problems) Solve number and practical problems with number and place value from the Year 4 curriculum, with increasingly large positive numbers (*)	I can solve problems such as 'A number has been rounded to the nearest hundred to get 500. What could that number be?' *and then…* I can solve problems such as 'A number has been rounded to the nearest hundred to get 3000. What is the largest whole number it could be?'	I can solve problems such as 'I am a number between 3000 and 4000. I am a multiple of 25 and of 9. When I am rounded to the nearest hundred my digits add to 7. What number am I?'	
4.2.b.2 (Calculate Mentally) Use addition and subtraction facts to 100 and derive related facts up to 1000 (+)	I can correctly answer 56 + 24 = 80 and deduce that 80 – 24 = 56.	I can deduce that 120 + 370 = 490 and 402 + 307 = 709 from 2 + 7 = 9. *and then…* I can solve problems such as 'I am thinking of two numbers. Their sum is 387 and their difference is 107. What are the numbers?'	
4.2.f.1 (Check) Check answers to addition and subtraction calculations by estimating and using inverse operations (*)	I can check my answer to 68 + 23 by rounding 68 to 70 and 23 to 20 and working out 70 + 20 = 90. *and then…* I can check my answer to 478 – 133 by working out 345 + 133. *and then…* I can check my answer to 478 – 133 by rounding or inverse operations and explain why I chose that method.		
4.2.b.3 (Calculate Mentally) Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers		I can calculate 40 ÷ 2 = 20 using my knowledge that 2 x 2 = 4. *and then…* I can calculate 400 ÷ 50 = 8 using my knowledge of 8 x 5 = 40. I know that 5 x 0 = 0; 12 x 1 = 12; 8 ÷ 1 = 8; 2 x 4 x 3 = 24. *and then…* I can calculate 60 x 500 x 30 x 1 = 900,000.	
4.2.a.1 (Understand Calculation) Use the distributive law to multiply two digit numbers by one digit (^)		I can work out 11 x 3 by calculating 10 x 3 = 30 and 1 x 3 = 3 and then adding to get 33. *and then…* I can work out 23 x 4 mentally by calculating 20 x 4 = 80 and 3 x 4 = 12 and then adding to get 92.	I can work out 345 x 6 mentally by calculating 300 x 6 = 1800, 40 x 6 = 240 and 5 x 6 = 30 to get 2070.
	Make sure children have secure understanding of the written method for UxTHU before commencing. LINK: Arithmetic 2 - 4.2.e.2 (Use Written Calculation) Multiply two-digit and three-digit numbers by a one-digit number using formal written layout		
4.2.a.3 (Understand Calculation) Use factor pairs in mental calculations (^)		I can work out 3 x 4 x 6 by working out 3 x 4 = 12, then 12 x 6 = 72. *and then…* I can work out 12 x 7 x 5 by rearranging mentally to get 12 x 5 x 7 = 60 x 7 = 420.	I can work out 8 x 4 x 7 x 5 by rearranging to get 4 x 7 x 8 x 5 = 4 x 7 x 40 = 4 x 280 = 800 + 320 = 1120.
4.2.a.4 (Understanding Calculation) Use factor pairs in mental calculations (^)		I can work out 20 x 6 by working out 20 = 10 x 2, then 10 x 12 = 120. *and then…* I can work out 12 x 5 x 7 by rearranging to get 6 x 2 x 5 x 7 = 6 x 70 = 420.	I can explain why factor pairs work to make calculations easier.
	Make sure to have secured a good understanding of factors in Arithmetic 2 before commencing. LINK: Arithmetic 2 - 4.2.d.1 (Recall) Recognise factor pairs (^)		
4.3.d.1 (Solve F/D/P Problems) Solve problems involving harder fractions to calculate and divide quantities, including non-unit fractions where the answer is a whole number (*)			I can solve problems such as 'I have 12 oatcakes. I eat 3/4 of them for lunch. Do I have enough left to eat two for a snack in the afternoon?' *and then…* I can solve problems such as 'I have 20 oatcakes. I eat 2/5 of them for lunch and need to save 1/4 of them for an afternoon snack. Do I have enough to give my friend 8 of them for her lunch?' *and then…* I can make up problems involving harder fractions and numbers of sweets and group them into easy, medium and hard problems.
4.3.d.2 (Solve F/D/P Problems) Solve simple measure and money problems involving fractions and decimals to two decimal places			I can solve problems such as 'I have £12. I spend 3/4 of it on lunch. Do I have enough left for my bus fare home of £1.80?' *and then…* I can solve problems such as 'I have £12. I spend 2/5 of it on lunch and need to save 1/3 of it for the bus fare home. Do I have enough to spend £2.40 on an ice cream?' *and then…* I can make up problems involving harder

			fractions and money and group them into easy, medium and hard problems.
4.1.b.2 (Represent Numbers) Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value	I can convert Roman numerals from I to X to our number system. Children should have learnt Roman numerals I to XII when looking at time in Stage 3 – See Measures 3.2.2	I can convert a number expressed in Roman numerals below 100 and explain why they are difficult to calculate with. *and then…* I can explain why Roman numerals are not a place value system and how zero makes a place value system work.	