Fortuna Primary School
Stage 5 Maths (Equivalent to Y5 National Curriculum)

Prerequisite Knowledge

Before starting Stage 5 pupils should be secure at:

- Recognising place value to at least 1000, including tenths, and use this to order and compare numbers.
- Counting backwards through zero into negative numbers.
- Counting backwards and forwards in multiples of 1000.
- Rounding 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.
- Using addition to undo subtraction and vice versa.
- Using columns for addition and subtraction with 4-digit numbers, including those that create 'tricky' columns.
- Mentally calculating the difference and/or totals of pairs of 3-digit numbers.
- Solving 2-step word problems involving addition and subtraction.
- Counting in multiples of 6, 7, 9 and 25 as well as those numbers taught at Stage 3.
- Recalling all times table and related division facts to 12 x 12.
- Identifying factor pairs for a given number.
- Using commutative, associative and distributive laws to solve multiplication problems mentally.
- Using grid method to solve UxHTU problems, and use rounding to check the answer.
- Solving THU÷U using short division.
- Explaining the meaning of the numerator and denominator in fractions.
- Identifying equivalents to common fractions.
- Performing calculations with fractions containing the same denominator.
- Reading time in the 12 and 24-hour clock.
- Calculating durations and convert units of time.
- Solving word problems that require converting units of measure.
- Explaining how to calculate the perimeter of rectangles.
- Calculating area using multiplication arrays.
- Identifying and naming acute, right and obtuse angles in polygons.
- Describing movement and position in the first quadrant.
- Representing and interpreting data in tables, bar charts and line graphs using discrete or continuous data.

End of Stage Success Criteria

When a child has progressed through Stage 5 they should:

- Be able to recognise place value to at least 1,000,000, including and use this to order and compare numbers.
- Be able to count backwards through zero into negative numbers in 1s and whole number steps.
- Be able to count backwards and forwards in powers of 10.
- Be able to write numbers to 1,000,000 in digits and in words.
- Be able to derive calculations for all four operations.
- Be able to use columns for addition and subtraction with values beyond 4-digit numbers, including those that create 'tricky' columns.
- Be able to use rounding to check answers for all four functions.
- Be able to mentally calculate the difference and/or total of pairs of larger numbers, if such a strategy is appropriate/efficient.
- Be able to read, write and compare decimals to 3 decimal places.
- Be able to multiply and divide numbers (including decimals) by 10, 100 and 1000.
- Be able to recall all times table and related division facts to 12 x 12, as well as 25s & 50s.
- Be able to identify factor pairs for numbers.
- Be able to recognise and identify square, cube and prime numbers.
- Be able to use the grid method or long multiplication to solve UxThHTU problems, and use rounding to check the answer.
- Be able to solve ThTHU÷U using short division.
- Be able to name 2D and 3D shapes and describe their properties using mathematical language.
- Be able to estimate and draw angles to within 2^0 of accuracy using a protractor.
- Be able to draw, read and interpret line graphs.
- Be able to read and interpret timetables, including calculating durations.
- Be able to calculate the perimeter and area of rectangular and composite shapes.
- Be able to recognise and convert equivalent units of measure for length, mass, volume, time and money.
- Be able to identify fractions greater than 1 and write them as mixed numbers.
- Be able to recognise tenths, hundredths and thousandths.
- Be able to recognise and calculate equivalent fractions, decimals and percentages.

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**
5.1.a.1 (Count) Count forwards and backwards with positive and negative whole numbers, including through zero (^)	I can continue the sequence –1, 0, 1 … *and then…* I can continue the sequence –3, –2, –1 … *and then…* I can solve problems such as 'Does the sequence –11, –6, –1 … pass through 91?'		
5.1.b.3 (Represent Numbers) Interpret negative numbers in context (^)	I can answer questions such as 'Which is colder -5^oC or 10^oC?' *and then…* I can answer questions such as 'Which is colder -2^oC or -10^oC?'	I can solve problems such as identifying the biggest change in temperature between day and night on the planets in the solar system.	
5.1.a.2 (Count) Count forwards or backwards in steps of powers of 10 for any given number to 1 000 000	I can count backwards from 34,875 in steps of 1000. *and then…* I can count backwards from 962,471 in steps of 100,000, 10,000, 1000, 100 and 10. *and then…* I can reduce any six-digit number to zero by subtracting the appropriate number of each of the appropriate powers of 10.		

5.1.b.1 (Represent Numbers) Read and write numbers to at least 1 000 000 and determine the value of each digit (^)	I can read and write numbers to 1,000,000 that are multiples of 100. *and then…* I can form a number with up to six digit cards and write it in words. *and then…* I can write larger (5 or 6-digit) numbers for real world contexts such as populations in geography in words and numerals. Last criteria changed to be more relevant than Rising Stars example.		
5.1.e.1 (Round Numbers) Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000		I can round 7678 to the nearest 100.	I can round 306,812 to the nearest 10,000. *and then…* I can identify the largest multiple of 9 that rounds to 250,000 to the nearest 100.
5.2.b.2 (Calculate Mentally) Continue to develop knowledge of addition and subtraction facts and to derive related facts (+)	I can write some calculations derived from 15 + 60 = 75. *and then…* I can write several calculations derived from 15 + 60 = 75.	I can write a variety of calculations derived from 15 + 63 = 78 and generalise to describe further calculations.	
5.2.a.2 (Understand Calculation) Develop their understanding of the meaning of the equals sign (*)		I can interpret instances of the equals sign such as 4 + 8 = 10 + 2 and 4 + ? = 13. *and then…* I can deal with a variety of instances of the equals sign including 3 + ? = 12; 3 + 12 = ? – 4 and ? + ? + 8 = ? + 11. *and then…* I can interpret the equals sign as indicating that the expressions on each side are equivalent, whether they involve numbers or are missing number problems.	
5.2.b.1 (Calculate Mentally) Add and subtract numbers mentally with increasingly large numbers		I can work out mentally 15,650 – 450 = 15,200. *and then…* I can work out mentally 23,712 – 1610 = 22,102.	I can solve problems mentally such as 45,762 + ? = 105,761.
		Note how the numbers lend themselves to mental work as there Is no crossing place value barriers.	
5.2.e.1 (Use Written Calculation) Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)	I can calculate 8234 + 3265 and 8234 – 3265 using formal columnar methods, with some prompting.	I can calculate 87,234 + 32,465 and 87,234 – 32,465 using formal columnar methods. *and then…* I can calculate 87,234 + 32,465 and 87,234 – 32,465 using formal columnar methods, describing why each step in the algorithm is used.	
5.2.f.1 (Check) Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy		I can check the answer to 9172 + 123 – 3987 by rounding to 9000 + 100 – 4000 = 5100, with some prompting and check the answer to 30 – 6 = 24 by working out 24 + 6 = 30. I can also check the reasonableness of the answer to a problem such as 'I have 30 sweets and eat 17. How many do I have left?' by realising that 47 is not sensible.	I can check the answer to 56,713 – 3156 + 954 by rounding to 60,000 – 3000 + 1000 = 58,000 and the answer to 7194 – 667 = 6527 by working out that 6527 + 667 = 7194. I can also check the reasonableness of the answer to a problem such as 'I buy a book at £6.99 and pay with a £20 note. How much change should I get?' by noticing that an answer of £3.01 is too small. *and then…* I can do the above, knowing where I am likely to have made a mistake. I can also realises that addition is better checked in other ways as addition is easier than subtraction. I can check the reasonableness of the answer to a problem by referring to the context. I can then explain how I know that it must be too large or too small.
5.3.c.4 (Use F/D/P as Numbers) Round decimals with two decimal places to the nearest whole number and to one decimal place			I can round 3.14 to the nearest whole number (3) and to one decimal place with the support of a decimal scale. *and then…* I can round 4.76 to the nearest whole number (5) and to one decimal place (4.8). *and then…* I can identify a number that rounds to 6.6 to one decimal place and is the smallest number for which this is true.
5.3.c.5 (Use F/D/P as Numbers) Read, write, order and compare numbers with up to three decimal places			I can choose the larger out of 8.6 and 8.68 and write down a number between them with the support of a decimal scale. *and then…* I can choose the larger out of 2.608 and 2.86 and write down a number between them. *and then…* I can do the above and write down the

			number that is halfway between two decimal values.
5.3.c.6 (Use F/D/P as Numbers) Add and subtract decimals including those with a different number of decimal places (+)			I can calculate 3.7 + 4.8 = 8.5. *and then…* I can calculate 2.87 – 0.9 = 1.97 and 3.4 – 1.76 = 1.64. *and then…* I can calculate 2.87 – 0.9 = 1.97 and 3.4 – 1.76 = 1.64 and devise more problems putting these calculations in a context such as measures.
5.3.d.2 (Solve F/D/P Problems) Solve problems involving addition and subtraction involving numbers up to three decimal places (*)			I can solve problems such as 'I have 2m of wood and cut off 0.6 m and then another 0.75 m. How much do I have left?', with supporting diagrams and prompts. *and then…* I can solve problems such as 'I have 2m of ribbon and use lengths of 12.7 cm, 87.5 cm, 23 cm and 47 cm. How much do I have left?' *and then…* I can solve problems such as 'I have 12m of wood split into 1.5 m lengths. I need ten 80 cm lengths, fifteen 15 cm lengths and seven 16 cm lengths. Can I cut this from my wood?'

Geometry & Data			
Objective	**Beginning**	**Developing**	**Secure**
5.3.3 (Solve Shape Problems) Use the properties of rectangles to deduce related facts and find missing lengths and angles	I can deduce that, if one side of a rectangle is 10 cm long, then the opposite side will also be 10 cm long. *and then…* I can solve problems such as 'The perimeter of a rectangle is 20 cm. One side is 4 cm long. How long is the other side?' *and then…* I can deduce angles and side lengths in compound shapes made up of rectangles. See Measures for links to perimeter.		
5.2.1 (Classify Shapes) Distinguish between regular and irregular polygons based on reasoning about equal sides and angles	I can decide whether a particular polygon is regular by considering the lengths of the sides and the size of the angles, with prompts. *and then…* I can sort a set of polygons into a Carroll diagram according to whether they have equal sides and whether they have equal angles. I realise that only the box where both are equal represents regular polygons. *and then…* I can do the above and link symmetry with regular polygons and explain where regular polygons can be useful.		
5.2.2 (Classify Shapes) Use the term diagonal (+)	I can draw in the diagonals for a rectangle and describe them as such, with prompting. *and then…* I can draw in the diagonals for a quadrilateral and describe them as such. *and then…* I can draw in the diagonals for any polygon and describe them as such.		
5.1.2 (Make and Visualise Shapes) Use conventional markings for parallel lines and right angles	I can add 'boxes' to diagrams of rectangles to indicate the right angles. *and then…* I can add arrows to diagrams of parallelograms to show which lines are parallel, and 'boxes' to diagrams of rectangles to indicate the right angles. *and then…* I can interpret diagrams with parallel lines and right angles, deducing additional information, to solve problems.		
5.4.2 (Describe Position) Identify the points required to complete a polygon (+)	I can plot three vertices of a square and then locate the position for the fourth vertex.	I can plot some vertices of a polygon given to them and then plot the remainder to complete the polygon. *and then…* I can plot some vertices of a polygon given	

		to them and then plot the remainder to complete the polygon, including all of the possible solutions.	
	This should be done within the first quadrant.		
5.5.1 (Describe Movement) Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed.		I can recognise a reflection and identify a shape reflected in lines parallel to the axes, checking by noticing that the shape has not changed its 'shape' with prompting. *and then…* I can do the above independently.	
5.4.1 (Describe Position) Continue to use coordinates in the first quadrant to become fluent in their use (+)		I can solve simple problems involving reflection of shapes on the coordinate grid. *and then…* I can solve problems involving reflection of shapes on the coordinate grid, including oblique lines and those that dissect the shape.	
5.2.3 (Classify Shapes) Continue to make and classify 3-D shapes, including identifying all of the 2-D shapes that form their surface (+)	I can identify that six squares form the surface of a cube. *and then…* I can identify that six rectangles form the surface of a cuboid and two triangles and three rectangles form the surface of a triangular prism. *and then…* I can list the shapes that form the surface of any 3-D shape I have met.		
5.1.3 (Make and Visualise Shapes) Identify 3-D shapes, including cubes and other cuboids, from 2-D representations	I can identify cuboids and pyramids from perspective drawings. *and then…* I can identify cuboids and pyramids from isometric drawings or perspective drawings. *and then…* I can identify cuboids and pyramids from isometric drawings or perspective drawings or plans and elevations.		
5.1.1 (Make and Visualise Shapes) Draw given angles, and measure them in degrees (*) and draw shapes with sides measured to the nearest millimetre (+)		I can draw an angle of 60^o and draw a line measuring 7.4 cm.	I can draw an angle of 48^o and draw a rectangle measuring 4.5 cm by 9.7 cm. *and then…* I can construct a triangle with angles of 48^o, 60^o and 72^o and draw any rectilinear shape, with given dimensions, to the nearest millimetre.
5.3.2 (Solve Shape Problems) Estimate and compare acute, obtuse and reflex angles (^) Children will know these terms from Stage 4 Geometry 4.3.1		I can estimate the size of an angle to within 20^o.	I can estimate the size of an angle to within 5^o. *and then…* I can estimate the size of an angle to within 2^o.
5.3.1 (Solve Shape Problems) Identify angles at a point and one whole turn, angles at a point on a straight line and ½ a turn and other multiples of 90º (^)			I can identify, in a geometric diagram, instances where angles meet at a point and sum to 360^o, with support. *and then…* I can identify, in a geometric diagram and in a geometric design, instances where angles meet at a point and sum to 360^o and instances where angles lie on a straight line and so sum to 180^o. *and then…* I can identify, in a geometric diagram and in a geometric design, instances where angles meet at a point and sum to 360^o and instances where angles lie on a straight line and so sum to 180^o. I can also make some conjectures about the sizes of the angles.
5.3.1 (Solve Data Problems) Solve comparison, sum and difference problems using information presented in a line graph See Stage 5 Measures Beginning 5.3.2 for reading thermometers outcomes.	I can collect data about temperature in my classroom during the course of a school day and draw a line graph to show it. I answer questions about it such as 'What is the lowest temperature?' *and then…* I can do the above and I can answer questions about such as 'When is it warmest? What is the lowest temperature?' *and then…* I can do the above and explain my		

	answers.		
5.1.1 (Interpret Data) Interpret line graphs		I can answer questions such as 'How much did the baby weigh at nine months old?' by interpreting an appropriate line graph.	I can answer questions such as 'How much heavier was the baby at nine months old than it was at six months old?' by interpreting an appropriate line graph. *and then…* I can answer questions such as 'At what age was the baby putting on weight most quickly?' by interpreting an appropriate line graph.
5.2.1 (Present Data) Decide the best way to present given data (+)			I can notice that the best representation for categorical data is different from that for numerical data. *and then…* I can make decisions about the best representation for categorical data as opposed to numerical data. *and then…* I can make decisions about the best representation for categorical data as opposed to numerical data, justifying these decisions.
5.3.2 (Solve Data Problems) Solve problems using information in tables, including timetables		I can solve problems using timetables such as 'I arrive at Bodmin station at 10 a.m. When is the next train to Plymouth?'	I can solve problems using timetables such as 'I need to be in Plymouth by 10 a.m. Which is the latest train from Bodmin I can catch and be there in time?' *and then…* I can plan a trip using public transport to a destination of my choice.
5.2.2 (Present Data) Complete tables, including timetables		I can complete tables, deducing what is needed from the available information, with support.	I can complete tables and timetables, deducing what is needed from the available information.
5.1.2 (Interpret Data) Interpret more complex tables, including timetables			I can answer questions such as 'I get to the bus stop at 8:35 a.m. and catch the first bus that arrives. How long do I have to wait if it is on time?' by interpreting an appropriate bus timetable. *and then…* I can answer questions such as 'I get to the bus stop at 8:35 a.m. and catch the first bus that arrives. What time do I arrive at Penzance?' by interpreting an appropriate bus timetable. *and then…* I can answer questions such as 'I need to get to Penzance by 9:45 a.m. What is the latest bus that I can catch from St Ives?' by interpreting an appropriate bus timetable.

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.			
5.3.2 (Solve Measurement Problems) Become familiar with temperature measure using degrees Celsius, realising that the scale becomes negative below the freezing point of water (+) See Stage 5 Data 5.3.1 for how this objective is built on by interpreting line-graphs involving temperature.	I can read the temperature from a room thermometer. *and then…* I can do the above and interpret it as being warmer or colder than usual. *and then…* I can read the temperature from weather maps and interpret it when it goes below zero.		
5.2.3 (Make Measurements) Continue to estimate and compare different measurements (+)	I can estimate the lengths of familiar objects in the classroom environment. *and then…* I can estimate the lengths of familiar objects in the classroom and outdoor environments. *and then…* I can identify, in the classroom or outdoor environment, a distance equivalent to the height of a Tyrannosaurus Rex.		
5.1.6 (Understand Units of Measure) Understand the difference between perimeter as a measure of length and area as a measure of two-dimensional space (+)	I can assemble examples of perimeters in the classroom and outdoor environments. *and then…* I can assemble examples of areas and perimeters in the classroom and outdoor environments.		

	and then… I can assemble examples of areas and perimeters in the classroom and outdoor environments and explain why they are different.		
5.3.6 (Solve Measurement Problems) Calculate and compare the area of rectangles	I can solve problems such as 'A rectangle has a perimeter of 20 cm. Its length and width are whole numbers. What is a possible area that it could have?' *and then…* I can solve problems such as 'A rectangle has a perimeter of 20 cm. Its length and width are whole numbers. What possible areas could it have? Which is the largest area?' *and then…* I can solve problems such as 'A rectangle has a perimeter of 20 cm. What is the largest possible area it could have?'		
5.1.1 Express missing measure questions algebraically (+)		I can express the problem of finding the side length of a square with perimeter 20 cm as 4 x s = 20. *and then…* I can express the problem of finding the width of a rectangle with length 7 cm and perimeter 20 cm as 2w + 14 = 20. *and then…* I can express the problem of finding the width of a rectangle with length 7 cm and perimeter 20 cm as 2w + 14 = 20 and explain how to work out w.	
5.2.4 (Make Measurements) Measure the perimeter of composite rectilinear shapes (^)	I can measure the perimeter of an 'L shape' drawn on a piece of paper using a ruler, with prompting. *and then…* I can do the above independently. *and then…* I can estimate the perimeter of an 'L shape', and check it by measuring.		
5.3.5 (Solve Measurement Problems) Calculate the perimeter of composite rectilinear shapes		I can calculate the perimeter of an 'L shape', given the appropriate dimensions, with support. *and then…* I can do the above independently. *and then…* I can write instructions for calculating the perimeter of an 'L shape', given the appropriate dimensions.	
5.2.5 (Make Measurements) Estimate the area of irregular shapes and volume and capacity (^)			I can use a square grid to estimate an irregular area using an appropriate strategy to deal with parts of squares, with prompts. I can estimate whether there is enough water left in a jug to pour themselves a glass of water. *and then…* I can use a square grid to estimate an irregular area using an appropriate strategy to deal with parts of squares. I can estimate whether I have enough water in a jug to pour drinks for Is around one table. *and then…* I can estimate an irregular area by comparing it with a known regular shape. I can put enough water in a kettle to make three cups of tea.
5.1.4 (Understand Units of Measure) Convert between different units of metric measure	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, with prompting, convert 3000 g to 3 kg by dividing by 1000.	I can apply my knowledge of multiplying and dividing by 10, 100 and 1000 and the relationship between metric units to convert 3.1 kg to 3100 g and 250 cm to 2.5 m.	I can convert 2.5 m to any of the less common measures such as Pico metres or Mega metres.
5.1.3 (Ratio) Use multiplication and division as inverses	I can convert from centimetres to metres by dividing by 100 and back again by multiplying by 100.		I can move between a map and real life by multiplying or dividing by the scale. *and then…* I can move between a scale drawing and the real life version by multiplying and dividing by the scale factor.
5.1.5 (Understand Units of Measure) Understand and use approximate equivalences between metric			I can use the equivalences of 2.5 cm = 1 inch or 30 cm = 12 inches to convert between centimetres and inches. *and then…*

units and common imperial units			I can use the equivalences of 2.5 cm = 1 inch, 2(.2) pounds = 1 kg and 1• pints = 1 litre to convert between metric and imperial units. *and then…* I can use the common equivalences to deduce others for less widely used imperial units.
5.3.4 (Solve Measurement Problems) Solve measurement problems using all four operations and decimal notation, including scaling and conversions		I can solve problems such as 'I need 0.6 m of ribbon and my friend needs twice as much. How much ribbon do we need altogether?' *and then…* I can solve problems such as 'I need 0.6m of ribbon and my friend needs six times as much. We buy 5m between us. How much will be left?'	I can solve problems such as 'I need 0.6m of ribbon and my friend needs six times as much. We buy 5m between us. How much will be left in inches?'
5.1.3 (Understand Units of Measure) Develop fluency in using money expressed in £, converting to p when necessary (+)			I can record amounts of money in £, using decimal notation when necessary. *and then…* I can discuss and record amounts of money expressed in £, comparing prices. *and then…* I can explain why £ and p work in a similar way to metres and centimetres and grams and kilograms.
5.3.3 (Solve Measurement Problems) Solve problems involving money, using the four operations (+)			I can solve problems such as 'I buy three bananas at 59p each. How much change do I get from £5?' *and then…* I can solve problems such as 'I buy three apples at 39p each and four drinks at £1.19 each. How much do I pay?' *and then…* I can solve problems such as 'I buy 2 kg of carrots at £1.07 per kg and two grapefruit. I pay £4.76. How much is each grapefruit?'
5.2.1 (Make Measurements) Continue to become fluent in telling the time (+)	I can tell when it is time to get up to go to school. *and then…* I can use knowledge of time to plan my own time. *and then…* I can plan ahead and assess whether I have sufficient time to complete tasks.		
5.1.1 (Understand Units of Measure) Continue to develop understanding of how analogue and digital clocks tell the time (+)		I can work out time intervals by looking at an analogue clock. *and then…* I can work out time intervals from both an analogue and digital clock. *and then…* I can work out time intervals by selecting the most appropriate method from the alternatives available.	
5.1.2 (Understand Units of Measure) Continue to practise converting between units of time (+)		I can convert 2 hours to 120 minutes. *and then…* I can convert 3, 1/4 hours to 195 minutes. *and then…* I can convert any number of hours to minutes.	
5.2.2 (Make Measurements) Continue to become fluent in writing the time (+)			I can write down the time in a variety of ways, with prompting. *and then…* I can do the above independently.
5.3.1 (Solve Measurement Problems) Solve problems involving converting between units of time			I can solve problems such as 'What date is it when you reach the hundredth day of the year?' *and then…* I can solve problems such as 'What date is it when you reach the one thousandth hour of the year?' *and then…* I can solve problems such as 'What date was it when you reached one million minutes old?'

Arithmetic 2			
Objective	**Beginning**	**Developing**	**Secure**
5.3.b.1 (Convert F/D/P) Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and	I can draw a fraction wall to show the relationship between halves, thirds, quarters and sixths, and use it to identify groups of equivalent fractions. I am able to explain, with prompting, why the fractions	I can draw a fraction wall to show the relationship between halves, thirds, quarters, sixths and twelfths, and use it to identify groups of equivalent fractions. I am able to explain why some have several	

hundredths	are equivalent.	equivalent fractions and others do not have any. *and then…* I can draw a fraction wall to show the relationship between any groups of fractions, selecting an appropriate length for the 'wall'. I am able to explain why some have several equivalent fractions and others do not have any.	
5.3.a.1 (Understand F/D/P) Write mathematical statements > 1 as a mixed number (^)	I can identify 6/5 as being greater than one and, with prompting, realise that it is one whole and one-fifth. *and then…* I can write 24/5 as 4 and 4/5.	I can convert freely between improper fractions and mixed numbers, knowing whether it is better to use one representation than the other.	
5.3.b.2 (Convert F/D/P) Recognise mixed numbers and improper fractions and convert from one form to the other (^)	I can write 1 and 1/4 as 5/4 and, with diagrams or manipulatives, explain why this works. *and then…* I can recognise that improper fractions have a numerator that is larger than the denominator and so can be written as a combination of whole numbers and proper fractions.	I can identify when it is better to work with mixed numbers rather than improper fractions or vice versa, explaining my reasons for doing so.	
5.3.c.1 (Use F/D/P as Numbers) Compare and order fractions whose denominators are all multiples of the same number	I can identify the smaller out of 3/8 and 1/4 with supporting diagrams.		I can identify the smaller out of 2/3 and 13/18. *and then…* I can identify the smaller out of 2/3 and 13/18 and write down a fraction that is between them.
5.3.c.3 (Use F/D/P as Numbers) Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams		I can work out 5 x 1/4 = 5/4 with supporting diagrams.	I can work out 5 x 3/8 = 15/8 or 1 7/8 and hence deduce that 5 x 2 3/8 = 10 + 15/8 = 11 7/8, using appropriate diagrams. *and then…* I can work out 5 x 3/8 = 15/8 or 1 7/8 and hence deduce that 5 x 2 3/8 = 10 + 15/8 = 11 7/8.
5.3.a.2 (Understand F/D/P) Continue to apply their knowledge of multiplication table facts to find equivalent fractions (+)	I can use doubling to create a set of equivalent fractions such as 1/3, 2/6, 3/9.	I can simplify 12/15 by noticing that 3 is a common factor between 12 and 15 and dividing both numerator and denominator by it to get 4/5.	I can quickly calculate equivalent fractions in order to solve problems.
5.3.a.3 (Understand F/D/P) Recognise and use thousandths and relate them to tenths and hundredths (^)		I can recognise that one out of 1000 is one-thousandth with the help of manipulatives. *and then…* I can write 1/1000 as 0.001 and extend my understanding of the relationship between tenths and hundredths to thousandths. I state that ten-thousandths equal one-hundredth and 100-thousandths equal one-tenth. *and then…* I can relate thousandths to tenths and hundredths and extend this to ten thousandths and millionths.	
5.3.b.3 (Convert F/D/P) Relate thousandths to decimal equivalents (*) (^)		I can interpret 3/1000 as 0.003. *and then…* I can interpret 45/1000 as 0.045. *and then…* I can interpret 3087/1000 as 3.087 and explain why the zero has to be in the tenths position.	
5.3.b.4 (Convert F/D/P) Read and write decimal numbers as fractions		I can interpret 0.6 as 6/10. *and then…* I can interpret 0.51 as 51/100. *and then…* I can interpret 0.126 as 126/1000.	
5.3.a.3 (Understand F/D/P) Recognise and use thousandths and relate them to tenths and hundredths (^)		I can recognise that one out of 1000 is one-thousandth with the help of manipulatives. *and then…* I can write 1/1000 as 0.001 and extend my understanding of the relationship between tenths and hundredths to thousandths. I state that ten-thousandths equal one-hundredth and 100-thousandths equal one-tenth. *and then…* I can relate thousandths to tenths and hundredths and extend this to ten thousandths and millionths.	

5.3.a.3 (Understand F/D/P) Divide one- or two-digit numbers by 1000, identifying the value of the digits in the answer as ones, tenths, hundredths and thousandths (+) N.B Also listed as Ratio 5.1.2			I can calculate 4 ÷ 100 = 0.04 and, with prompting, identify the 4 in 0.04 as four-hundredths. *and then…* I can calculate 23 ÷ 1000 = 0.023, identifying the 2 in 0.023 as two-hundredths and the 3 as three-thousandths. *and then…* I can explain why dividing ones by one thousand results in thousandths and how this might extend into ten thousandths.
5.3.b.5 (Convert F/D/P) Write percentages as a fraction with denominator hundred, and as a decimal (^)			I can write 25% as 25/100 and as 0.25 with the support of appropriate images or manipulatives. *and then…* I can write 45% as 45/100 and 0.45. *and then…* I can write 45% as 45/100 and 0.45 and simplify 45/100 to 9/20.
5.3.b.6 (Convert F/D/P) Know percentage and decimal equivalents of 1/2, 1/4, 1/5, 2/5, 4/5 and those with a denominator of a multiple of 10 or 25 (^)			I can write 1/2 as 0.5 and 50%; 1/4 as 0.25 and 25%; 1/5 as 0.2 and 20%. *and then…* I can do the above and write 3/10 as 0.3 and 30%; 4/25 as 0.16 and 16%. *and then…* I can do the above and deduce which other fractions can be written as whole number percentages.
5.3.d.3 (Solve F/D/ P)Solve problems which require knowing key percentage and decimal equivalents			I can solve problems such as 'Which is better: 25% commission or 0.15 of the sales?' *and then…* I can solve problems such as 'Which is more: 20% off or 0.75 of the full amount?' *and then…* I can decide which decimal and percentage equivalents are key ones and which can easily be deduced.
5.1.a.3 (Count) Continue to count in any multiples of 2 to 10, 25 and 50 (+)	I can count up in 6s and 9s using my knowledge of counting up in 3s, and in 8s using my knowledge of counting up in 2s and 4s.	I can decide whether a number is a multiple of any number by counting up in multiples of that number. *and then…* I can identify whether numbers are in more than one of the sequences with which I am familiar, developing strategies for deciding.	
5.2.b.4 (Calculate Mentally) Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000	I can work out 2.1 x 10 = 21 and 56 ÷ 10 = 5.6. *and then…* I can work out 2.3 x 1000 = 2300 and 98 ÷ 1000 = 0.098.		I can calculate 0.012 x 600 = 7.2.
5.2.e.2 (Use Written Calculation) Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers	I can calculate 3964 x 7 and 3964 x 32 using a formal written method such as the grid method. *and then…* I can do the above, using long multiplication as an alternate method		I can calculate 3964 x 7 and 3964 x 32 using a formal written method such as long multiplication and relate the steps to the grid method.
5.2.a.1 (Understand Calculation) Continue to use the distributive law to partition numbers when multiplying them (+)	I can use jottings to explain how I work out 11 x 3 by partitioning. *and then…* I can use jottings to explain how to multiply 214 by 9 using partitioning. *and then…* I can explain how I can use partitioning to work out 452 x 12.		
5.2.e.3 (Use Written Calculation) Divide numbers up to 4 digits by a one-digit number using formal written method of short division and interpret remainders appropriately for the context N.B. Also listed as Ratio 5.1.1	I can calculate 714 ÷ 6 using chunking and relating it to the formal written method of short division, with prompting and solve problems such as 'Lin wishes to buy 45 bottles of water. They are sold in packs of eight bottles. How many packs must she buy?' knowing that the answer is not exact and being unsure how to deal with the remainder.	I can do the preceding, knowing to round up to obtain the correct answer for the context. *and then…* I can calculate 7194 ÷ 6 using the formal written method of short division and extend it to dividing decimals involving four digits by one-digit numbers. I can also solve problems that lead to the calculation 45 ÷ 8 and write versions that require the remainder to be dealt with in different ways, e.g. '45 cm of ribbon is to be cut into eight equal pieces. How long is each piece?' The remainder should be expressed as a decimal.	

Reasoning			
Objective	**Beginning**	**Developing**	**Secure**
5.1.c.1 (Order and Compare Numbers) Order and compare numbers to at least 1 000 000 (^)	I can choose the larger number out of 30,000 and 300,000. *and then…* I can place the correct sign (=, < and >) in statements such as between 343,434 and 344,344. *and then…* I can solve problems involving timelines from the origins of humankind.		
5.1.d.1 (Solve Number Problems) Solve number problems and practical problems with number and place value from the Year 5 curriculum (*)	I can solve problems such as 'What is the term-to-term rule for the sequence 5, 9, 13 … and write down the next two terms?' *and then…* I can solve problems such as 'What is the term-to-term rule for the sequence 14.5, 13, 11.5 … and write down the next two terms?'		I can solve problems such as 'What sequence has the third term 0.3 and the seventh term –1.3?'
5.3.1 (Algebra) Recognise and describe linear number sequences and find the term to term rule	I can state that the sequence 2, 5, 8 … goes up in 3s. *and then…* I can identify 2, 5, 8 … as a linear sequence with a rule that says + 3'.	I can describe the sequence 2, 5, 8 … by the position to term rule that states 'x 3 then – 1.'	
5.2.c.4 (Solve Calculation Problems) Solve problems involving scaling by simple fractions and problems involving simple rates (^) N.B. Also listed as Ratio 5.1.4	I can solve problems such as 'One ruler costs 30p. How much do four rulers cost?'	I can solve problems such as 'Two rulers cost 60p. How much do five rulers cost?' *and then…* I can make up problems such as 'Helen cycles 40 km in two hours. How far would she cycle in 20 minutes at the same speed?'	
5.2.c.2 (Solve Calculation Problems) Solve problems involving addition, subtraction, multiplication and divison, and a combination of these (^)		I can solve problems such as 'Sam buys two bottles of water at £1.20 each and pays with a £5 note. What change does he get?'	I can solve problems such as 'Sam buys seven bottles of water and gets 20p change when he pays with a £10 note. How much was each bottle?' *and then…* I can make up problems involving several steps and prompting different calculation strategies such as 'Use the numbers 5, 1, 6, 7, 25 and 75 once each and any combination of the four operations to make the number 612'.
5.2.c.1 (Solve Calculation Problems) Solve addition and subtraction multi-step problems in familiar contexts, deciding which operations and methods to use and why (*)		I can solve problems such as 'Dan has £5. He spends £1.80 on a magazine. He needs to keep £1.40 for the bus fare home. Can he afford a sandwich costing £1.90?'	I can solve problems such as 'It is 560 km from Penzance to Manchester and Ali has completed 218 km of the journey. How far must he now travel until he is 100 km from Manchester?', choosing appropriate methods for the calculations. *and then…* I can make up problems involving several steps and prompting different calculation strategies such as 'It is 560 km from Penzance to Manchester. Ali drives 315 km and notes that he is 112 km from Birmingham. How far is it from Birmingham to Manchester?' .
5.2.f.2 (Check) Check answers to calculations and to multiplication and division calculations using the inverse (+)		I can check the answer to 30 ÷ 6 = 5 by working out 5 x 6 = 30.	I can check the answer to 7194 ÷ 6 = 1199 by working out that 1199 x 6 = 7194. *and then…* I can check the answer to 7194 ÷ 6 = 1199 by working out that 1199 x 6 = 7194. They also realise that multiplication is better checked in other ways as multiplication is easier than division. I can check divisions by multiplication if necessary.
5.1.2 (Algebra) Distributivity can be expressed as a(b + c) = ab + ac (+)	I can recognise that a + b = b + a expresses the idea that addition can be done in any order (is commutative). *and then…* I can recognise that a x b = b x a expresses the idea that multiplication can be done in any order (is commutative). *and then…* I can recognise that a(b + c) = a x b + a x c expresses the idea that multiplication out of brackets can be done and relates it to partitioning in order to multiply multi-digit numbers together.		
5.2.b.3 (Calculate Mentally) Multiply and divide numbers			I can see that there is more than one strategy to complete a mental calculation

mentally drawing upon known facts			and can describe them. *and then…* I can select from several strategies to calculate 25 x 80 x 2.5 (= 5000). *and then…* I can solve problems such as 'Use the numbers 6, 3, 7, 9, 25 and 50 once each, and use any of the four operations to make the target number of 573'.
5.2.d.2 (Recall) Recall square numbers and cube numbers and the notation for them (*)	I can list the first eight square numbers and interpret 5^2 as 5 x 5 = 25. *and then…* I can identify whether a given number is a square number or cube number up to 100, interpret 6^2 as 6 x 6 = 36 and 2^3 as 2 x 2 x 2 = 8. *and then…* I can sort the numbers below 200 into a Venn diagram with two sets: square numbers and cube numbers. I can also interpret 3^4 as 3 x 3 x 3 x 3 = 81 and extend the idea to higher powers.		
5.2.c.3 (Solve Calculation Problems) Solve calculation problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes	I can solve problems such as 'I am thinking of a two-digit number. It is a square number. It is a multiple of 12. What number is it?' *and then…* I can solve problems such as 'I am thinking of a two-digit number. The difference between its digits is a cube number and the tens digit is a square number. It is a multiple of 13. What is the number?' *and then…* I can make up problems such as 'I am thinking of a two-digit number. The difference between its digits is a cube number and the tens digit is a square number. It is a multiple of 13. What is the number?' with a unique answer.		
5.2.d.1 (Recall) Identify multiples and factors, including all factor pairs of a number, and common factors of 2 numbers	I can list the factors of numbers below 10 and arrange them in pairs that multiply to give 10. I can also list multiples of numbers in the multiplication tables.		I can identify multiples or factors of a number from a set of numbers below 50 and list the factors of 40 as 1, 40; 2, 20; 4, 10; 5, 8. I recognises that 5 is a common factor of 40 and 35. *and then…* I can solve problems involving factors and multiples such as 'Numbers are co-prime if they have no factors in common. Find all of the numbers below 30 that are co-prime with 36. What do you notice? Can you explain this?
5.2.1(+2) (Algebra) Find all factor pairs of a number N.B This objective is duplicated on Rising Stars	I can list some of the factor pairs of 24.	I can list the factor pairs of 24. *and then…* I can list the factor pairs of 24, realising that they are solutions to a x b = 24.	
5.2.a.4 (Understand Calculation) Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers		I can explain that a number such as 11 only appears in the multiplication table square in the first column and first row because only 1 and itself 'go into it'. *and then…* I can explain that a prime number such as 11 has only two factors and that a composite number such as 12 has prime factors that are 2 and 3. *and then…* I can solve problems such as 'Which number up to 100 has the most factors?'	
5.2.a.3 (Understand Calculation) Establish whether a number up to 100 is prime (^)		I can test whether 19 is prime by trying to divide it by numbers less than 19. *and then…* I can test whether 43 is prime by checking its divisibility by numbers smaller than half 43. *and then…* I can test whether 67 is prime by testing its divisibility by the prime numbers smaller than the square root of 67.	
5.2.d.3 (Recall) Recall prime numbers up to 19 (^)		I can identify the prime numbers below 10. *and then…*	

		I can correctly list the prime numbers up to 19. *and then…* I can apply their knowledge of the prime numbers below 20 to quickly test numbers up to 200 to ascertain whether they are prime.	
5.3.d.1 (Solve F/D/P Problems) Solve a variety of problems involving fractions (+)	I can solve problems such as 'What fraction of £1 is 20p?'	I can solve problems such as 'What fraction of £3 is 20p?'	I can solve problems such as 'I spent 3/5 of my money and had £1.40 left to buy lunch. How much did I have originally?'
5.3.c.2 (Use F/D/P as Numbers) Add and subtract fractions with the same denominator and denominators that are multiples of the same number, including calculations > 1 (*)			I can calculate 3/4 + 1/2 with appropriate supporting materials. *and then…* I can calculate 3/4 + 5/12. *and then…* I can make up addition and subtraction problems involving fractions with the same denominator and multiples of the same denominator and solve them.
5.1.b.2 (Represent Numbers) Read Roman numerals to 1000 (M) and recognise years written in Roman numerals			I can interpret the numbers from 1 to 20 using Roman numerals, and interpret the year 1900 written using Roman numerals. *and then…* I can interpret the date written using Roman numerals and identify the year a film was made. *and then…* I can explain why calculation with large numbers is difficult with Roman numerals.