

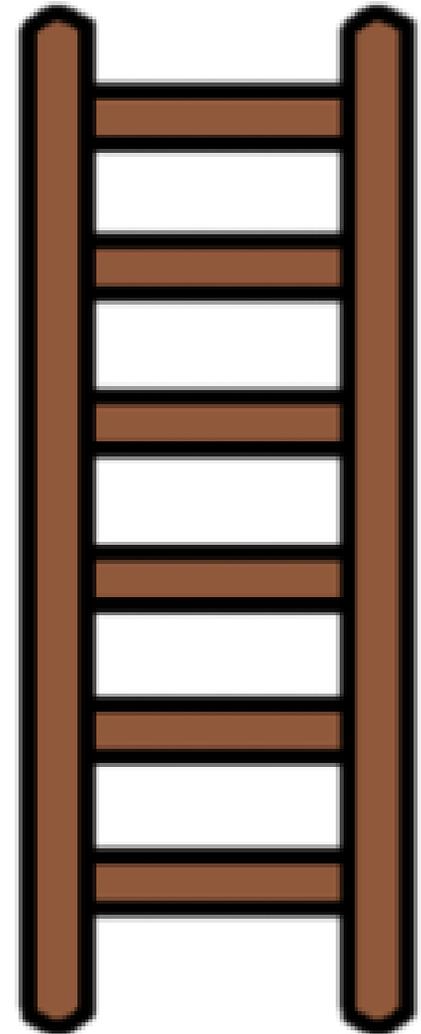
Ysgol Cradoc



Cradoc School

"Providing roots to grow and wings to fly"

Numeracy
Learning Ladder
2017



NUMERACY LEARNING LADDER									
Strand : Number Skills									
Use Number facts and relationships		Fractions, decimals, percentages and ratio		Calculate using mental and written methods		Estimate and check		Manage money	
YN	listen to and join in with rhymes, songs, stories and games that have a mathematical theme			YN	understand and use the concept of 'one more' in their play			N.N17	I can use money in role play.
YN	realise that anything can be counted, not just objects, eg claps, steps			N.N12	I can count using 'one more'			YN	demonstrate an awareness of the purpose of money through role play
N.N1	I can count up to 5 things. count reliably up to 5 objects				understand and use the concept of 'one less' in their play				
N.N2	I can read numbers up to 5. I can count things up to 5. recognise numbers 0 to 5 and relate a number 0 to 5 to its respective quantity			N.N12a	I can count using 'one less'				
N.N3	I can compare and order numbers to at least 5.			YN	use counting to solve simple maths problems in everyday and play situations				
YN	recite numbers from 0 to 10 forwards and backwards using songs and rhymes								
YN	use mark making to represent numbers in play activities that can be interpreted and explained								
YN	Use the terms 'first', 'second', 'third' and 'last' in daily activities and play								
R.N1	I can count up to 10 and get it right every time			R.N12	I can join two groups of things to find 'how many altogether?'				
	recite a range of number rhymes and songs			YR	mentally recall 'one more' of a number within 10			R.N17	I can use 1p, 2p, 5p and 10p coins to pay for objects.
R.N2	I can read and write numbers up to at least 10			YR	mentally recall 'one less' of a number within 10				
	recite numbers up to 20, forwards and backwards, and from different starting points			R.N12a	I can take away objects to find 'how many are left?'				
R.N3	I can compare and order numbers up to at least 10			YR	solve simple problems in a practical situation that involve simple addition and subtraction up to 5				
YR	Use number facts up to 5 count in 2s to 10 and in 10s to 100								
YR	use ordinal numbers to 10 in daily activities and play								
YR	begin to read number words								
1.N1	I can count up to 20 and get it right every time	1.N8	I can find halves in real-life situations.	1.N12	I can add and subtract numbers when working with up to 10 objects.	1.N15	I can make sensible guesses of a number of objects. I can check by counting.	1.N17	I can use different coins to pay for things up to 20p.
1.N2	I can read and write numbers to at least 20 forming and orientating them correctly	Y1	recall halves up to 10	Y1	use 'counting back' strategies to mentally solve problems within 10	Y1	make a sensible estimate of measurement in length, height, weight and capacity that can be checked using non-standard measures	1.N17a	I can work out how much has been spent and give change from 10p.
Y1	recite numbers up to 100, forwards and backwards and from different starting points	Y1	recall doubles and near doubles up to 10	Y1	mentally recall 'one more' of a number within 20				
1.N3	I can look at different numbers and know how to put them in order to at least 20			Y1	mentally recall 'one less' of a number within 20				
Y1	demonstrate an understanding of place value, eg one 10 and four units equal 14 up to at least 20			1.N12a	I can use 'counting on' to add 2 groups, starting with the larger number, eg 8+5.				
1.N4	I can use number facts up to 10 i.e. bonds of 10, eg 6+4, doubling and halving 4+4			Y1	solve one-step problems that involve addition and subtraction, including missing number problems, eg $7 + \square = 9$, using concrete objects and pictorial representations				
Y1	recognise odd and even numbers up to 20			Y1	use known facts to solve simple problems within 10, eg doubling and halving, number bonds				
Y1	count in 2s, 10s and 5s to 100			Y1	use known number facts when adding three single digit numbers and realise addition can be done in any order				
Y1	use ordinal numbers to 20 in practical situations			Y1	understand and use the mathematical symbols for addition, subtraction and equals				
Y1	read and write number words to 10			Y1	understand and use the different mathematical terms for addition and subtraction, eg add, combine, find the difference				
2.N1	I can count objects by grouping in 2s,5s or 10s.	2.N8	I can find halves and quarters in real-life situations.	2.N12	I can find small differences within 20 by using 'counting on'.	2.N16	I can use checking strategies: eg repeat addition in different order / use halving and doubling within 20.	2.N17	I can use different combinations of money to pay for items up to £1.

2.N2	I can read and write numbers to at least a 100.	Y2	I can recall doubles up to 20	2.N12a	I can remember and use number facts to 10 and place value to add or subtract larger numbers, eg $24 + 4$, $30 + 5$, $34 + 10$	Y2	make a sensible estimate of measurement in length, height, weight and capacity that can be checked using standard measures	2.N17a	I can find totals and give change from multiples of 10p.
Y2	recite numbers beyond 100, forwards and backwards								
2.N3	I can compare and order 2-digit numbers.								
Y2	demonstrate an understanding of place value up to at least 100								
2.N4	I can remember number facts to 10 and use them to work out other facts, - doubling and halving, eg work out $40 + 40$ from knowing $4 + 4$ - bonds of 10, eg work out $60 + 40$ from knowing $6 + 4$.								
2.N5	I can remember and use 2, 5 and 10 multiplication tables.								
Y2	partition 2-digit numbers and know the value of each digit								
Y2	recognise odd and even numbers up to 100								
Y2	count on in 2s and 10s from any given number								
Y2	begin to link multiplication with simple division								
Y2	use and record ordinal numbers in practical situations								
Y2	read and write number words to 100								
3.N2	I can read and write numbers to 1,000. explain the value of a digit in numbers up to 1 000	3.N8	I can use halves and quarters.	3.N12	I can find differences within 100.	3.N16	I can check subtraction using addition	3.N17	I can use different coins to pay for things up to £2 and calculate the change
3.N3	I can compare and estimate with numbers up to 100.	3.N8a	I can halve 2-digit numbers when working with number, money and measure.	3.N12a	I can use mental strategies to add and subtract 2-digit numbers.	3.N16a	I can check halving using doubling	3.N17a	I can order and compare items up to £10
3.N4	I can use mental strategies recall number facts up to 20.	3.N8b	I know how to use my multiplication facts to find fractions of amounts.	3.N13	I can partition to double or halve numbers.	3.N16b	I can check multiplication using repeated addition	3.N18	I can record money spent and saved
3.N5	I can recall 2, 3, 4, 5 and 10 multiplication tables and use them to solve multiplication and division problems. identify multiples of 2, 3, 4, 5 and 10; use the term multiple. identify odd and even numbers up to 1000	Y3	recognise a quarter as a half of a half						
3.N6	I can multiply numbers by 10.								
4.N2	I can read and write numbers to 10 000.	4.N8	I can halve 3-digit numbers when working with number, money and measures.	4.N12	I can find differences within 1000.	4.N15	I can estimate by rounding to the nearest 10 or 100.	4.N17	I can use money to pay for items up to £10 and calculate the change.
4.N3	I can compare and estimate with numbers up to 1 000.	4.N8a	I can use my knowledge of tables to find fractions of amounts.	4.N12a	I can add a 2-digit number to a 3-digit number using a suitable mental or written method. I can subtract a 2-digit number from a 3-digit number using a suitable mental or written method.	4.N16	I can check my answers using inverse opposite.	4.N17a	I can order and compare items up to £100.
		4.N8b	I can recognise fractions that are several parts of a whole eg $\frac{2}{3}$.	4.N13	I can use mental strategies to multiply a 2-digit numbers by a single digit number. I can use mental strategies to divide 2-digit numbers by a single digit number.			4.N7b	I can add and subtract totals less than £10 using correct notation eg $£6.85 - £2.76$.
4.N5	I can use mental strategies to recall multiplication tables for 2, 3, 4, 5, 6 and 10 and use to solve division problems. identify multiples of 2, 3, 4, 5, 6 and 10; use the terms multiple and factor	Y4	recognise connections between fractions, eg <i>one-tenth is half of one-fifth</i>	Y4	identify negative whole numbers on a number line  order whole numbers between -10 and 10			4.N18	I can manage money, compare costs and work out what can be bought with a given amount.
4.N6	I can multiply and divide by 10 and 100.								
5.N2	I can read and write to 100 000.	5.N8	I can calculate fractional quantities, eg $\frac{1}{6}$ of 24=3.	5.N12	I can find differences between numbers with 1 decimal place.	5.N15	I can estimate by rounding to the nearest 10, 100 or 1000.	5.N17	I can order and compare the cost of items up to £1000.
5.N3	I can compare numbers with 1 and 2 decimal places.	5.N8a	I can use doubling and halving strategies when working with simple proportions.	5.N12a	I can add and subtract 3-digit numbers using an appropriate mental or written method.	5.N16	I can check my answers using inverse operations.	5.N17a	I can add and subtract totals less than £100 using correct notation.
				5.N13	I can multiply and divide 3-digit numbers by a single-digit number.				
5.N5	I can use mental strategies to recall multiplication tables for 2, 3, 4, 5, 6 and 10 and use to solve division problems. identify multiples of 2, 3, 4, 5, 6 and 10; use the terms multiple and factor identify a prime number as having two factors; recognise that 1 is not a prime number identify prime numbers below 10	5.N9	I can use my understanding of simple fraction and decimal equivalences when measuring and calculation, eg $\frac{1}{2}=0.5$.		order negative and positive numbers, including decimals to 1 decimal place			5.N18	I can plan and track money and savings by keeping accurate records.
5.N6	I can multiply and divide numbers and decimals by 10 and 100.		share objects in a given ratio, eg <i>red blocks and blue blocks in a ratio of 1:2</i> add and subtract fractions with the same					5.N18a	I understand that budgeting is important.

Strand : Measuring							
Length, weight/mass, capacity		Time		Temperature		Area and volume/ Angle and position	
N.M1	I can sort and order things using bigger than/smaller than. I can sort and order things using heavier/lighter than. I can sort and order containers using holds more than/holds less than.	N.M4a	I can use 'before' and 'after' to explain what I do in my day.	N.M7	I can use words like hot and cold when talking about temperature.	N.M9	I can follow instructions when given 2 things to do.
			anticipate events related to elements of daily routines and use the terms 'before' and 'after'		use words that describe temperature during everyday activities, eg hot/cold		follow two-step instructions for simple movements within games and play activities
			sing/chant the days of the week				demonstrate an awareness of prepositions and movement during their own physical activities
R.M1	I can use words like longer/shorter than, heavier/lighter than holds more/less than	R.M4	I can show that I understand how long tasks and everyday activities take.	R.M7	I can use words like hot and cold when talking about temperature	R.M9	I can move in the direction I am told
		R.M4a	I can use time to explain my daily activities				use prepositions to describe position
			sing/chant the days of the week, months and seasons of the year in meaningful contexts, eg when changing the class calendar				
1.M1a	I can use different things to measure length, height and distance	1.M4	I can use words to do with time when I talk about my daily activities weekly activities seasons of the year.	1.M7	I can use words like cooler/warmer when I describe different temperatures.	1.M9	I can make whole turns and half turns.
1.M1b	I can use different things to measure weight/mass		order the days of the week, the months and seasons of the year in meaningful contexts				describe position, direction and movement
1.M1c	I can use different things to measure capacity	1.M5	I can read 'o'clock' using an analogue clock. I can read 'o'clock' using 12-hour digital clocks.				
2.M1	I can measure length, height and distance in 'metres' or 'centimetres'. I can use 'kilogram' or 10 'grams' when measuring weight/ mass. I can use 'litres' when measuring capacity.	2.M5	I can read 'half past', 'quarter past' and 'quarter to' on an analogue clock.	2.M8	I can compare daily temperatures using a thermometer (°C).	2.M9a	I recognise that a quarter turn is a right angle.
	use symbols related to weight, measure and capacity	2.M5a	I can read hours and minutes on a 12-hour digital clock			2.M9	I recognise half and quarter turns, clockwise and anti-clockwise.
			use language relating to dates, including days of the week, months, seasons and years				use mathematical vocabulary to describe position, direction and movement
			record the days of the week, the months and seasons of the year				
3.M1a	I can measure and estimate length, height and distance to nearest ½ cm	3.M5	I can tell the time to the nearest 5 minutes on an analogue clock. I can calculate how long it is to the next hour.	3.M8	I can read the temperature on a thermometer and work out the readings above and below 0°C.	3.M9	I can use the four compass points to describe directions.
3.M1b	I can use 5g, 10g and 100g weights when measuring weight/mass.	3.M5a	I can read hours and minutes on a 12-hour digital clock using am/pm.			3.M10	I can find areas by counting squares.
3.M1c	I can use litres and half litres when measuring to nearest 100ml.		calculate start times, finish times and durations using hours, 30-minute intervals and 15-minute intervals				identify right angles
	choose between metric units to measure a length						recognise that two right angles make a half turn, and that four right angles make a full turn
3.M2	I know that perimeter is the distance around a shape.						
4.M1	I can use a ruler to measure to the nearest mm and record using a mixture of cm and mm eg 1cm and 3mm.	4.M4	I can use calendars to plan events.	4.M8	I can use thermometers to take readings and I understand readings above and below 0°C.	4.M9	I can use eight compass points to describe direction.
4.M1a	I can weigh objects using measuring scales to the nearest 5g,10g,25g or 100g.	4.M5	I can tell the time to the nearest minute on analogue clocks.			4.M10	I can recognise volume in practical situations.
4.M1b	I can measure capacities to the nearest 50ml or 100ml.	4.M5a	I can read hours and minutes on a 24-hour digital clock.				describe an angle as more or less than a right angle
			calculate start times, finish times and durations using 5-minute intervals				
4.M2	I can measure and calculate the perimeter of squares and rectangles.		convert between 12- and 24-hour clock times				
	select and use appropriate standard units to estimate and measure length, weight/mass and capacity	4.M5b	I can time and order events in seconds.				
4.M3	I can change cm to mm, m to cm, km to m.		estimate the number of minutes everyday activities take to complete				
	choose appropriate metric units to measure length, weight/mass and capacity						
5.M1	I can use measuring instruments with 10 equal divisions between each major unit and record using decimal notation eg 4.2cm, 1.3kg.	5.M5	I can read and use analogue and digital clocks.	5.M8	I can measure and record temperatures involving positive and negative readings.	5.M9	I can use coordinates to specify location.
5.M2	I can measure perimeters.	5.M5a	I can time events in minutes and seconds and order the results.	5.M8a	I can calculate temperature differences, including those involving temperature rise and fall across 0°C.	5.M10	I can calculate, estimate and compare the area of squares and rectangles using standard units.
	make estimates of length, weight/mass and capacity based on knowledge of the size of real-life objects, recognising the appropriateness of units in different contexts		calculate start times, finish times and durations using hours and minutes			5.M10a	I can find volumes by counting and other practical methods.
5.M3	I can make use of conversions eg ¼ of a km=250m.	5.M5b	I can carry out practical activities involving timed events and explain which unit of time is the most appropriate.				draw and measure acute angles in multiples of 10 degrees
	recognise the appropriateness of units in different contexts		estimate the length of time everyday activities take to complete, extending to hours and quarters of hours				recognise acute and obtuse angles
6.M1	I can read and interpret scales or divisions on a range of measuring instruments.	6.M5	I can time events in minutes and seconds to the nearest tenth of a second.	6.M8	I can measure and record temperatures involving positive and negative readings.	6.M9	I can use grid references to specify location.
	make estimates of length, weight/mass and capacity based on knowledge		convert between standard units of time	6.M8a	I can calculate temperature differences, including those	6.M10	I can calculate the area of squares and rectangles.

	of the size of real-life objects				involving temperature rise and fall across 0°C.		
6.M3	I can record measurements in different ways, eg 1.3kg = 1kg 300g.		estimate the length of time everyday activities take to complete with increasing accuracy				draw and measure acute and obtuse angles in multiples of 5 degrees
6.M3a	I can use the language of imperial units in daily use, eg miles, pints.	6.M6	I can use timetables and schedules to plan events and activities. I can interpret timetables and schedules to plan events and activities. I can make calculations as part of the planning process.				recognise reflex angles
		6M6a	I can estimate how long a journey takes.				calculate a missing angle within a right angle
Y7	I can find the perimeter of shapes, including compound shapes with straight sides.	Y7	I can measure and record time in hundredths of a second, eg 9.95 secs.	Y7	I can record temperatures using the appropriate temperature scales.	Y7	I can calculate the area of a rectangle and a triangle using the correct formula.
Y7	I can make estimates of length, weight/mass and capacity based on everyday objects and ones I am less familiar with.	Y7	I can calculate start times, finish times and durations			Y7	I can work these formulae out for myself.
Y7	I can read and interpret scales on a range of measuring instruments.	Y7	I can convert between times given to me as a decimal or fraction and hours, minutes and seconds, eg 1.5, 1.25, 1.75 hours			Y7	I can work out formulae and use them to calculate the area of parallelograms.
Y7	I can convert between metric measures such as mm/cm/ m/km or g and kg and carry out calculations using them.	Y7	I can use time zones to compare times in different countries.			Y7	I can calculate areas of compound shapes (eg shapes made up of rectangles and triangles) and volumes of simple solids (eg cubes and cuboids).
Y7	I understand that some measurements have fixed values and others can take any value within a given range, eg shoes sizes and head circumferences.					Y7	I can measure and draw angles to the nearest degree and label it on my diagram, eg angle ABC.
						Y7	I can use knowledge I already have on angles to estimate other angle types.
						Y7	I can calculate angles on a straight line, around a point, vertically opposite and in triangles.

Strand : Geometry					
Shape		Construction		Movement	
YN	recognise and use the names for 2D shapes (circle, square and triangle) within play activities and the environment	YN		YN	use a variety of media to develop concept of symmetry
	use and build with 2D and 3D shapes within play-based activities				
YR	recognise and name common 2D shapes (circle, square, triangle and rectangle) and some 3D shapes (cube, cuboid, and sphere) within play activities and the environment	YR		YR	create a simple symmetrical picture through a variety of media
	use 2D and 3D shapes to make models and pictures.				
Y1	recognise and name common 2D shapes (squares, triangles, rectangles, circles and semi-circles) in order to begin to compare and sort	Y1		Y1	recognise and create a symmetrical picture or simple shape
	recognise and name common 3D shapes (cube, cuboid, cone and sphere) in order to begin to compare and sort				
	use 2D and 3D shapes and describe how they fit together.				
Y2	recognise and name regular and irregular 2D shapes and 3D shapes, understand and use the properties of shape	Y2		Y2	identify a line of symmetry for 2D shapes and complete symmetrical pictures
	make increasingly more complex or accurate models with 3D shapes and tessellate 2D shapes				
Y3	recognise and classify triangles, squares, rectangles, pentagons and hexagons, including irregular cases	Y3	draw lines to the nearest half centimetre	Y3	identify lines of symmetry in 2D shapes
	recognise 3D shapes, including prisms				
	identify congruent shapes in the same orientation				
Y4	recognise, classify and sketch polygons with up to eight sides, including irregular shapes	Y4	draw lines to the nearest millimetre	Y4	draw lines of symmetry
	recognise and classify 3D shapes, using their own criteria		recognise and draw perpendicular and parallel lines		
Y5	recognise and classify triangles, using their own criteria	Y5	draw and label lines accurately, eg AB	Y5	translate a shape on squared paper horizontally or vertically
	identify congruent shapes in different orientations		construct solids from given nets		draw the reflection of a shape in any line
			draw squares, rectangles and right-angled triangles accurately		complete a partly drawn shape after rotation
Y6	recognise tetrahedra and square based pyramids	Y6	draw cubes and cuboids on isometric paper	Y6	find all the lines of symmetry for a given shape
	recognise and sketch different types of quadrilaterals		draw nets of cubes on square paper		identify rotational symmetry of shapes
	explore the tessellation of different shapes				
	identify a net of a cube				
Y7	I can make connections between nets and prisms and pyramids	Y7	I can construct circles using compasses	Y7	I know the symmetrical properties of regular and irregular shapes
	I can define solid shapes by their properties using the terms edges, faces, vertices and prism		I can recognise and draw to scale on square paper, nets of cubes and cuboids		I can rotate a shape on a grid
	I can explain the properties of congruent shapes		I can draw triangles accurately given lengths and angles, using a ruler and a protractor		I can translate a shape using a description, eg 4 squares right and 2 squares down
	I can identify a radius and diameter and use the relationship between them to identify a circumference				I can describe a translation

Strand : Algebra							
Number Sequences		Expressions and Formulae		Functions and Graphs		Equations and Inequalities	
	None below Y3 (see Data – Pattern)						
Y3	explore sequences of whole numbers involving addition and subtraction, <i>eg counting in 2s, 3s and 4s from different starting points</i>	Y3		Y3	use one and two step function machines to generate input and output involving addition and subtraction within 100; express, in words, the operations from function machines	Y3	be able to list numbers that are 'greater than' or 'less than' another number
Y4	explore sequences of positive whole numbers involving addition and subtraction in 2s, 3s, 4s, 5s, 6s, 8s and 10s from different starting points	Y4		Y4	use one and two step function machines to generate input and output using all four operations express, in words, the operations from function machines	Y4	use > to describe whether a number is greater than another find an 'unknown' in one step equations, <i>eg</i> $6 + \square = 10$
Y5	recognise and state the difference in sequences that involve adding or subtracting write the next two (or more) terms in sequences that involve addition or subtraction show that a number is in the sequence and/or find the position number by continuing the sequence or otherwise	Y5		Y5	use multistep function machines to generate input and output using all four operations; express, in words, the operations from function machines read, plot and write coordinates in one quadrant, <i>eg</i> (2, 4)	Y5	use < to describe whether a number is less than another solve one step equations using letters to present 'unknowns' with integer solutions, <i>eg</i> $6 + a = 10$ and $b + b = 8$
Y6	find the term to term rule for ascending and descending sequences, <i>eg</i> 3, 7, 11, 15 add 4 generate a sequence given the first term and the term to term rule consider spatial patterns, <i>eg square numbers</i>	Y6	explore general statements through practical activities, <i>eg that</i> $a + a + a = 3a$, $3 \times a = 3a$ and $a + a + a + b + b = 3a + 2b$ simplify expressions involving the addition of one variable, <i>eg</i> $5t + 3t = 8t$	Y6	express output generated from one step function machines using algebra identify the coordinates of a missing point from a regular shape refer to the x axis and the y axis	Y6	construct and solve one step equations with whole number solutions be able to list numbers between two points using the terminology 'less than or equal to' and 'greater than or equal to'
Y7	I know the difference between a term to term rule and an nth term rule (Eg for the sequence 1, 3, 5, 7, 9, the term to term rule is add 2, the nth term of the sequence is 2n) I can explore number sequences I can express nth term rules involving one and two steps in words and symbols	Y7	I can show that $a + b = b + a$ and $a - b$ is not equal to $b - a$ (Eg if $a = 2$ and $b = 3$ then $2+3 = 3+2$ but $2-3 \neq 3-2$) I can show that $a \times b = b \times a$ and a/b is not equal to b/a (Eg if $a = 6$ and $b = 2$ then $6 \times 2 = 2 \times 6$ but $6/2 \neq 2/6$) I know that $4g \times 2h = 8gh$ I know that b divided by 2 is notated as $b/2$ and $\frac{1}{2} b$ I can substitute positive whole numbers into one and two step expressions (Eg if $a = 3$ and $b = 4$ then $5a-2b = (5 \times 3) - (2 \times 4) = 7$) I can simplify expressions involving the addition and subtraction of two or more variables (Eg $5a + 6b + 7a - 3b = 12a + 3b$)	Y7	I can express output generated from two (or more) step function machines, taking into account the order of operations using algebra (Eg If the input for the function machine input $\rightarrow x2 \rightarrow +1 \rightarrow$ output is 7 then the output is 15) I can read, plot and write coordinates in all four quadrants (in the form (x,y), (2,3)).	Y7	I can solve two step equations (Eg $3x + 5 = 17 \rightarrow x = 4$) I can express a set of numbers as a single inequality using $< > \leq \geq$ (Eg $3 + 4 > 7 - 6$) I can give solutions for inequalities $< > \leq \geq$, recognising that there are an infinite number of solutions (Eg for the inequality $2x + 1 > 7$, $x > 3 \rightarrow x$ is greater than 3 For the inequality $2x + 1 \geq 7$, $x \geq 3 \rightarrow x$ is greater than or equal to 3)

Strand: Data Skills			
Collect and record data, Present and analyse data, Interpret results		Pattern/Probability	
N.D1	I can match and sort things which are the same.	YN	copy a range of simple patterns and sequences visually and aurally, eg clapped patterns, threading activities.
N.D2	I can show a set of things using marks.		
R.D1	I can sort and order objects using one reason.	YR	recognise and repeat three object/colour/clapped patterns and sequences.
R.D2	I can show a set of objects using marks, numbers or pictures		
1.D1	I can sort and group things using more than one reason	Y1	demonstrate an understanding of repeating patterns, including shape and number, by describing, reproducing and extending.
1.D2	I can collect information by voting or sorting and show this in pictures, objects or drawings.		
1.D2a	I can make lists and tables using information I've collected		
2.D1	I can collect and write about information from: - lists and tables, - diagrams, - block graphs - pictograms where the symbol represents one unit.	Y2	order and identify patterns in combinations of mathematical objects, including number and number tables, and discuss the relationship between them.
2.D2	I can take out and make sense of information from lists, tables, diagrams and graphs.		
3.D3	I can take out and make sense of information from charts, timetables, diagrams and graphs.		
3.D4a	I can show information using: lists, tally charts, tables and diagrams		
3.D4 b	I can show information using: bar charts and bar line graphs labelled in 2s, 5s and 10s		
3.D4 c	I can show information using: pictograms where one symbol represents more than one unit using a key		
3.D4 d	I can show information using: Venn and Carroll diagrams		
4.D3	I can pick out and make sense information from charts, timetables, diagrams and graphs.		
4.D4 a	I can represent data using: lists, tally charts, tables and diagrams		
4.D4 b	I can represent data using: bar charts and bar line graphs labelled in 2s, 5s and 10s-		
4.D4 c	I can represent data using: pictograms where one symbol represents more than one unit using a key		
4.D4 d	I can represent data using: Venn and Carroll diagrams.		
5.D3	I can extract and interpret information from an increasing range of diagrams, timetables and graphs (including pie charts).	Y5	use the words 'certain' and 'impossible' to describe the likelihood of an event occurring
5.D3a	I can use mean, median, mode and range to describe a data set.		recognise that some events are impossible and some events are certain
5.D4a	I can represent data using: lists, tally charts, tables, diagrams and frequency tables		recognise that some events are more likely than others
5.D4b	I can represent data using: bar charts, grouped data charts, line graphs and conversion graphs.		use the words 'likely', 'unlikely' and 'even chance'
	use the words 'certain' and 'impossible' to describe the likelihood of an event occurring		
	recognise that some events are impossible and some events are certain		
	recognise that some events are more likely than others		
	use the words 'likely', 'unlikely' and 'even chance'.		
6.D3	I can extract and interpret information from an increasing range of diagrams, timetables and graphs (including pie charts).	Y6	use numbers to describe the likelihood of an event, eg a one-in-six chance
6.D3a	I can use mean, median, mode and range to describe a data set.		recognise that some events are equally likely
6.D4 a	I can represent data using: lists, tally charts, tables, diagrams and frequency tables		identify the outcomes of simple events, eg flipping a coin, rolling a dice
6.D4 b	I can represent data using: bar charts, grouped data charts, line graphs and conversion graphs.		
	use numbers to describe the likelihood of an event, eg a one-in-six chance		
	recognise that some events are equally likely		
	identify the outcomes of simple events, eg flipping a coin, rolling a dice.		
Year 7	I can collect own data for a survey, eg through designing a questionnaire.	Year 7	I know that the probability of an impossible event is 0 and a certain event is 1
Year 7	I can construct frequency tables when the data has been grouped into equal class intervals (groups given to learners).	Year 7	I know the probability of any event is on a scale between 0 and 1
Year 7	I can construct a wide range of graphs and diagrams to represent the data and reflect the importance of scale	Year 7	I can write the probability of an event as a fraction or a decimal or a percentage
Year 7	I can interpret diagrams and graphs (including pie charts)	Year 7	I can give examples of events that have a probability of half
Year 7	I can compare two different sets of discrete data using mean, mode, median and range	Year 7	When events have two outcomes, I can decide which is the most likely.
		Year 7	I can write a list of all the possible outcomes of an event.
		Year 7	I can estimate the number of times an outcome of an event may happen, eg when flipping a coin ten times, I know how many heads to expect.

Strand : Developing Numerical Reasoning					
Identifying processes and connections		Represent and communicate		Review	
Not defined for Nursery		Not defined for Nursery		Not defined for Nursery	
R1a.1	Make guesses and discover that 'getting it wrong' at first is a valued part of learning	R2a.1	Show willingness to make contributions to small group discussions	R3a.1	Know that 'acting things out', or drawing pictures, can often help them to understand
R1a.2	Demonstrate skills for counting – i.e.: <ul style="list-style-type: none"> • Demonstrate knowledge that the order of numbers is always the same and that numbers go on for ever • Count forwards and backwards • Match number names to sets of objects (subitising for small numbers and counting for larger numbers) • Recognise the empty set and the numeral 0 	R2a.2	Listen to, and talk about, contributions of others in discussions	R3a.2	Know that making a mistake is not a failing but an opportunity to learn better and feel better through feeling more confident
R1a.3	Connect cardinal and ordinal (up to 10)	R2a.3	Show curiosity about numbers	R3a.3	Practise talk aloud (self-monitoring) techniques while working
R1a.4	Copy and extend patterns of objects and shapes presented concretely and pictorially	R2a.4	Recognise numerals to ten confidently and correctly, sometimes matching numeral to quantity correctly.	R3a.4	Use more than one representation (concrete, pictorial or symbolic) of a problem and solution, understanding that outcomes will be the same in all representations of the same problem
R1a.5	Devise patterns using concrete objects and pictures	R2a.5	Read and write numbers, as numerals and words, to ten	R3b/c.1	Show that they are familiar with numbers used in cardinal, ordinal and nominal senses
R1a.6	With support of cardinal and ordinal apparatus Connect 'one more' with 'next one' for any number up to 10 Connect 'one less' with 'the one before' for any number up to 10	R2a.6	Know that events, such as sounds and movements can be counted	R3b/c.2	Engage effectively and with enjoyment with sorting, ordering and classifying activities
R1a.7	Recognise use of symbols;	R2a.7	Talk about numbers that have personal meaning – eg their age, number of pets, number of toys	R3b/c.3	Understand that the different outcomes from a sorting activity or survey can be represented by a set of boxes
R1a.8	Talk about the equals sign as 'is the same as' and 'makes' or 'leaves' appropriately;	R2a.8	When playing matching games, explain why concrete objects or pictures do or do not 'match'	R3b/c.4	Represent the findings of mini surveys using concrete objects and representing them as pictures, perhaps using structured containers with various contents that draw children's attention to numerical features of the information
R1a.9	Experience, through play, concrete representations of aggregation, augmentation, reduction, taking away and partitioning	R2a.9	Explain how they make decisions about ordering numbers or objects in given way	R3b/c.5	Respond orally to questions about the information represented in concrete/physical tables and charts
R1a.10	Talk about comparison between objects or sets of objects presented concretely and pictorially (eg more/less, longer/shorter)	R2a.10	Given a criterion, explain how they decide how to sort objects		
R1a.11	Show that they can see what is the same and what is different – by talking, with concrete objects and pictures	R2a.11	With support use comparative language correctly		
R1a.12	Order a small group of objects by a given characteristic	R2a.12	Describe patterns that they see and make		
R1a.13	Choose a characteristic of a group of objects by which to order them (and order them successfully)	R2b/c.1	Take part in discussions with peers and adults.		
R1a.14	Understand hierarchical classification – sub-groups within groups – (eg cats are animals)	R2b/c.2	Demonstrate, in practical activities, that they understand the effect of combining sets of objects or of removing items.		
R1b.1	Practise 'think aloud' with an adult	R2b/c.3	Demonstrate, in practical activities, how to compare 2 quantities by setting them out in proximity to each other		
R1b.2	With support, represent the task or problem using pictures or concrete objects	R2b/c.4	With support, construct models and create pictures representing aspects of stories and counting songs and rhymes		
R1b.3	Talk about links with existing knowledge				
R1b.4	Consider whether 'acting out' the problem might help				
R1b.5	Consider other relevant experience and knowledge and make decisions about its potential to be helpful in this situation, including testing 'guesses' and refining them in the light of findings and applying knowledge 'blindly' in the hope that it might help,				
R1b.6	Practise self-monitoring techniques during an activity or problem				
R1c/d.1	Practise thinking aloud				
R1c/d.2	Recognise solutions to problems				
R1c/d.3	Gain concrete and pictorial experience of combining sets of objects, augmenting sets of objects, partitioning sets, reducing sets, comparing objects and sets of objects				
R1e.1	With support, select concrete objects to represent and enact mathematical situations and events				
R1e.2	With support, select a number of alternative sets of objects to represent and enact mathematical situations and events				
R1e.3	With support, talk about the role of the equals sign whenever it is encountered – what is it representing?				
R1f.1	Order a set of objects by one characteristic (for example a set of animals of different heights)				
R1f.2	Talk about the relative size of numbers, relating them to real-life contexts that are meaningful for children				
R1f.3	Talk about experience with measuring activities, including weight and length				
R1f.4	When prompted, make predictions about the suitability of instruments and containers for weighing and packaging and measuring (eg when tidying up) and suggest alternatives. Children should go on to test their ideas and reflect on their findings.				
R1f.5	Focus on the physical characteristics of objects in order to make decisions that enable comparison (eg will this dog fit in this bed?)				
1.1a.1	Show willingness to 'have a go' without being afraid to make mistakes	1.2a.1	Show willingness to make contributions to small group and class discussions	1.3a.1	Encourage each other to 'act-out' or 'draw something' to aid understanding and explanation
1.1a.2	Consolidate skills for counting – i.e.:	1.2a.2	Listen to, and talk about, contributions of others in discussions and, with support, ask	1.3a.2	Be willing and able to re-start (perhaps with support) and repeat the

	<ul style="list-style-type: none"> Demonstrate knowledge that the order of numbers is always the same and that numbers go on for ever Count forwards and backwards in steps of different sizes and from different numbers Match number names to sets of objects (subitising for small numbers and counting for larger numbers) Connect cardinal and ordinal (up to 20) 		appropriate questions		construction of alternative representations (concrete, pictorial and symbolic) when the first solution is not the correct one
1.1a.3	Extend and devise patterns of objects and shapes, including doubles, halves and quarters, presented concretely, pictorially and as symbols	1.2a.3	Recognise and use numerals to twenty confidently and correctly	1.3a.3	Understand the need to re-visit the original problem or question in order to know whether they have answered it or not
1.1a.4	Correct patterns that do not follow the pattern or rule Use the equals sign as 'is the same as' and 'makes' or 'leaves' appropriately	1.2a.4	Read and write numbers, as numerals and words, to twenty	1.3a.4	Talk-aloud fluently
1.1a.5	Experience and enact, through play, concrete representations of aggregation, augmentation, reduction, taking away and partitioning – and represent these using pictures and symbols	1.2a.5	In games and oral activities, successfully match numerals, collections of objects and numbers in words.	1.3a.5	With support explain how they have reached a solution
1.1a.6	With support of cardinal and ordinal apparatus <ul style="list-style-type: none"> Connect 'one more' with 'next one' for any number up to 20 Connect 'one less' with 'the one before' for any number up to 20 	1.2a.6	Explain why they order numbers or objects in a particular way	1.3a.6	Know that, where outcomes are not the same when multiple alternative representations of a problem are considered, there must be an error and that this can be used as a strategy to check solutions
1.1a.7	Use appropriate comparative language when comparing objects or sets of objects presented concretely and pictorially (eg more/less, longer/shorter)	1.2a.7	Explain why they sort objects in particular ways and suggest alternative criteria	1.3b/c.1	Show that they are confident with numbers used in cardinal, ordinal and nominal senses
1.1a.8	Represent simple mathematical situations with concrete objects and create pictorial images to represent those situations	1.2a.8	Use comparative language correctly and spontaneously	1.3b/c.2	Engage effectively, with confidence and enjoyment, with sorting, ordering and classifying activities
1.1a.9	Show that they can see what is the same and what is different – by talking, with concrete objects, pictures and symbols	1.2a.9	Describe patterns, sequences and relationships in practical activities using concrete objects and pictorial representations	1.3b/c.3	Appreciate that putting things in boxes (concretely or pictorially) makes it clear when things are separate and can show or somehow connected
1.1a.10	Sort and classify objects according to 2 criteria)	1.2b/c.1	Respond to oral questions about real world situations, incorporating some mathematical language related to sequencing, chronology and comparison.	1.3b/c.4	Understand that representing outcomes in boxes helps to clearly show how when outcomes or findings are very common or uncommon
1.1a.11	Develop understanding of hierarchical classification – devise subgroups and talk about relationships between them (cats are animals; cats are different colours; dogs are animals too, but are they cats?)	1.2b/c.2	Interpret and record, in pictures, the effect of combining 2 sets of objects	1.3b/c.4	Represent the findings of mini surveys using concrete objects and representing them as pictures
1.1b.1	Choose to 'think aloud' as a strategy for making sense of a problem – for understanding what needs to be done	1.2b/c.3	Interpret and record, in pictures, the effect of combining multiple sets of objects		
1.1b.2	Represent the task or problem using pictures or concrete objects and talk about the similarities in the different representations – how different specific aspects of the task are represented in alternative ways – does it help me know what to do? What does it show me?	1.2b/c.4	Interpret and record, in pictures, the effect of reducing a set of objects		
1.1b.3	Reflect on experience – recognise that previous self-monitoring helps them to remember what they did;	1.2b/c.5	Interpret and record, in pictures, the effect of partitioning a set of objects		
1.1b.4	Continuing practice and development of self-monitoring techniques	1.2b/c.6	Interpret and record, in pictures, the difference between 2 quantities (i.e. compare them pictorially and indicate the 'gap')		
1.1b.5	Talk about existing knowledge linked to previous experience (in order to reinforce conceptual links) – 'how do you know this?', 'why do you think that?'	1.2b/c.7	Construct models and create pictures representing aspects of stories and counting songs and rhymes and other mathematical situations and events.		
1.1b.6	At times, be able to predict whether initial ideas will be helpful or unhelpful to complete the task and reject some of those; at other times, be willing to test ideas, even when unsure of the outcome;				
1.1c/d.1	Solve problems using mental strategies when appropriate				
1.1c/d.2	With support, represent the mathematics of a situation or problem using concrete objects and pictures/diagrams				
1.1c/d.3	Through reflecting on the question/task posed, recognise solutions to problems and know when a solution is not achieved				
1.1c/d.4	Show basic understanding of the relationship between addition and subtraction and between halving and doubling				
1.1c/d.5	With prompting and support, apply knowledge of number facts to problems involving large numbers				
1.1e.1	With support, 'translate' flexibly between concrete pictorial and symbolic representations of the same mathematics				
1.1e.2	Show confidence in constructing representations concretely and pictorially and in testing ideas, even if the outcome is uncertain				
1.1e.3	Talk about a variety of equipment and instruments and strategies and what they have discovered when using them				
1.1f.1	Order a set of objects by one characteristic				
1.1f.2	Order a collection of sets of objects by number in set				
1.1f.3	Talk about the relative size of numbers, relating them to real-life contexts that are meaningful for children				
1.1f.4	Talk about experience with measuring activities, including weight and length, using appropriate mathematical language				
1.1f.5	Make predictions about the suitability of instruments and containers for weighing and packaging and measuring (explaining their reasons) and suggest alternatives. Children should go on to test their ideas and reflect on their findings.				
1.1f.6	Construct their own questions for peers, requiring estimation and prediction about relative quantities and sizes				
2.1a.1	Count sets of objects reliably up to 100	2.2a.1	Show confidence to make contributions to small group and class discussions	2.3a.1	Judge whether acting out or drawing or some other strategy will help to check or explain a solution
2.1a.2	Order numbers up to 100 reliably;	2.2a.2	Show an interest in conversations that include mathematical references, including stories. Ask	2.3a.2	Spontaneously and with confidence, re-construct representations in order to

			and respond to questions, using appropriate mathematical language where appropriate		try again to reach a solution
2.1a.3	Demonstrate knowledge that basic number facts can help them calculate with larger numbers	2.2a.3	Read and write numbers, as numerals and words, to one hundred	2.3a.3	Spontaneously revisit the original problem or question and use appropriate strategies to evaluate whether the solution might be correct or is clearly not
2.1a.4	Connect cardinal and ordinal up to 100	2.2a.4	Devise criteria for sorting and classifying (objects and pictures and numbers) and be able to explain them	2.3a.4	Continue to develop 'talk-aloud' and begin to do it silently and 'in my head'
2.1a.5	Extend patterns of objects and shapes presented concretely, pictorially and as symbols and simple fractions	2.2a.5	Use comparative language correctly and spontaneously	2.3a.5	Explain how they have reached a solution
2.1a.6	Devise patterns using concrete objects, pictures and symbols	2.2a.6	Describe patterns, sequences and relationships in practical activities using concrete objects, pictorial representations and numbers	2.3a.6	Make reasonable attempts to work backwards, a step at a time (de-construct), as well as re-start when reattempting a problem
2.1a.7	Correct patterns that do not follow the pattern or rule	2.2b/c.1	Ask and respond to oral questions about real world situations, incorporating some mathematical language related to sequencing, chronology and comparison.	2.3b/c.1	Show any number up to 20 as both cardinal and ordinal (eg 16 as quantity and as position)
2.1a.8	Move between different representations of the same situation or event - experience and enact concrete representations of the range of addition and subtraction structures (aggregation, augmentation, reduction, taking away and partitioning) – and represent these using pictures and symbols;	2.2b/c.2	Interpret and record, in pictures and as symbols, the effect of combining 2 sets of objects		
2.1a.9	know that addition and subtraction for quantity 4 (the same 4 sweets are added or removed) is the same as addition and subtraction of the number 4 (the 4 sweets added or removed do not need to be the same sweets).	2.2b/c.3	Interpret and record, in pictures and arrays and as symbols, the effect of combining multiple sets of objects		
2.1a.10	interpret mathematical situations and events presented in symbols, 'translating' into pictures and concrete/practical representations....and talk about how they understand and create different representations using familiar mathematical language	2.2b/c.4	Interpret and record, in pictures and as symbols, the effect of reducing a set of objects		
2.1a.11	Enact 'sharing' and 'grouping' situations and problems	2.2b/c.5	Interpret and record, in pictures and as symbols, the effect of partitioning a set of objects		
2.1a.12	Show that they can see what is the same and what is different – by talking, with concrete objects, pictures and symbols	2.2b/c.6	Interpret and record, in pictures and as symbols, the difference between 2 quantities (i.e. compare them pictorially and indicate the 'gap')		
2.1a.13	Choose characteristics of a group of objects by which to order them (and order them successfully), creating pictorial/diagrammatic representations	2.2b/c.7	Interpret and construct concrete, pictorial and symbolic representations of mathematical situations and events and be able to explain the similarities between them.		
2.1a.14	Communicate the makeup of groups and subgroups and the relationships between them using concrete materials				
2.1a.15	Use appropriate mathematical language to explain their thinking and to pose questions				
2.1b.1	Choose to 'think aloud' as a strategy for making sense of a problem.				
2.1b.2	Represent the task or problem using pictures and/or concrete objects				
2.1b.3	With support, identify 'givens, goals and gaps' – 'what do they know?', 'what do they need to know?', 'how might they obtain that information?'				
2.1b.4	Talk about previous experience and existing knowledge that has some connection with the task (for the individual child), even if unsure about relevance;				
2.1c/d.1.	Solve problems using mental strategies when appropriate				
2.1c/d.2	Represent the mathematics of a situation or problem using concrete objects and pictures/diagrams				
2.1c/d.3	Interpret diagrams and arithmetic notation				
2.1c/d.4	Identify givens, goals and gaps in simple problems				
2.1c/d.5	Choose the appropriate operation when solving addition or subtraction problems				
2.1c/d.6	Decide what they could write or draw that might help them make sense of the problem				
2.1c/d.7	Know when and how to apply knowledge of number facts to problems involving large numbers				
2.1e.1	'Translate' flexibly between concrete pictorial and symbolic representations of the same mathematics				
2.1e.2	Make decisions about how to represent the problem and talk about why such a representation will help – will it show what we need to find out?				
2.1e.2	Suggest equipment that will help us discover or measure what we need to find.				
2.1e.4	Suggest other tasks that might need to be accomplished, or knowledge that must be obtained in order to reach solution.				
2.1f.1	Break down into steps, and describe to the teacher, their thinking when deciding 'how big?', 'how long?' or 'how many?'				
2.1f.2	Describe the mental images they see 'in their head' or 'at the back of their eyelids' when they imagine number or mathematical processes				
3.1g.1	Demonstrate understanding of the number system and use that knowledge to help them make sense of the world around them – eg relative sizes of small and large objects, near and far, chronology – up to 1000	3.2d.1	With support, interpret concrete and pictorial representations of the mathematics within a variety of situations and events	3.3d.1	With prompting, understand the commutative nature of addition and multiplication and use this to check solutions
3.1g.2	Recognise, extend and describe patterns	3.2d.2	With prompts, devise 'I wonder what would happen if?' questions (modelled by teacher)	3.3d.2	With support, demonstrate knowledge that subtraction is not commutative and so checks that are appropriate for addition and multiplication are not appropriate for subtraction
3.1g.3	Count reliably, forwards and backwards and in intervals of 2,3,4,5,10, 100	3.2d.3	With support, and using manipulatives, models and images, show what they have done and relate concrete and pictorial representations to each other	3.3d.3	Know that addition and subtraction are the inverse of each other and that this can be harnessed as a checking strategy as well as a problem-solving strategy
3.1g.4	Round to nearest 1,10, 100 in order to estimate and approximate	3.2e.1	With support, interpret charts, diagrams and graphs (pictorial/diagrammatic representations) of a variety of mathematical situations and events	3.3d.4	Understand that multiplication can be represented as repeated groups to construct arrays
3.1g.5	Order numbers (up to 1000) and fractions (halves and quarters)	3.2e.2	With support, and linked to sorting activities, create charts, diagrams and graphs to represent concrete situations and events, at first using one scale unit to represent one count	3.3d.5	With support, construct, draw and write alternative representations of a problem and/or solution to confirm a solution
3.1g.6	Compare 2 values and evaluate the difference	3.2f.1	Record concrete and pictorial representations of mathematics in situations and events, using	3.3e.1	Describe what they know (can interpret) from tables, pictograms, simple bar

			numerals and other symbols (with support)		charts
3.1g.7	Combine 2 values and evaluate the total	3.2g.1	With support use correct notation when recording calculations	3.3e.2	With support compare items represented graphically and talk about more/less/how much more/less
3.1g.8	Partition a number into 2 or 3 (whole number) parts and know all possibilities	3.2g.2	Show some confidence with basic mathematical symbols, understanding that 'the answer' can be on either side of the equals sign	3.3e.3	With support make up questions about a data set
3.1g.9	Demonstrate that they understand the effects of addition, subtraction, multiplication and division	3.2g.3	Record units of measurement accurately, with support	3.3e.4	With support recognise when it is not possible to find particular information in a given data representation
3.1g.10	Know that addition and subtraction are inverse operations and that one can be used to 'undo' the other.	3.2g.4	Begin to tabulate systematically		
3.1g.11	Talk about the connections between dividing, sharing and fractions				
3.1g.12	Use symbols for equalities and inequalities fluently				
3.1g.13	Express 'rules' using symbols for variables or unknowns				
3.1g.14	Select criteria by which objects might be sorted and choose appropriate representation – eg Carroll diagram, Venn diagram, table, bar chart				
3.1g.15	Explain that data is simply information – that it might be provided by others or we might discover it for ourselves				
3.1g.16	Develop increasing facility for measurement with other units (eg capacity, mass) showing understanding of appropriate units in different contexts				
3.1g.17	Develop experience and accuracy with a range of measuring instruments eg scales, tape measures, stopwatch				
3.1g.18	Show awareness that practice is needed to develop expert skills and knowledge				
3.1g.19	Show willingness to practise and develop concepts and skills				
3.1g.20	Know that some tasks are likely to be solved through working with others and that sometimes it is important to work independently				
3.1g.21	Demonstrate enthusiasm when faced with challenging problems				
3.1g.22	With support/prompts, ask 'I wonder what would happen if?' questions				
3.1g.23	Describe some aspects of their strategies for approaching problems				
3.1h.1	Decide how to represent the problem with apparatus and or pictures/diagrams				
3.1h.2	Describe and explain their jottings and 'workings'				
3.1h.3	Be confident to attempt to represent the problem and revise as necessary				
3.1h.4	Make decisions about whether to work with others or work independently				
3.1h.5	Talk about experiences (in a very wide range of everyday life and the pupil's personal experiences) and knowledge that might be useful for the new problem				
3.1h.6	Talk about how they will know when they have reached a solution				
3.1h.7	Talk about whether they are aiming for a precise solution or whether there will be intermediate steps or stages				
3.1i	There is no 3.1i				
3.1j.1	☑ Ask themselves the question 'What does this make me think of?'				
3.1j.2	☑ Make decisions about which calculations will help them make sense of a problem and help them to find a solution				
3.1j.3	Decide whether a table or diagram will help to clarify the problem				
3.1j.4	Ask themselves the question 'Is this about something changing? What is changing?'				
3.1j.5	Anticipate whether they might need to measure or count something				
3.1j.6	Anticipate what units of measurement are likely to be relevant?				
3.1j.7	Consider how they might record what they find – number jottings, calculations, diagrams, to show how things change				
3.1j.8	Be prepared to revise early 'plans'				
3.1j.9	Be prepared to 'have a go' even with an idea that they can't explain or justify				
3.1k.1	When approaching a problem, with support, anticipate what might need to be measured or counted and consider appropriate units and instruments for collecting and recording information				
3.1l.1	Carry out a number of activities using calculators and evaluating the role of the calculator in each activity (eg did it complete a large number of straightforward calculations very quickly, freeing up time for thinking about more interesting and challenging mathematical ideas?)				
3.1l.2	Judge whether the calculations that are likely to be necessary should be manageable manually – if not, do they need to revise their own calculation knowledge or is it important to use a calculator				
3.1l.3	Consider a range of mental and written strategies for solving the problem, identify some that might be helpful and some that probably would not				
3.1m.1	Practise visualisation techniques to imagine comparison of quantities and objects of different sizes, shapes, orientations				
3.1m.2	Indicate with their hands and by reference to common objects the size of some familiar units of measurement and how they relate to each other (eg cm, 500ml, 1kg, 10kg)				
4.1g.1	Talk with confidence about mathematical facts and information across the curriculum in areas of personal interest	4.2.d1	Interpret concrete and pictorial representations of the mathematics within a variety of situations and events	4.3d.1	Understand the commutative nature of addition and multiplication and use this to check solutions
4.1g.2	Show understanding of the number system, extended to include negative numbers	4.2.d2	With support, and using manipulatives, models and images, and appropriate mathematical language, construct concrete and pictorial representations to each other	4.3d.2	Know that subtraction is not commutative, and that checks that are appropriate for addition and multiplication are not appropriate for subtraction.
4.1g.3	Demonstrate a secure and developing sense of size, quantity, order	4.2.e1	With support, interpret charts, diagrams and graphs (pictorial/diagrammatic representations) of a variety of mathematical situations and events, including where scale interval is 2, 5 or 10	4.3d.3	Use inverse operations to check addition and subtraction solutions and solve problems

4.1g.4	Recognise, extend, describe patterns and number sequences, including below zero	4.2.e2	With support, and linked to sorting activities, create charts, diagrams and graphs to represent concrete situations and events, using one scale unit to represent two or ten	4.3d.4	With support, use a short list of questions and prompts to support self-monitoring and reflection during the problem solving process
4.1g.5	Use the vocabulary of estimation and approximation; make and justify estimates and approximations of numbers	4.2.e3	Talk about what a graph or chart shows, including comparing values represented	4.3d.5	Use arrays to represent multiplicative structures Identify simple fractions and simple equivalent fractions within arrays
4.1g.6	Partition a number into many (whole number) parts (not only HTU)	4.2.f1	Independently record concrete and pictorial representations of mathematics in situations and events, using numerals and other symbols	4.3d.6	Construct, draw and write alternative representations of a problem and/or solution to confirm a solution
4.1g.1	Demonstrate secure understanding of the effects of addition, subtraction, multiplication and division, knowing that there might be remainders following division	4.2.g1	Independently, use correct notation when recording simple calculations With support use correct notation when recording increasingly complex calculations	4.3d.7	Use rounding (to nearest 10 and 100) and estimation to predict approximate answers
4.1g.2	Talk confidently about the connections between dividing, sharing and fractions	4.2.g2	Show some confidence with basic mathematical symbols, understanding that 'the answer' can be on either side of the equals sign	4.3e/f.1	Talk about their experiences of data collection, showing understanding of what would be easy or difficult to find out using different data sets
4.1g.3	Through repeated experiences using 'rules', understand that symbols can be used to stand for variables or unknowns	4.2.g3	Show confidence and accuracy when recording familiar units of measurement	4.3e/f.2	Represent the same data concretely and with pictures/diagrams
4.1g.4	Select criteria by which objects might be sorted and choose appropriate representations of the results of a sorting activity	4.2.g4	Tabulate systematically and with confidence, presenting findings clearly	4.3e/f.3	Identify 'difference' situations in data presented graphically
4.1g.5	Suggest possible sources of data for an investigation			4.3e/f.4	With support make up questions about a data set
4.1g.6	Extend practical experience of measurement using other units (eg capacity, mass) in or to solve problems in context			4.3e/f.5	Make up appropriate questions about a data represented in different ways (tables, bar charts, simple line graphs)
4.1g.7	Welcome opportunities to practise, in order to improve				
4.1g.8	Actively seek opinions and support of others where appropriate				
4.1g.9	Show enjoyment when engaged with mathematical tasks				
4.1g.10	With support/prompts, ask 'I wonder what would happen if?' questions				
4.1g.11	Attempt to describe their thinking, using some mathematical language				
4.1h.1	Describe and explain their decisions and solutions				
4.1h.2	Select criteria by which objects might be sorted and choose appropriate representations of the results of a sorting activity				
4.1h.3	Suggest possible sources of data for an investigation				
4.1h.4	Talk about how they will know when they have reached a solution				
4.1j.1	If unsure, talk about previous problem solving experiences (even if not apparently connected) – reflect on strategies used and how they helped				
4.1j.2	Talk about whether the problem is about adding and subtracting or about multiplying and dividing (additive or multiplicative) or neither				
4.1j.3	Explain what they will do first and why				
4.1j.4	Make or draw something to help describe the problem or support or organise thinking				
4.1j.5	Be confident to restart if progress is unsatisfactory				
4.1j.6	Be prepared to investigate, with support, possible reasons for unexpected findings				
4.1k.1	When approaching a problem, anticipate what might need to be measured or counted and consider appropriate units and familiar instruments for collecting and recording information				
4.1l.1	Explain why a calculator enables more advanced mathematical thinking for some problems				
4.1l.2	Consider a range of mental and written strategies for solving the problem, identify some that might be helpful and some that probably would not and say why				
4.1l.3	Evaluate, mentally, a range of strategies for potential 'helpfulness' and 'talk aloud' that support thinking				
4.1l.4	Describe the types of calculations that are likely to be involved to solve the problem				
4.1m.1	Practise visualisation techniques to imagine comparison of quantities and objects of different sizes, shapes, orientations				
4.1m.2	Indicate with their hands and by reference to common objects the size of a wide range of units of measurement and how they relate to each other				
5.1g.	Recognise and explain patterns and relationships, generalise and predict.	5.2d1	With support, and using appropriate mathematical language, show concrete, pictorial and symbolic (abstract) representations of their work and thinking	5.3d.1	Understand the commutative nature of addition and multiplication and use this to check solutions
5.1g.	Suggest extensions by asking 'What if...?'	5.2d2	Interpret and construct a variety of representations of mathematics in a range of contexts and context free	5.3d.2	Use inverse operations to check addition/ subtraction and multiplication/ division solutions and solve problems.
5.1g.	Demonstrate secure understanding of the effects of addition, subtraction, multiplication and division, including addition and subtraction of fractions (in line with those taught in Y5) and including negative numbers	5.2e.1	Independently interpret and construct charts, diagrams and graphs choosing appropriate scales intervals (2, 5, 10, 100)	5.3d.3	Construct, draw and write alternative representations of a problem and/or solution to confirm a solution
5.1g.	Understand inverse relationships between addition and subtraction, multiplication and division, and use this to solve problems	5.2e.2	Talk about what a graph or chart shows, including comparing and evaluating values represented	5.3d.4	With support, use a list of questions and prompts to support self-monitoring and reflection during the problem-solving process
5.1g.	With support, decide what remainders after division actually mean in problem contexts	5.2e.3	Understand that line graphs tell a story over time and construct and interpret examples with support	5.3d.5	When a solution is incorrect, suggest where, in the process, something might have gone wrong
5.1g.	Talk about the link between fractions and proportion	5.2f.1	Independently 'translate' between concrete, pictorial and abstract representations of	5.3d.6	Create visual representation of a problem and describe the relationship

			mathematics in the same situations and events		between quantities in the problem
5.1g.	Create and use symbols to represent variables and unknowns in number sentences and expressions	5.2g.1	Independently, use correct notation when recording simple, and some more complex, calculations	5.3d.7	Use rounding (to nearest 10, 100 and 10000) and estimation to check reasonableness of answers
5.1g.	Select criteria by which objects might be sorted and choose appropriate representation of the outcomes of a classification activity	5.2g.2	Show confidence with basic mathematical symbols, understanding that 'the answer' can be on either side of the equals sign	5.3e/f.1	Talk about different representations of the same dataset and evaluate the effect on the reader of different representations
5.1g.	Choose to use a classification task as part of a problem solving strategy	5.2g.3	Independently, use correct abbreviations for units of measurement		
5.1g.	Talk about 'particular' and 'general' and be able to identify a particular example of a general 'class'	5.2g.4	Tabulate systematically and clearly and explain the contents of the table		
5.1g.	Working with concrete representations, convert between units of measurement for length, volume, mass, capacity and time accurately in problem contexts				
5.1g.	Measure accurately, using (Y5 appropriate) instruments and units				
5.1g.	Show enthusiasm for mathematics investigations and problems				
5.1g.	Spontaneously ask, 'I wonder what would happen if?' questions and make decisions about how to engage with and solve the problem				
5.1g.	Describe the steps in their thinking when approaching and solving a problem with increasing confidence				
5.1g.	Identify mathematics in experiences and environments outside the mathematics lesson				
5.1h.	Thoughtfully reflect on whether others will be able to understand their jottings and 'workings' and refine in order to make it clearer				
5.1h.	Select criteria by which objects might be sorted and choose appropriate representation of the outcomes of a classification activity				
5.1h.	Choose to use a classification task as part of a problem-solving strategy				
5.1h.	Reflect on the original problem when explaining the solution reached				
5.1j.	Ask themselves the questions 'Have I seen something like this before? What does this make me think of?'				
5.1j.	Talk about whether the problem is about adding and subtracting or about multiplying and dividing (additive or multiplicative) or something else, and describe apparatus and pictures that they could use or draw to make sense of it				
5.1j.	Explain what they intend to do to try to solve the problem, perhaps as a series of instructions for a partner				
5.1j.	Calculate effectively, drawing upon a repertoire of mental and written strategies				
5.1j.	Be prepared to investigate possible reasons for unexpected findings				
5.1k.	Identify with confidence the units that they expect to use and any instruments that will be needed				
5.1k.	Measure effectively, using suitable instruments and units, converting between units where appropriate, perhaps with support				
5.1l.	Give an example of an activity in which a calculator enabled more advanced mathematical thinking than would have been possible without the calculator				
5.1l.	Evaluate, mentally, a range of strategies for potential 'helpfulness' and decide what to try first				
5.1l.	Talk about the calculations that are needed and evaluate whether they can be solved mentally or using written strategies or whether a calculator might be needed				
5.1m.	Use visualisation techniques to 'picture' and describe comparison (eg of 10 ml with 300 ml; 500g with 50 kg)				
5.1m.	Respond correctly to multiple choice-style questions about size and number of units (eg length of a room, capacity of a fish tank, mass of a football team)				
6.1g.1	Actively seek patterns and relationships, generalise and predict.	6.2d.1	Interpret and construct a variety of representations of mathematics in a range of contexts and context-free, using appropriate mathematical language	6.3d.1	Understand the commutative nature of addition and multiplication and use this to check solutions
6.1g.2	Create and use symbols to represent variables and unknowns in number sentences and expressions.	6.2d.2	Talk about why some representations are easier to understand than others in a variety of examples	6.3d.2	Use inverse operations to check addition/subtraction and multiplication/division solutions and solve problems
6.1g.3	With fluency use the inverse relationships between addition and subtraction, multiplication and division, to solve problems	6.2e.1	Select appropriate graphical representation of a set of data	6.3d.3	When a solution is incorrect, suggest where, in the process, something might have gone wrong and try again, using a modified strategy
6.1g.4	Be confident about what to do with remainders after division in problem contexts	6.2e.2	Talk about what a graph or chart shows, including comparing and evaluating values represented	6.3d.4	Use a list of questions and prompts to support self-monitoring and reflection during the problem-solving process
6.1g.5	Talk about the relationship between fractions and percentages and proportion	6.2e.3	Understand that line graphs tell a story over time and construct and interpret examples	6.3d.5	Create visual representation of a problem and understand that the relationship between quantities in the problem is linked to the operations needed to solve the problem
6.1g.6	Talk about 'particular' and 'general' and be able to identify a particular example of a general 'class' (and another, and another)	6.2e.4	Make up questions to be answered using a graph, chart or diagram	6.3d.6	Use rounding (to nearest 10, 100, 1000 or whole number) and estimation to check reasonableness of answers
6.1g.7	Working with concrete representations, convert between units of measurement for length, volume, mass, capacity and time accurately and fluently	6.2f.1	Fluently 'translate' between concrete, pictorial and abstract representations of mathematics in the same situations and events	6.3e/f.1	Select the most appropriate representation of a data set for a given audience or purpose and explain reasons for decision
6.1g.8	Measure accurately, using (Y6 appropriate) instruments and units	6.2g.1	Independently, use correct notation when recording (simple and complex) calculations		
6.1g.9	Show enthusiasm for mathematics investigations and increasingly complex problems	6.2g.2	Show confidence with basic mathematical symbols including inequalities and brackets		
6.1g.10	Spontaneously and independently ask, 'I wonder what would happen if?' questions and see the problem through to a conclusion	6.2g.3	Independently and with confidence, use correct abbreviations for units of measurement		
6.1g.11	Describe the steps in their thinking when approaching and solving a problem with increasing confidence and be able to unpick their strategies when things don't work out	6.2g.4	Identify and describe patterns and trends in tabular data		
6.1g.12	Identify mathematics in experiences and environments outside the mathematics lesson and demonstrate enjoyment and confidence when engaged with mathematics outside the mathematics				

	lesson				
6.1h.1	Choose to use a classification task as part of a problem-solving strategy where appropriate				
6.1h.2	With confidence, be able to justify their solution to a problem				
6.1j.1	Ask themselves the question 'What does this make me think of? What experience and knowledge that I have might help me here?'				
6.1j.2	Decide whether/what to measure or count or calculate and how to get started				
6.1j.3	With support, anticipate potential difficulties and how to deal with them				
6.1j.4	Explain what they intend to do to try to solve the problem, perhaps as a series of instructions for a partner				
6.1j.5	Make appropriate decisions, in the course of the activity, about calculations to be done				
6.1j.6	Calculate fluently and confidently				
6.1j.7	Recognise and explain possible reasons for anomalies				
6.1k.1	Identify with confidence the units that they expect to use and any instruments that will be needed				
6.1k.2	Measure effectively, using suitable instruments and units, converting between units fluently where appropriate				
6.1l.1	Evaluate, mentally, a range of strategies for potential 'helpfulness' and decide what to try first				
6.1l.2	Justify decisions about whether or not to use a calculator				
6.1m.1	Respond correctly and make up their own multiple choice-style questions about size and number of units (eg length of the playground, capacity of a coffee mug)				
7.1n.1	Recognise the mathematical content identified in activities planned in various areas of the curriculum, (with support where necessary), and relate this to their learning in mathematics	7.2h.1	Answer questions and discuss work using correct mathematical language to describe calculations, shapes, and procedures. For example: 'I found the area of the rectangle by multiplying its base by its height'	7.3g.1	Demonstrate an active approach to sense checking work, including routinely making initial mental estimates for the result of any calculation
7.1n.2	Use a range of explicit mathematical skills and strategies to solve problems in mathematics and other subjects. For example: Identify and extract information from charts showing census information in geography, choose an appropriate method to collect data for a survey in English	7.2j.1	Select and construct simple statistical diagrams to display data, making correct use of titles, scales, and labels. Explain the key features in the data represented on the diagram, and justify the choice of diagram.	7.3g.2	Use inverse operations to check results.
7.1p.1	Discuss, with peers and teacher, how to tackle a substantial investigation or problem-solving task and formulate a simple plan	7.2k.1	Interpret information presented in simple statistical diagrams, eg bar charts with frequency scales that do not start at zero	7.3h.1	Relate numerical answers back to the context of the original question or problem
7.1q.1	With teacher guidance, carry out a simple plan for a substantial piece of work, considering the relative importance of the various steps and deciding how time should be allocated to each.	7.2l.1	Set out standard and informal written calculations clearly, for all four operations.	7.3h.2	Respond to questions about whether a satisfactory solution has been found.
7.1r.1	Choose the mathematical techniques needed to carry out simple tasks, and make appropriate decisions about the type of recording that is needed. For example: explore paper triangles and trapezia to decide how to work out their area.	7.2l.2	Clearly set out the results of operations carried out on a calculator, including indicating rounding where appropriate, and the incorrect use of the equals sign – i.e. not writing results like $3 \times (9.2 + 4.9) = 14.1 = 42.3$	7.3h.3	Select appropriate units for solutions, carrying out any conversions that may be necessary. Interpret simple decimals correctly. For example: 1.25 hours – 1 hour and 15 minutes
7.1s.1	Make decisions about the information needed to complete a simple investigation or problem-solving task. For example: use arrays to solve problems involving proportional reasoning	7.2m.1	Know, and use correctly, the correct symbols for metric units of length, mass, capacity and time and convert between units.	7.3j.1	Understand that it is can be difficult or misleading to draw firm conclusions on the basis of a single calculation or a small set of data.
7.1s.2	When investigating, make decisions about methods and units for measurement, degree of accuracy required, how to organise and present findings.			7.3j.2	Recognise that statements about the real world may or may not be true, even if they result from correct mathematical or statistical reasoning. For example: a set of data might suggest that 'Year 7 girls are on average taller than Year 7 boys', but another sample of data might lead to different conclusions.
7.1t.1	Discuss the results of completed work, and identify further information that might be required to produce a more complete solution or explanation.			7.3k.1	Identify the main features of a statistical table or diagram and interpret these features in the context of the situation being investigated.
7.1u.1	Develop the habit of asking, 'Can I do this in my head?' for calculations such as 9×15 , $832 \div 4$			7.3l.1	Respond to questions about statistical data, understand that conclusions of this kind are tentative and relevant only to the group surveyed and that results might differ if another sample of data was taken.
7.1u.2	Confidently use appropriate formal or informal written strategies for all four operations when calculating with whole numbers.				
7.1u.3	Understand that a calculator can give quick reliable answers to more difficult calculations; but also understand that a mental estimate is still important to establish whether an answer is reasonable, and that a calculator is not the best choice for simple calculations that could be done mentally.				
7.1v.1	Understand some of the basic features of a scientific calculator. For example: understand how fractions are entered and represented, and convert fractions to decimals and vice-versa.				
7.1v.2	Use and understand some of the basic functions of a scientific calculator. For example: the square key, the square root key, fraction key, negative numbers				
7.1w.1	Make a sensible choice of units for measuring familiar objects. For example: kilometres for the distance from Holyhead to Cardiff, grams for the mass of a smart phone				
7.1w.2	Estimate the size of a range of objects that are familiar to learners. For example: The height of rugby posts, The mass of a tablet computer, The perimeter of the classroom, playground or sports field				