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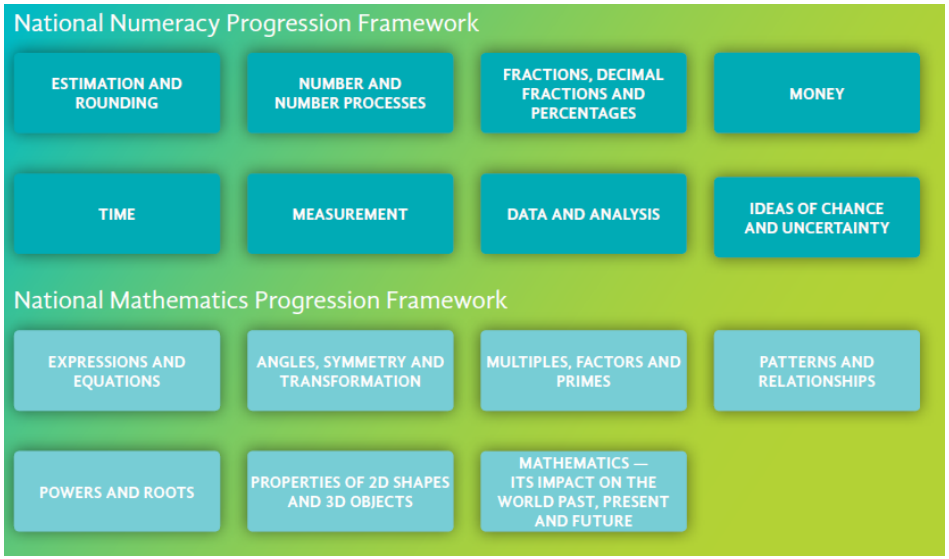
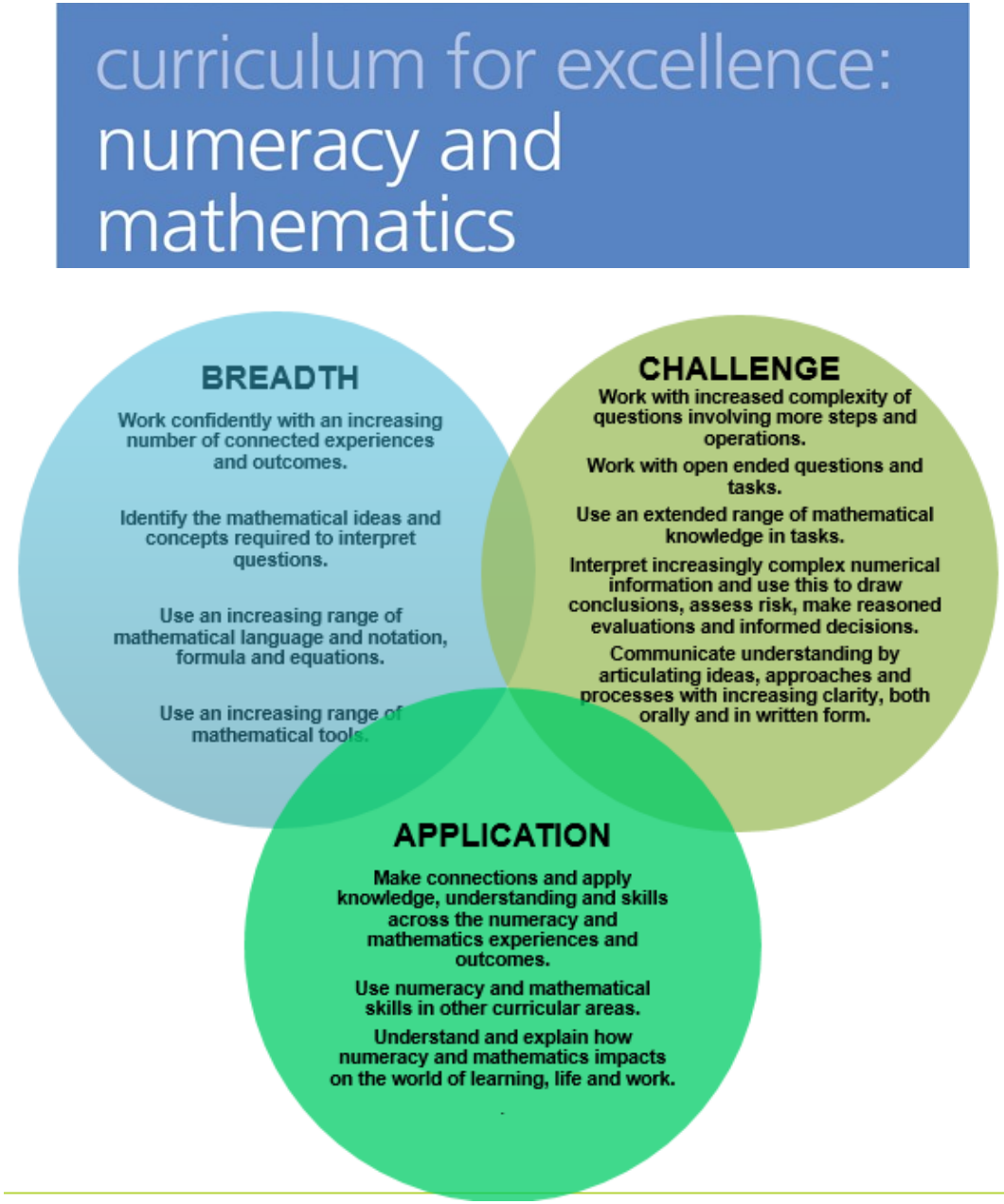
FALKIRK NUMERACY and MATHEMATICS PROGRESSION PATHWAY





HGIOS 4 - Learning Provision
2.2 Curriculum - Learning pathways

The curriculum provides flexible learning pathways which lead to raising attainment through meeting the needs and aspirations of all our learners. Learning pathways support children and young people to build on their prior learning and ensure appropriate progression for all learners. Learning pathways are based on the experiences and outcomes and design principles of progression, coherence, breadth, depth, personalisation and choice, challenge and enjoyment and relevance.

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This pathway provides a framework for planning teaching and learning which ensures that learners are progressing within and across the levels of the experiences and outcomes for Numeracy and Mathematics. The document supports practitioners' with their responsibility to ensure sufficient breadth, challenge and application is offered to learners. The Falkirk Numeracy and Mathematics pathway uses the organisers & sub-organisers which will be familiar from existing Curriculum for Excellence guidance documents:

Organiser	Sub-organisers:			
Number, money and measure	Estimation and rounding	Number and number processes	Multiples, factors and primes	Powers and roots
	Fractions, decimal fractions and percentages	Money	Time	Measurement
	Mathematics – its impact on the world, past, present and future	Patterns and relationships	Expressions and equations	
Shape, position and movement	Properties of 2D shapes and 3D objects		Angles, symmetry and transformation	
Information handling	Data and analysis		Ideas of chance and uncertainty	

Some of the Numeracy and Mathematics experiences and outcomes span two or more levels. In this document we include the experience or outcome in each level it applies to. Throughout this document the progression statements delineate the differences between the learning in each sub-organiser to avoid repetition and highlight transferable numeracy skills. Useful links have been noted in **red text** to help practitioners make valuable connections for pupils by grouping or bundling experiences and outcomes discretely within numeracy, and/or within interdisciplinary learning or learning across the curriculum. **Numeracy and Mathematics experiences and outcomes which are the responsibility of all adults working with pupils are shown in bold italics**. **The statements in each column of this pathway describe how progress within each experience or outcome develops.** The final column shows **the benchmarks which define how a pupil can demonstrate achievement of the relevant level.**

It should be noted that learner progress within and across the breadth of the experiences and outcomes **is not linear** and this pathway will help practitioners plot the most appropriate pace and challenge for individuals, groups, and classes. This pathway helps schools to define **what** needs to be taught in Numeracy and Mathematics, so that practitioners can plan **how** to make this learning as progressive, active and engaging as possible for their learners. **Please note that practitioners will not be able to "cover" all experiences and outcomes or their progression statements in every academic year.**

Falkirk Progression Pathways will help all staff to improve attainment by:

1. Developing a shared understanding of what progression looks like – within and across levels – in line with the national benchmarks
2. Supporting the planning and delivery of consistent, high quality learning & teaching which meets the principles of curriculum design
3. Providing a focus for dialogue about planning, assessment, moderation, and tracking
4. Pulling key information & guidance into one flexible, adaptable document – ease workload, streamline bureaucracy, maximise resources

This Pathway also supports staff in building their pupils' understanding of Literacy and English so that they can be actively involved in the planning and development of their own next steps and goals, in line with the principles of Curriculum for Excellence, Getting it Right for Every Child, and the United Nations Convention on the Rights of the Child.

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***Please note that the order in which the benchmarks appear in this document reflects their links to the experience/outcome & actual learning statements & may differ from the order they appear in the Education Scotland publication. Where experiences & outcomes run over multiple pages, the benchmark may repeat for convenience & to retain relevance.**

It is noted within the text where certain Organisers do not apply to a level.

EARLY LEVEL

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—EARLY LEVEL

EARLY LEVEL	NUMERACY AND MATHEMATICS			
	Experiences and Outcomes	Progression		Benchmarks
Organiser—Number, money and measure	Estimation and rounding			
	Please note that important elements of this experience—one-to-one correspondence—rely on understanding of number within *MNU 0-02a* & therefore teaching & learning of these should be combined.			
		I can/am able to:	**I can/am able to:**	**I can/am able to:**
	I am developing a sense of size & amount by observing, exploring, using & communicating with others about things in the world around me *MNU 0-01a*	• Begin to notice & talk about amounts that mean something e.g. too much, more please, none left, too heavy, etc.	• With support, explore & talk about the sizes & amounts I observe in the world around me e.g. this stick is longer than that one, this bowl has more apples than that bowl, etc.	• Use relevant vocabulary to give or demonstrate a more realistic estimation of size & amount through tasks across my learning.
		• Play with a wide range of concrete materials to explore sizes & amounts e.g. biggest, smallest, longer, lighter, etc.	• Begin to demonstrate my ability to estimate size & amount during play e.g. choosing the right size block or stick to complete my structure.	• With support, begin to estimate measurements in the world around me using non-standard units with some accuracy e.g. how many pencils long is my desk?
		• Talk about & show my observations of size & amount in the world around me e.g. that's a tall tree, this box is heavy.	• Begin to understand that estimation is making an observation about size & amount e.g. making a realistic guess about quantity .	• Understand that I can check my estimation by counting. • Talk about what estimating means
		• Recognise how the same quantity of objects/concrete materials can be arranged e.g. one line of 4 objects, 2 lines of 2, etc.	• Begin to visually estimate & compare quantities or amounts at a glance e.g. which pile of bricks will help me build the tallest tower?	• Use my subitising skills to estimate & compare the number of objects in groups for a range of purposes across my learning.
		• Notice when the quantity of objects or shapes in an arrangement changes e.g. when something is added or taken away.		
				• ***Demonstrates skills of estimation in the contexts of number and measure using relevant vocabulary including less than, longer than, more than and the same.***
				• ***Checks estimates by counting***
				• ***Recognises the amount of objects in a group, without counting (subitising) and uses this information to estimate the number of objects in another group***.

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—EARLY LEVEL

EARLY LEVEL	NUMERACY AND MATHEMATICS			
	Experiences and Outcomes	Progression		Benchmarks
Organiser—Number , money and measure	Number and number processes	I can/am able to:	I can/am able to:	I can/am able to:	
	Link to MNU 0-01a ***I have explored numbers, understanding that they represent quantities, & I can use them to count, create sequences & describe order*** ***MNU 0-02a***	• Play with & explore numbers in my environment (from 0) e.g. environmental print, number washing lines, stories/songs with numbers, etc. • Understand that when something is all gone/empty there is nothing left. • With support, begin to develop one-to-one correspondence e.g. touch one object & say one word. • When counting, realise that the last number spoken indicates how many there are. • With support, rote count to 5 e.g. in rhymes & songs. • Through play, explore the sequencing of numbers e.g. counting forwards & backwards (through rhymes, songs, countdowns, etc). • With support, show my understanding of the terms first & last e.g. taking turns.	• Play with & explore number in my environment e.g. recognise numerals up to 20. • Begin to understand that numbers represent quantities e.g. when playing, buying or moving objects. • Show my understanding that quantities can be represented in different ways e.g. mark making & pictorial representation. • Begin to demonstrate understanding of one-to-one correspondence (within 10) e.g. counting lines & groups of objects. • Begin to recognise "how many" in regular & irregular dot patterns e.g. experimenting with different arrays, five & ten frames & dice. • With support begin to group the same number of items in a range of ways • With support rote count forward within the range zero to 20. • With support, rote count backward within the range zero to 10. • Begin to order & sequence numbers correctly within the range zero to 10 e.g. starting to say which numbers come before, after, in between, or are missing. • Show my understanding of the terms first, second & third e.g. through actions, games, & discussion.	• Identify, recognise, read & write numerals from 0 to 20. • Independently count using one-to-one correspondence (within 20) . • Recognise "how many" in regular & irregular dot patterns without counting e.g. subitising. • Show my understanding of the conservation of number. • Rote count backward within the range zero to 20. • Rote count forward within the range zero to 30 from any given number. • Order & sequence numbers correctly forwards & backward within the range zero to 20. e.g. saying which numbers come before, after, in between, or are missing. • Use ordinal numbers correctly in real life situations.	• ***Explains that zero means there is none of a particular quantity and is represented by the numeral 0*** • ***Recalls the number sequence forwards within the range 0—30, from any given number.*** • ***Recalls the number sequence backwards from 20*** • ***Identifies and recognises numbers from 0 to 20*** • ***Orders all numbers forwards and backwards within the range 0 –20.*** • ***Identifies the number before, the number after and missing numbers in a sequence within 20*** • ***Uses one-to-one correspondence to count a given number of objects to 20*** • ***Identifies 'how many?' in regular dot patterns, for example, arrays, five frames, ten frames, dice and irregular dot patterns, without having to count (subitising).*** • ***Groups items recognising that the appearance of the group has no effect on the overall total (conservation of number).*** • ***Uses ordinal numbers in real life contexts, for example, 'I an third in the line'.*** • ***Uses the language of before, after and in-between.*** • ***Counts on and back in ones to add and subtract.*** • ***Doubles numbers to a total of 10 mentally.***

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—EARLY LEVEL

EARLY LEVEL		NUMERACY AND MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser—Number , money and measure	Number and number processes	I can/am able to:	I can/am able to:	I can/am able to:	See above benchmarks also
	Link to MNU 0-01a ***I use practical materials & can 'count on & back' understand addition & subtraction, recording my ideas & solutions in different ways.*** *MNU 0-03a*	• With support, begin to notice that when you add more, amounts and sizes of things get bigger e.g. adding blocks to make a tower taller. • With support, begin to notice that when you take away, amounts & sizes of things get smaller. • Show or say when something is "more than" or "less than" • Through play, explore giving out or distributing quantities of objects e.g. setting the table for snack, sharing out toys or resources. • Through play & real life experiences, develop an understanding of doubles & pairs e.g. Snap, twins, doubling with pictures.	• Within 5, use concrete materials to find 'how many altogether'. • Say that adding means putting 2 or more groups, objects, numbers together to make a bigger group, object or number. • Within 5, use concrete materials to find 'how many left'. • Say that subtracting means taking away 1 or more group, object, or number to make a smaller group, object or number. • Use concrete materials to find one more than a number • Use concrete materials to find one less than a number • With support, begin to understand & recognise that + means add, - means take away , = means equal/the same • With support, begin to explore & represent mathematical symbols +, -, = e.g. mark making, games, etc. • With support, begin to partition by exploring & showing different ways to make a total of 5 e.g. how many ways can we group our 5 objects to give the same total? (2+3, 1+1+3, etc.) • Through exploration develop the understanding that 4+1 is the same as 1+4 & that both equal/total 5. • Through play & real life experiences, develop an understanding of doubling e.g. introducing numerals in simple games such as Dominoes, digital matching games.	• Use concrete materials & counting on skills to do addition within 10 e.g. cubes, ten frames, rekenreks, counters, number lines. • Use concrete materials & counting on & back skills to do subtraction within 10 e.g. cubes, ten frames, rekenreks, counters, number lines. • Use manipulatives to find the difference between 2 numbers & solve simple missing number problems in the range 0-10 e.g. number lines. • Recognise & use the symbols +, -, = appropriately to record simple number stories & problems. • Partition by showing & recording different ways to make a total of 10 e.g. how many ways can we group our 10 objects to give the same total? • With support, explore total quantities made by doubling numbers up to 5. • Apply my number sense to solve simple addition, subtraction & doubling problems mentally (up to a total of 10).	• ***Counts on and back in ones to add and subtract.*** • ***Doubles numbers to a total of 10 mentally.*** • ***When counting objects, understands that the number name of the last object counted is the name given to the total number of objects in the group.*** • ***Partitions quantities to 10 into two or more parts and recognises that this does not affect the total.*** • ***Adds and subtracts mentally to 10*** • ***Uses appropriately the mathematical symbols +, - and =*** • ***Solves simple missing number problems.***

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EARLY LEVEL		NUMERACY AND MATHEMATICS			
	Experiences and Outcomes	⟷	Progression	⟷	Benchmarks
Organiser—Number , money and measure	Fractions , decimal fractions and percentages	* Please note there are no experiences and outcomes at early level in this organiser for Multiples, factors & primes OR for Powers and Roots			
		Link to MNU 0-03a **I can share out a group of items by making smaller groups. I can split a whole object into smaller parts** ***MNU 0-07a***	**I can/am able to:** • Through play & real life experiences split a whole object into smaller parts e.g. snack, paper, etc. • Through play & real life experiences, explore equal "sharing out" or splitting of groups & single objects e.g. everyone having the same size or the same amount.	**I can/am able to:** • With support split a whole object into equal parts. • Using concrete materials, with support share out a group of objects into 2 equal groups.	**I can/am able to:** • Independently share out objects into equal groups. • Recognise & say that when a whole object or group is split equally in 2 it is halved e.g. 1 whole = 2 halves . • Using concrete materials, explore various other ways to split even numbered groups of objects & whole objects in to equal parts (up to 10) e.g. bar of chocolate could be split into a range of equal sized pieces, biscuit dough could be made into different quantities of biscuits depending on their size.	• ***Splits a whole into smaller parts and explains that equal parts are the same size*** • ***Uses appropriate vocabulary to describe halves*** • ***Shares out a group of items equally into smaller groups***

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EARLY LEVEL		NUMERACY AND MATHEMATICS			
	Experiences and Outcomes	⟷	Progression	⟷	Benchmarks
Organiser—Number, money and measure	Money	**I am developing my awareness of how money is used & can recognise & use a range of coins** *MNU 0-09a*	**I can/am able to:** • Say and/or show how money is used e.g. real-llfe & role play situations - to buy toys, pay for shopping, etc. • Pick out coins from a selection of other objects • Show an awareness that there are different types of coins	**I can/am able to:** • Use money related vocabulary e.g. price, change, cost, how much, etc. • Find & name 1p, 2p,5p,& 10p coins • With support, put out amounts to 10p using 1p coins • With support, explore making amounts using coins, concrete materials or pictures	**I can/am able to:** • Make amounts to 10p using concrete materials or pictures • Select and/or add 1p, 2p, 5p, 10p coins to buy things up to the value of 10p • Add and/or subtract using 1p, 2p 5p 10 coins to pay for items & give change within 10p • Identify 20p, 50p £1 & £2 coins • Arrange all named coins in order of value - increasing & decreasing	• ***Identifies all coins to £2*** • ***Applies addition and subtraction skills and uses 1p, 2p, 5p, 10p coins to pay the exact value for items to 10p***

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—EARLY LEVEL

EARLY LEVEL | **NUMERACY AND MATHEMATICS**

Experiences and Outcomes	Progression			Benchmarks
	I can/am able to:	**I can/am able to:**	**I can/am able to:**	
Organiser—Number money and measure **Time** **I am aware of how routines and events in my world link with times and seasons, and have explored ways to record and display these using clocks, calendars and other methods.** ***MNU 0-10a***	• Describe my daily routine with support e.g. In the morning I have breakfast • Rote learn the days of the week & months of the year • Talk about the 4 seasons, giving basic descriptions of the weather & beginning to match months to seasons • Recognise objects which tell the time e.g. clocks, watches, phone, sand timers, etc. • Talk about things which take a long time, & things which happen quickly e.g. How many sleeps until my birthday? How quickly my toy car speeds across the floor. • Give examples of what is happening now e.g. in the present • Give examples of what has already happened e.g. things which were in the past • Say what happened before e.g. before I came to nursery I brushed my teeth • Say what will happen after an event e.g. I will go to the park after nursery	• Place up to 3 events in sequence e.g. first I wake up, then I get dressed, etc. • Say which day of the week it is today • Begin to say which day of the week it was yesterday, & will be tomorrow • Name the seasons & begin to put them in sequence • Use sand timers to mark & measure time for tasks & play e.g. the length of time I can be on the computer • Begin to recognise & say how the hands of a clock look at special times of the day e.g. where is the big hand & little hand at home time, tea time. • Talk about the differences in the way clocks show the time e.g. clock faces, numbers & hands for analogue & LED/ digital displays	• Place more than 4 events in time sequence • Accurately use terms before & after e.g. we will do our language work before we do our numeracy work, after I finish my work I will... • Name and sequence the days of the week (before, after, yesterday, tomorrow). • Name the months & seasons . • Understand & follow basic timetables & calendars e.g. Visual work timetable, Advent calendar. • Use a simple method to record the day, month & year when dating my work. • Use time language e.g. hour hand, minute hand, etc. • Read & say the time—o'clock—in 12 hours using digital & analogue clocks • Represents o'clock times on a digital display or clock face	• ***Links daily routines and personal events to time sequences*** • ***Names the days of the week in sequence, knows the months of the year and talks about features of the four seasons in relevant contexts*** • ***Recognise, talks about, and, where appropriate, engages with everyday devices used to measure or display time, including clocks, calendars, sand timers and visual timetables*** • ***Reads analogue and digital o'clock times (12 hour only) and represents this on a digital display or clock face.*** • ***Uses appropriate language when discussing time, including before, after, o'clock, hour hand and minute hand***

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EARLY LEVEL		NUMERACY AND MATHEMATICS			
	Experiences and Outcomes	⟷	Progression	⟷	Benchmarks
Organiser—Number, money and measure	Measurement	**Link to MNU 0-01a** **I have experimented with everyday items as units of measure to investigate and compare sizes and amounts in my environment, sharing my findings with others.** ***MNU 0-11a***	**I can/am able to:** • Say when things are different amounts e.g. elephant vs mouse, child's weight vs adult weight, jug & cup of milk • Use words which describe size e.g. long/short, tall, wide, heavy/light • Explore objects, containers, spaces, etc to find out how big or small they are • Begin to use words to compare size, length, height, weight, mass/capacity	**I can/am able to:** • Use parts of the body & other everyday objects to measure things • Put objects in order of size • Compare the mass/capacity of 2 containers • Compare the weight of two objects • Find an object that is 'longer' 'shorter'. 'heavier' and 'lighter' • With support, use measurement for a variety of purposes e.g. baking, construction challenges. • Make guesses or predictions about the size/weight/volume of objects/containers, etc. Which will hold the most, be the longest, etc.	**I can/am able to:** • Use and understand the language of measure. • Put objects in order in a range of measurements, length, height, weight etc. • Compare the mass/capacity of various containers & identify which hold more or less. • Measure the length, weight and height of familiar objects using non-standard units. • Record findings from practical investigations. • Begin to compare & talk about these findings, using everyday language e.g. longer, shorter, taller, heavier, lighter, more and less. • Estimate how long, heavy or how much an object will hold.	• ***Share relevant experiences in which measurements of length, height, mass and capacities are used, for example, in baking*** • ***Describes common objects using appropriate measurement language, including tall, heavy and empty*** • ***Compares and describes lengths, heights, mass and capacities using everyday language including longer, shorter, taller, heavier, lighter, more and less.*** • ***Estimate, then measures, the length, height, mass and capacity of familiar objects using a range of appropriate non-standard units***

*** Please note there are no experiences and outcomes at early level in this organiser for Mathematics, its impact on the world, past, present and future**

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—EARLY LEVEL

EARLY LEVEL | **NUMERACY AND MATHEMATICS**

Organiser—Number, money and measure

Patterns and relationships

Experiences and Outcomes	Progression		Benchmarks
	I can/am able to:	**I can/am able to:**	**I can/am able to:**
Link with MNU 0-03a I have spotted & explored patterns in my own & the wider environment I can copy and continue these & create my own patterns ***MTH 0-13a***	• Talk about & identify basic patterns, e.g. spots, stripes, etc. • Explore & notice patterns in my own & the wider environment • Match basic repeating patterns or arrangements e.g. stripes, spots, colours, pattern "Snap" etc. • Re-create/copy a 2 part pattern using concrete materials e.g. 2 blue shape/tiles, one red shape tile, groups of counters etc. • With support, notice & explore number e.g. become familiar with numbers in my own & the wider environment.	• Talk about & identify patterns in my own & the wider environment. • Copy & continue patterns in my own & the wider environment • Create simple repeating patterns or arrangements of objects, shapes, colours, etc. • Begin to link patterns with number by counting where each shape or element is e.g. 2 blue shapes before, 1 red shape, etc. • Notice when the quantity of objects or shapes in an arrangement changes e.g. stack of blocks, objects on a tray. • With support, play with number lines to explore missing numbers on a number line up to 10.	• Copy , continue & create simple patterns involving objects & shapes. • Create & describe increasingly complex repeated patterns • Identify a simple number pattern e.g. noticing the relationship between the number - each number has 1 more than the one before (the pattern is add 1). • Find missing numbers on a number line ranging from 0 to at least 20	• Copies, continues and creates simple patterns involving objects, shapes and numbers • Explores, recognises and continues simple number patterns • Finds missing numbers on a number line within the range 0 -20

*** Please note there are no experiences and outcomes at early level in this organiser for Expressions & Equations**

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EARLY LEVEL		NUMERACY AND MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser—Shape, position and movement	Properties of 2D Shapes and 3D objects	I can/am able to:	I can/am able to:	I can/am able to:	
	I enjoy investigating objects and shapes and can sort, describe and be creative with them *MTH 0-16a*	• Play with & talk about the shape of various objects e.g. loose play.	• Play with & handle objects with various shapes & begin to notice & talk about their properties e.g. straight , round, flat, corners.	• Begin to recognise the properties of common 2 & 3 D shapes e.g. straight, round, number of corners, number of sides, flat & curved, number of faces.	• Recognises, describes and sorts common 2D shapes and 3D objects according to various criteria, for example, straight, round, flat and curved.
			• Begin to match objects with the same shape (by touch/sight) & describe the properties they have in common.	• Match objects with the same shape & describe the properties they have in common.	
			• Begin to sort objects according to their properties e.g. straight , round, flat, number of corners, number of sides, etc.	• Sort objects according to their properties e.g. straight , round, flat, number of corners, number of sides or faces. etc.	
			• Begin to recognise that shapes have "faces" e.g. flat 2 D shapes only have 1 face, 3 D shapes have more faces.	• Use language correctly to describe 2 D shapes, & 3D objects & their properties e.g. straight, curved, sides, corners, faces.	
		• Through play, create & explore 2D shapes & 3D objects using a range of materials e.g. everyday objects, collage, drawing, loose play, construction , etc.	• Create or copy 2D shapes & 3D structures using a range of materials e.g. everyday objects, collage, drawing, loose play, construction , etc.	• Draw or make a representation of a common 2D shape i.e. copy/recreate its properties	
				• Create or copy 3D structures or objects using a range of materials e.g. boxes, blocks, everyday objects, construction materials , etc.	

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EARLY LEVEL		NUMERACY AND MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser—Shape, position and movement	Angles symmetry and transformation	I can/am able to:	I can/am able to:	I can/am able to:	
	In movement, games and using technology I can use simple directions and describe positions MTH 0-17a	• Begin to talk about the position of objects & use directional language when moving or placing objects & self e.g. the cup is on top of the table, take 2 steps forward & one step back.	• With support understand & correctly use the language of position & direction e.g. to describe the position of one object in relation to another, to play with a programmable turtle or toy.	• Understand & correctly use the language of position & direction e.g. describing a simple journey or route, playing games such as Snakes & Ladders, digital games & toys.	• Understands and correctly uses the language of position and direction, including in front, behind, above, below, left, right, forwards and backwards, to solve simple problems in movement games
		• Begin to understand & follow simple directions in order to move parts of my body and/or position myself in relation to others e.g. action songs & games, lining up one after the other.	• Understand & follow simple directions in order to move objects & my body in a range of ways. e.g. in front, behind, above, below, left, right, forwards and backwards,	• Follow & use directions to solve simple problems e.g. Find an object from given directions, direct others to treasure using a map & clues.	
	I have had fun creating a range of symmetrical pictures and patterns using a range of media. MTH 0-19a	• Play with & explore reflections using objects & reflective surfaces e.g. mirrors, water, etc.	• Through play, explore & create symmetrical pictures & patterns using a range of media e.g. indoors & out through folding, stamping, printing , collage, loose play, construction, photography, etc.	• Experience creating pictures & patterns with one line of symmetry using a range of media.	• Identifies, describes and creates symmetrical pictures with one line of symmetry
		• Play with & explore symmetrical objects, pictures & patterns in the world around me e.g. butterflies, masks & faces.	• With support, begin to recognise & describe whether a shape / picture/ pattern or object is symmetrical by talking about where it would be folded to fit on top of itself.	• Recognise & describe whether a shape / picture/pattern or object is symmetrical by beginning to talk about the "mirror line" or fold as a line of symmetry.	
		• Collect items or pictures of items from real life which are symmetrical, e.g. leaves, insects.	• With support, draw or complete some simple symmetrical shapes on square or doted paper		

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EARLY LEVEL		NUMERACY AND MATHEMATICS			
Experiences and Outcomes		Progression			Benchmarks
Organiser—Information handling	Data and analysis		I can/am able to:	I can/am able to:	
	I can collect objects and ask questions to gather information, organising and displaying my findings in different ways ***MNU 0-20a***		• Play with, explore & collect objects & information which interest me in my own & the wider environment e.g. different leaves, seeds or shells, gloves, hats, scarves, favourite snacks.	• With support, begin to ask questions about the objects & information I collect e.g. How many apples should we buy for snack? What colour of eyes does everyone in nursery have? • With support, begin to collect & organise objects &information for specific purposes e.g. How can we find out how many apples we need for snack? What is the most common eye colour in our nursery/ class?	• Ask questions about the objects & information I collect e.g. What materials are different toys made from? • Collect & organise objects & information for specific purposes e.g. birth month, hair colour, favourite snack etc.	• ***Asks simple questions to collect data for a specific purpose*** • ***Collects and organises objects for a specific purpose***
	I can match objects, and sort using my own and others' criteria, sharing my ideas with others ***MNU 0-20b***		• With support, begin to notice quantities through the use of the concrete & pictorial objects & information I collect. • Play & explore sorting, matching & arranging objects into different categories through the use of concrete materials e.g. what do we notice about the different leaves, hats, snacks, etc	• With support, begin to count through the use of the concrete & pictorial objects & information I collect. • Through the use of concrete materials, sort, match & arrange objects into sets using the categories I discover e.g. colour, shape, textures, size, etc.	• With support, through the use of concrete materials, count to help me make relevant choices & decisions for specific purposes. • Contribute/add the results of my sorting, matching & arranging to given pictorial or concrete displays of information.	• ***Applies counting skills to ask and answer questions and make relevant choices and decisions based on the data*** • ***Contributes to concrete or pictorial displays where one object or drawing represents one data value, using digital technologies as appropriate***
	I can use the signs and charts around me for information, helping me plan and make choices and decisions in my daily life. ***MNU 0-20c***		• With support, begin to notice & interpret the signs & charts which help me make decisions (in my own & wider environments) e.g. I must put my apron on before I paint, where to put my bag & jacket, road signs, etc.	• With support, begin to notice how information can be organised into signs, charts & pictorial representation of information e.g. pictogram for snack choices, visual information about activities available in nursery/class. • With support, begin to interpret & use simple pictorial displays to help me make decisions in my everyday life e.g. Which activity do I want to go to first? How many apples do we need to order for snack?	• Contribute/add information to a simple, given pictorial display using digital technologies as appropriate e.g. showing number of red, blue cars from taking a simple traffic survey (one object or drawing represents one data value). • Interpret & use simple graphs, charts & signs (including digital examples) to help me plan, make choices & decisions in my everyday life e.g. choosing food from a pictorial menu, comparing most popular toys past & present, etc.	• ***Uses knowledge of colour, shape, size and other properties to match and sort items in a variety of different ways*** • ***Interprets simple graphs, charts and signs demonstrates how they support planning, choices and decisions***

*** Please note there are no experiences and outcomes at early level in this organiser for Ideas of chance and uncertainty**

FIRST LEVEL

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—FIRST LEVEL

FIRST LEVEL		NUMERACY AND MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser—Number, money and measure	Estimation and rounding	I can/am able to:	I can/am able to:	I can/am able to:	
	I can share ideas with others to develop ways of estimating the answer to a calculation or problem, work out the actual answer, then check my solution by comparing it with the estimate	• With support, investigate ways/ strategies to estimate the answer to a simple calculation or problem.	• Talk about the ways/strategies that I use to estimate an answer to a calculation or problem.	• Make a choice about the ways/ strategies that I use to estimate an answer to a calculation or problem and discuss this with others.	• ***Uses strategies to estimate an answer to a calculation or problem, for example, doubling and rounding***
	MNU 1-01a	• With support, begin to talk about how these ways/strategies can be used to check solutions to actual calculations.	• Use my knowledge & skills in number to solve a calculation or problem & begin to compare this with my estimate.	• Compare my actual solution to a calculation or problem with my estimate & discuss whether my solution "makes sense".	• ***Rounds whole numbers to the nearest 10 and 100 and uses this routinely to estimate and check the reasonableness of a solution***
	Link to: ***MNU 1-02a & MNU 1-03a***	• With support, use manipulatives , pictures or stories to round whole numbers to the nearest 10 & to the nearest 100 e.g. using number lines.	• Round whole numbers accurately to the nearest 10, 100.	• Use my rounding skills to estimate & check answers to a calculation or problem.	
		• With support, talk about when I have to round up or round down.	• Use my rounding skills to make estimates to calculations or problems.		

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—FIRST LEVEL

FIRST LEVEL	NUMERACY AND MATHEMATICS			
Experiences and Outcomes	Progression			Benchmarks
Organiser—Number , money and measure Number and number processes	I can/am able to:	I can/am able to:	I can/am able to:	
I have investigated how whole numbers are constructed, can understand the importance of zero within the system & can use my knowledge to explain the link between a digit, its place & its value. **MNU 1-02a** ***Link to:*** ***MNU 1-01a & MNU 1-03a*** ***This experience continues on to the next page.***	• Partition numbers within 20 e.g.23 = 20 + 3. • Identify the value of digits in 2 digit numbers correctly using the terms "tens" & "ones". • Use concrete materials, mental methods, counting on, bridging to 10, doubles & my knowledge of partitioning etc. to add within 20. • Use concrete materials, mental methods & counting on & back skills etc. to do subtraction within 20 e.g. cubes, ten frames, rekenreks, counters, number lines. • Show that the addition of two numbers can be done in any order (commutative law). • Through exploration develop the understanding that subtraction is not commutative e.g. through number fact families. • Read, recite, write, order (sequential & non-sequential) whole numbers within 20 from any given number. • Explore the 2 times table using concrete materials e.g. repeated addition, groups of 2, dot patterns, arrays, hundred square, skip/jump counting etc. • Count forwards and backwards in 2s. • Explore odd and even numbers	• Partition 3 digit whole numbers • Identify the value of digits in 3 digit numbers correctly using the terms "hundreds", "tens" & "ones". • Use concrete materials & number skills (including mental methods) to add and subtract within 100. • Explore & discuss other mathematical vocabulary for addition e.g. sum, total. • Compare numbers & use the signs < (less than) ,> (greater than) & = (equals) • Read, recite, write, order (sequential & non-sequential) whole numbers within 100 from any given number. • Explore the 4, 5 & 10 times table using concrete materials e.g. repeated addition, groups of 4, 5 & 10, dot patterns, arrays, hundred square, skip/jump counting etc. • Count forwards and backwards in 5s & 10s. • Through exploration develop the understanding that multiplication is commutative e.g. pictorial representations, arrays.	• Partition any whole numbers within 1000. • Identify the value of digits in 4 digit numbers correctly using the terms "thousands", "hundreds", "tens" & "ones". • Use concrete materials & number skills (including mental methods) to add and subtract within 1000. • Explore & discuss other mathematical vocabulary for multiplication & division e.g. product, quotient & remainder. • Compare numbers & use the signs ≤ (less than and/or equal to), ≥ (greater than and/or equal to) & ≠ (not equal to). • Read, recite, write, order (sequential & non-sequential) whole numbers within 1000 from any given number. • Explore the 3 times table using concrete materials e.g. repeated addition, groups of 3, dot patterns, arrays, hundred square, skip/jump counting etc. • Count forwards and backwards in 100s. • Make array patterns to show multiplication & use tables knowledge to determine multiplication facts.	• ***Demonstrate understanding of zero as a placeholder in whole numbers to 1000*** • ***Identifies the value of each digit in a whole number with three digits, for example,867=800+60+7.*** • ***Uses correct mathematical vocabulary when discussing the four operations including, subtract, add, sum of, total, multiply, product,, divide and shared equally.*** • ***Reads, writes, orders and recites whole numbers to 1000, starting from any number in the sequence*** • ***Demonstrates understanding of the commutative law, for example, 6+3=3+6 or 2x4=4x2*** • ***Applies strategies to determine multiplication facts, for example, repeated addition, grouping, arrays and multiplication facts.*** • ***Counts forwards and backwards in 2s, 5s, 10s and 100s.***

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—FIRST LEVEL

FIRST LEVEL		NUMERACY AND MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser—Number , money and measure	Number and number processes	I can/am able to:	I can/am able to:	I can/am able to:	
	I have investigated how whole numbers are constructed, can understand the importance of zero within the system & can use my knowledge to explain the link between a digit, its place & its value.	• With support, begin to explore the 10 times table using my number skills & knowledge of the 2 times table to double 10 and multiples of 10 e.g. 5 + 5 = 10, 10 + 10 = 20, 20 + 20 = 40.	• With support, begin to explore the 100 times table using my number skills & knowledge of the 2, 5 & 10 times table.	• Use table facts for the 2, 3, 4, 5 & 10 times tables.	• ***Applies strategies to determine multiplication facts, for example, repeated addition, grouping, arrays and multiplication facts.***
	MNU 1-02a ***Link to:*** ***MNU 1-01a & MNU 1-03a***	• With support, identify the correct operation to solve a problem & discuss using appropriate vocabulary e.g. add, subtract, multiply, share equally, total etc.	• Identify the correct operation to solve a problem & discuss using appropriate mathematical vocabulary.	• With support, identify the most efficient steps to solve a problem & discuss the operations & methods involved using appropriate mathematical vocabulary.	• ***Adds and subtracts multiples of 10 or 100 to or from any whole number to 1000*** • ***Uses correct mathematical vocabulary when discussing the four operations including, subtract, add, sum of, total, multiply, product,, divide and shared equally.***
	This experience is continued from the previous page.	• Solve addition and subtraction whole number problems with 2 digits e.g. find the missing number in a number sequence.	• Use concrete materials & number skills to add and subtract multiples of 10 to & from any whole number within 100. • Solve simple addition and subtraction whole number problems with 3 digits e.g. link to real life contexts such as money.	• Use concrete materials & number skills to add and subtract multiples of 10 & 100 to & from any whole number within 1000. • Solve addition and subtraction whole number problems with 3 digits e.g. could introduce (as a formal written method) expanded column method through partitioning; Do not go any further into column methods however.	• ***Solves addition and subtraction problems with three digit whole numbers.***

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—FIRST LEVEL

FIRST LEVEL	NUMERACY AND MATHEMATICS			
Experiences and Outcomes	Progression			Benchmarks
Organiser—Number, money and measure Number and number processes	I can/am able to:	I can/am able to:	I can/am able to:	
I can use addition, subtraction, multiplication & division when solving problems, making best use of the mental strategies & written skills I have developed. **MNU 1-03a** Pupils should be offered opportunities to apply their mental strategies & written skills to solve problems with more than one step through a relevant context e.g. link to MNU 1-09a	• Use concrete materials to solve division calculations or problems using my knowledge of sharing equally e.g. sharing a number of items between a different number of people.	• Use concrete materials to solve division calculations or problems using my knowledge of grouping & repeated subtraction e.g. how many groups of 5 are in 15?	• Use multiplication knowledge & other appropriate strategies (including mental methods) to determine division facts.	• ***Applies strategies to determine division facts, for example, repeated subtraction, equal groups, sharing equally, arrays and multiplication facts.***
	• Discuss & express my methods for solving division calculations or problems in words and pictures.	• Through exploration & patterns in multiplication tables, link division to inverse multiplication e.g. discuss & express the fact families in words & symbols: 3 lots of 5 make 15, 5 lots of 3 make 15 (5 x 3 = 15), there are 5 groups of 3 in 15 & there are 3 groups of 5 in 15 (15 ÷ 3 = 5) etc.	• Discuss & express my methods for solving division calculations or problems in words, pictures, symbols & informal jottings.	• ***Uses multiplication and division facts to solve problems within the number range 0 to 1000***
	• Use multiplication facts to solve calculations & problems within 20.	• Use multiplication & inverse multiplication facts to solve calculations & problems within 100.	• Use multiplication & division facts to solve calculations & problems within 1000.	• ***Multiplies and divides whole numbers by 10 and 100 (whole number answers only)***
	• With support, show that when you multiply a whole number by 10, you increase the place value by one place e.g. use base 10 number sets (Dienes).	• With support, show that when you multiply a whole number by 100, you increase the place value by two places e.g. use base 10 number sets (Dienes).		• ***Applies knowledge of inverse operations (addition and subtraction; multiplication and division).***
		• With support, show that when you divide a whole number by 10 or 100, you decrease the place value by one or two places e.g. use base 10 number sets (Dienes).	• Use concrete materials & multiplication & division skills to multiply whole numbers by 100 (whole number answers only).	
		• Use concrete materials & multiplication skills to multiply & divide whole numbers by 10 (whole number answers only).		
	• With support, begin to solve two step addition & subtraction problems applying my number skills and knowledge of the relationship between addition and subtraction.	• With support, begin to solve two step multiplication & division problems applying my number skills and knowledge of the relationship between multiplication and division.	• Solve two step problems involving addition, subtraction, multiplication and/or division by applying my number skills and knowledge of inverse operations.	• ***Solve two step problems.***
	• Check my calculations using the link between addition & subtraction.	• Check my calculations using the link between multiplication & division.	• Check my calculations using my knowledge of inverse operations.	

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—FIRST LEVEL

FIRST LEVEL		NUMERACY AND MATHEMATICS		
Experiences and Outcomes		Progression		Benchmarks
Number, money and measure	Organiser—Multiples, Factors &Primes	There are no Experiences, Outcomes or Benchmarks at this level		
	Organiser—Powers and Roots	There are no Experiences, Outcomes or Benchmarks at this level		

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—FIRST LEVEL

FIRST LEVEL	NUMERACY AND MATHEMATICS			
Experiences and Outcomes	Progression			Benchmarks
Organiser—Number , money and measure Fractions, Decimal Fractions & Percentages	I can/am able to:	I can/am able to:	I can/am able to:	
Having explored fractions by taking part in practical activities, I can show my understanding of: • ***how a single item can be shared equally*** • ***the notation & vocabulary associated with fractions*** • ***where simple fractions lie on the number line.*** **MNU 1-07a**	• Investigate & explore equal shares of single objects & items from my own or wider environment e.g. sharing a cake at a party. • With support, discuss & recognise the pattern between the number of equal shares and the size of each share e.g. the more people that have to equally share one whole pizza, the smaller the size of pizza slice they will each get. • Through stories, concrete materials, pictorial representations, practical activities & using my knowledge of halves, explore quarters e.g. understand that when a single item or group is split equally in 4 it is quartered,1 whole = 4 quarters & each part is 1 quarter. • With support, use pictorial representations to represent fair/ equal sharing e.g. bar modelling • With support, explore where halves and quarters lie on a number line e.g. discuss where they are in relation to the number 1.	• Investigate & explore equal shares of odd numbers and odd numbered groups of items/objects. • Identify & explain the link between the number of equal shares and the size of each share. • Through stories, concrete materials, pictorial representations, practical activities & using my knowledge of division, explore quarters, fifths and tenths. • Begin to explore eighths through stories, concrete materials, pictorial representations & practical activities. • With support, record how a fraction is written & discuss correct vocabulary e.g. how the division is represented by the '-' line, the bottom number is the number of equal shares & called the denominator etc. • Compare the size of common fractions & explore where they sit on a number line (1/2 , 1/4, 1/5 & 1/10).	• Using correct notation and mathematical vocabulary, explain what a fraction is (including the role of the numerator and de- • Through stories, concrete materials, pictorial representations, practical activities & using my knowledge of division, explore thirds, eighths and simple common non unit fractions e.g. 2/3, 3/4 etc. • Using correct notation and mathematical vocabulary, record common fractions to tenths e.g. 1/2, 2/3 & 5/8. • Compare the size of fractions & explore where common, simple fractions sit on a number line.	• ***Explains what a fraction is using concrete materials, pictorial representations and appropriate mathematical vocabulary*** • ***Demonstrates understanding that the greater the number of equal parts, the smaller the size of each share.*** • ***Uses the correct notation for common fractions to tenths, for example,*** $\frac{1}{2}$ ***and*** $\frac{2}{3}$ ***and*** $\frac{5}{8}$ • ***Compares the size of fractions and places simple fractions in order on a number line.*** • ***Explains the role of the numerator and denominator***
Through exploring how groups of items can be shared equally, I can find a fraction of an amount by applying my knowledge of division. **MNU 1-07b**	• Through stories, concrete materials & practical activities, find halves of 1 or 2 digit whole numbers within 20 (even numbers only). • Using my knowledge of halves, find quarters of appropriate 1 or 2 digit whole numbers within 20.	• Find common unit fractions (1/2 , 1/4, 1/5 & 1/10) of up to 3 digit appropriate whole numbers e.g. using concrete materials and/or known multiplication & division facts, making use of bar modelling etc. • Find common unit fractions (1/2 , 1/4, 1/5 & 1/10) of appropriate amounts in simple problems.	• Find common unit fractions (1/2, 1/3, 1/4, 1/5, 1/10) within 1000 of appropriate whole numbers e.g. using concrete materials and/or known multiplication & division facts, making use of bar modelling etc. • Find common unit fractions (1/2, 1/3, 1/4, 1/5, 1/10) of appropriate amounts in simple problems.	• ***Uses known multiplication and division facts and other strategies to find unit fractions of whole numbers, for example,*** $\frac{1}{2}$ ***or*** $\frac{1}{4}$***.***

Please note opportunities to link these experiences and outcomes to practical activities such as measurement. MNU 1-11a & b and to MNU 1-03a

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—FIRST LEVEL

FIRST LEVEL		NUMERACY AND MATHEMATICS			
	Experiences and Outcomes		Progression		Benchmarks
Organiser—Number , money and measure	Fractions, Decimal Fractions & Percentages	***Link to:*** **MNU 1-07a and MNU 1-07b** Through taking part in practical activities including use of pictorial representations, I can demonstrate my understanding of simple fractions which are equivalent. **MTH 1-07c**	**I can/am able to:** • Through stories, concrete materials, pictorial representations & practical activities, recognise & explain the equivalence of 2/4 and ½ e.g. using bar modelling.	**I can/am able to:** • Through stories, concrete materials, pictorial representations & practical activities, recognise & explain the equivalence of ½ & other appropriate common fractions e.g. using bar modelling. • Through stories, concrete materials, pictorial representations & practical activities, recognise & explain the equivalence of fifths & tenths & quarters & eighths e.g. using bar modelling.	**I can/am able to:** • Through stories, concrete materials, pictorial representations & practical activities, recognise & explain the equivalence of simple & appropriate common fractions e.g. using bar modelling.	• Uses pictorial representations and other models to demonstrate understanding of simple equivalent fractions, for example. 1 2 3 - = - = - 2 4 6

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—FIRST LEVEL

FIRST LEVEL	NUMERACY AND MATHEMATICS			
	Experiences and Outcomes	Progression		Benchmarks
Organiser—Number, money and measure	Money			
	I can use money to pay for items & can work out how much change I should receive. **MNU 1-09a**	**In a range of contexts across my learning, I can/am able to:** • Identify & name all coins & notes to £5 e.g. through role play, games etc. • With support, experiment with coins as manipulatives to create the same value using different coin combinations e.g. 10 x 10 p coins = 1 x £1 coin • With support, explore & investigate amounts in £ & p notation when using money e.g. £1 = 100 p, £2 = 200 p and/or 2 x £1	**In a range of contexts across my learning, I can/am able to:** • Identify and name all coins and notes to £10 e.g. through matching exercises, • Explore & investigate amounts in £ & p notation when using money e.g. 140 p = £1.40 • Write down/represent amounts in different ways using the correct notation within £10 e.g. 20p = £0.20.	**In a range of contexts across my learning, I can/am able to:** • Identify and name all coins and notes to £20. • Write down/represent mixed amounts in different ways using the correct notation within £10 e.g. 350p = £3.50	• ***Identifies and uses all coins and notes to £20 and explores different ways of making the same total*** • ***Records amounts accurately in different ways using the correct notation, for example, 149p = £1.49 and 7p = £0.07***
	I have investigated how different combinations of coins & notes can be used to pay for goods or be given in change. **MNU 1-09b**	• Explore & use different combinations of coins & notes up to £5 to pay for items with a specific price e.g. what combinations could be used at the tuck shop to buy something which costs £1 &10 pence. • Use number skills & knowledge (including mental) to work out totals within £5. • Use number skills & knowledge (including mental) to work out change within £5. • Solve simple problems in a practical context involving addition & subtraction of money within £5. • With support, and/or through play, begin to investigate how goods can be paid for other than in cash e.g. debit and credit cards.	• Explore & use different combinations of coins & notes up to £10 to pay for items. • Use number skills & knowledge (including partitioning & mental agility) to work out totals within £10. • Use number skills & knowledge (including partitioning & mental agility) to work out change within £10. • Solve problems in a practical context involving addition & subtraction of money within £10 e.g. partitioning the pounds & pence where necessary. • Explore & investigate how goods can be paid for other than in cash e.g. drama role play or discussion/ demonstration of the use of vouchers, contactless payment.	• Explore different combinations of coins and notes up to £20 to make the same total. • Use number skills & knowledge (including mental) to work out totals within £20 & change within £10. • Solve problems in a practical context involving addition of money within £20 & subtraction within £10. • Talk about or show how to make non-cash payments for goods e.g. apple pay etc.	• ***Uses a variety of coin and note combinations, to pay for items and give change within £10*** • ***Applies mental agility number skills to calculate the total spent in a shopping situation and is able to calculate change*** • ***Demonstrates awareness of how goods can be paid for using cards and digital technology***

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—FIRST LEVEL

FIRST LEVEL	NUMERACY AND MATHEMATICS			
Experiences and Outcomes	Progression			Benchmarks
Organiser— Number, money and measure / Time	I can/am able to:	I can/am able to:	I can/am able to:	
I can tell the time using 12 hour clocks, realising there is a link with 24 hour notation, explain how it impacts on my daily routine & ensure that I am organised and ready for events throughout my day. **MNU 1-10a**	• Use my knowledge of fractions & 2D shape to understand why we use the terms 1/2 past the hour on an analogue clock face • Say that 1 hour = 60 mins • Say that half past the hour = 30 mins • Read, write & use analogue & digital clocks to show o'clock & 1/2 past (12 hour only) • Give examples of things I do at o'clock and half past the hour in my daily routine • Begin to use the language of time correctly, using terms such as day & night, morning, afternoon, evening, . • Recognise that the time can look the same at 2 different points in each day e.g. I eat my breakfast at 7.30 in the morning = am, & have my bath at 7.30 =pm in the evening	• Use my knowledge of fractions & 2D shape to understand why we use the terms 1/4 past & 1/4 to the hour on an • Say how many minutes there are in 1/4 past the hour = 15 mins & 1/4 to = 45 mins • Read, write & use analogue & digital clocks to show o'clock , 1/2 past, 1/4 past & 1/4 to the hour (12 hour only) • Give examples of things I do at o'clock ,half past, 1/4 past & 1/4 to the hour in my daily routine • Use the language of time correctly, introducing terms such as noon, midnight, sunrise, sunset. • Recognise that there are 24 hours in a day—12 before noon and 12 after noon.	• Use my knowledge of the 5 times table to explore how 1 hour = 60 mins is shown on a clock face e.g. groups of 5 minutes—why is each group of 5 numbered in the way it is? • Notice that some analogue clocks have a 3rd hand which measures seconds & be able to say that 1 minute = 60 seconds • Read, write & convert times between digital & analogue & vice-versa—o'clock, 1/4 & 1/2 past & 1/4 • Give examples of things I do a.m.& p.m. • Use the language of time e.g. noon = meridian to correctly say what a.m. & p.m. mean. [teachers may wish to tell the story of the first timepieces, Greenwich Meantime, science overlap with position of the sun, etc] • Recognise o'clock , 1/2 past, 1/4 past & 1/4 to the hour when shown in 24hr notation on digital devices	• ***Tell the time using half past, quarter past and quarter to using analogue and digital 12 hour clocks*** • ***Records 12 hour times using am and pm and is able to identify 24 hour notation, for example, on a mobile phone or computer.*** • ***Knows the number of seconds in a minute, minutes in an hour, hours in a day, days in each month, week and days in a year.***
I can use a calendar to plan and be organised for key events for myself & my class throughout the year. **MNU 1-10b**	• Say how many days are in a week • Use calendars to count and/or mark off the number of days in each month • Link/say the number/order of the days & months, using the correct letters after each number e.g. 1st = first day of the month, month of the year, 2nd = second, etc. • Explore simple ways to record dates using the day, month, & year e.g. 5th March 2016 • Link/say which months belong to each season • Mark or note real-life tasks & events into a calendar	• Say the months of the year in order/ sequence • Use calendars to look for patterns relating to the number of days in each month e.g. using familiar rhymes • Explore & record dates in different ways for different purposes using numbers and words e.g. 05.03.07 or 5/3/07, Monday 5th of March 2007 • Make & follow a simple work timetable for myself and/or my class (12 hour clock only) • Use real-life schedules to note & mark times for appointments, events , favourite TV programmes, piano lesson, judo class, etc	• Talk about the number of weeks and days in a year—including a leap year • Link/talk about how length of day, month & year are linked to the movement of the Sun, Moon & Earth • Identify/show/talk about seasonal events & changes • Place events into a simple weekly schedule or timetable to help me organise school work & real-life • Use a calendar to plan for events which will happen over the year, e.g. Christmas Fayre, my birthday, school trip, family birthdays, holidays, etc.	• ***Records the date in a variety of ways, using words and numbers*** • ***Uses and interprets a variety of calendars and 12 hour timetables to plan key events*** • ***Orders the months of the year and relates these to the appropriate seasons.***

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—FIRST LEVEL

FIRST LEVEL		NUMERACY AND MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser— Number, money and measure	Time	I can/am able to:	I can/am able to:	I can/am able to:	
	I have begun to develop a sense of how long tasks take by measuring the time taken to complete a range of activities using a variety of timers. **MNU 1-10c**	• Explore how sand & clock timers can help me to estimate how long everyday tasks take e.g. eating a snack, changing for gym (collaborative working) • Use appropriate language when talking about the passage of time e.g. won't take long, will be quick/slow, a wee while. • Talk about the passage of longer periods of time - how it feels & what we can do in 1/2 hour and/or an hour e.g. let's work for 1/2 hour, talk about how it feels, then make a list of what we get done.	• Start & stop a variety of timers to measure how long everyday tasks take. • Compare & record estimated times taken for simple everyday tasks & events e.g. to walk/drive home, until your next birthday, etc. (using timers, 1/4 hours, 1/2 hours, hours, days, weeks, months, years) • Talk about how & when timers are useful in everyday life e.g. to help us work out how fast/slow we need to work, whether we are getting faster at running our daily mile, how to cook our meals.	• Use a variety of timers to explore the flexibility and accuracy that comes with measuring time in seconds as well as minutes, hours, days e.g. deciding who has placed first in a sporting race, cost of a phone call, etc. • Compare & record estimated times with measured times. • Give reasons why some timers would be more suited to certain tasks—sand timers set a deadline for quick tasks, digital timers may be more accurate for exact timing.	• ***Knows the number of seconds in a minute, minutes in an hour, hours in a day, days in each month, week and days in a year.*** • ***Selects and uses appropriate timers for specific purposes.***

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—FIRST LEVEL

FIRST LEVEL		NUMERACY AND MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser— Number, money and measure	Measurement	I can/am able to:	I can/am able to:	I can/am able to:	
	I can estimate how long or heavy an object is, or what amount it holds, using everyday things as a guide, then measure or weigh it using appropriate instruments and units. MNU 1-11a	• Make reasonable estimate s of length, height, mass & capacity using everyday things e.g. how many books fit into your bag, how many steps is it to the dinner hall • Explore instruments which can be used to measure the length, height, mass & capacity of everyday things e.g. rulers, measuring tape, metre sticks, scales, measuring jugs • Demonstrate how to use a variety of instruments to complete simple measuring tasks • With support, recognise & use abbreviations to read & record units of length, height, mass & capacity. (including centimetres/metres, grams/kilograms, millilitres/litres) • With support read a variety of scales on measuring devices including thermometers to record measurements using the correct words, numbers & units e.g. the desk is 42 centimetres long . • With support say how accurate estimates are when compared to actual measurements.	• Make reasonable estimate s of the length, height, mass & capacity of everyday things using centimetres/ metres, grams/kilograms, millilitres/litres) • With support, select the most appropriate devices to measure the length, height, mass or capacity of everyday objects. • With support measure & weigh everyday objects accurately using a variety of instruments. • Recognise & apply my knowledge of relationships between units e.g. 1m = 100cm, 1/2m = 50 cm, 1kg = 1000g, 1/2kg = 500 g, 1 l = 1000ml, 1/2 l = 500ml • Read a variety of scales on measuring devices to record measurements including thermometers using the correct words, numbers, & units - making simple conversions between units of measure where required e.g. 1100 g = 1 kg 100 g • Comment on how accurate esti-mates are when compared to actual measurements.	• Make reasonable estimate s of the length, height, mass & capacity of everyday things to the nearest standard unit • Select the most appropriate devices to measure the length, height, mass or capacity of everyday objects. • Measure & weigh (to the nearest standard unit))everyday objects accurately using a variety of instruments. • Recognise & apply my knowledge of relationships between units e.g. 1/4m = 250cm, 750 g = 3/4 kg, 1/10 l = 100ml • Read a variety of scales on measuring devices including thermometers to record these measurements using the correct words, numbers & units making conversions between units of measure where required e.g. 1/2 a litre = 500 ml • Discuss & compare estimates & measurements to check how rea-sonable & accurate they are.	• ***Uses knowledge of everyday objects to provide reasonable estimates of length, height, mass and capacity*** • ***Makes accurate use of a range of instruments including rulers, metre sticks, digital scales and measuring jugs when measuring lengths, heights, mass and capacities using the most appropriate instrument for the task.*** • ***Records measurements of length, height, mass and capacity to the nearest standard unit, for example, millimetres (mm), centimetres (cm), grams (g), kilograms (kg), millilitres (ml), litres (l).*** • ***Compares measures with estimates.*** • ***Uses knowledge of relationships between units of measure to make simple conversions, for example, 1m 58cm= 158cm.*** • ***Reads a variety of scales on measuring devices including those with simple fractions, for example, 1/2 litre.***

Please note opportunities to link these experiences and outcomes to fraction skills and knowledge. MNU 1-07a, b & c

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—FIRST LEVEL

FIRST LEVEL		NUMERACY AND MATHEMATICS			
Experiences and Outcomes		Progression			Benchmarks
Organiser— Number, money and measure	Measurement		I can/am able to:	I can/am able to:	I can/am able to:	
	I can estimate the area of a shape by counting squares or other methods. **MNU 1-11b**		• Use non-standard units to explore & estimate the area of various simple 2D shapes e.g. using bricks, cubes, tiles & counters.	• Use standard units to explore & estimate the area of various simple 2D shapes e.g. using 1 cm square grids, metre square grids outdoors, etc.	• Use standard units to estimate the area of simple regular & irregular shapes including half squares.	• ***Uses square grids to estimate then measure the areas of a variety of simple 2D shapes to the nearest half square.***
				• Use dot patterns and arrays to explore & estimate the area of various sized squares and rectangles (whole numbers only).	• Begin to recognise & talk about the multiplication pattern which helps me calculate the area of simple shapes e.g. using arrays, notice that the area links to multiplying the length of adjoining sides of rectangles & squares.	
			• Measure the area of various simple 2D shapes by counting in non-standard units.	• Measure the area of various simple 2D shapes by counting in standard units.	• Measure the area of various simple regular & irregular 2D shapes by counting in standard units including half squares.	
				• Use the abbreviations cm^2 and m^2 to show I am counting the area of shapes in 1 centimetre squares or 1 m squares.		
			• Use non-standard units to explore & create shapes with a given area e.g. using bricks, cubes, tiles.	• Use standard units to explore & create simple 2D shapes with a given area.	• Use standard units to create various regular & irregular 2D shapes with a given area including half squares.	• ***Create shapes with a given area to the nearest half square using square tiles or grids.***
			• Use non-standard units to investigate simple shapes which all have the same area.	• Use standard units to explore & create how to make simple 2D shapes with the same area.	• Explain or show how different shapes can have the same area.	• ***Recognises that different shapes can have the same area (conversation of area).***

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—FIRST LEVEL

FIRST LEVEL	NUMERACY AND MATHEMATICS			
	Experiences and Outcomes	Progression		Benchmarks
Organiser— Number, money and measure	Mathematics - its impact on the world, past, present and future	I can/am able to:	I can/am able to:	I can/am able to:	
	I have discussed the important part that numbers play in the world & explored a variety of systems that have been used by civilisations throughout history to record numbers . MTH 1-12a	• Describe how numbers are useful to me in real life e.g. importance of numbers when planning events such as a party for catering. • Talk about how numbers & quantities were written and/or recorded by cultures & civilisations in the past e.g. tally marks, hieroglyphs, Roman numerals, the abacus, etc.	• Describe how numbers are useful when people are at work e.g. time-keeping, budgeting or costs. • Say how cultures & civilisations in the past used their number systems to develop their everyday life & work e.g. the importance of trade within & between cultures.	• Talk about the work of Scottish people who have used numbers and ideas to affect peoples' lives & work e.g. how the first banks evolved, mathematicians & engineers using maths/number to build bridges, etc. • Describe how people in the past used numbers to make their lives easier & better.	• Investigates and shares understanding of the importance of numbers in learning, life and work • Investigates and shares understanding of a variety of number systems used throughout history

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—FIRST LEVEL

FIRST LEVEL		NUMERACY AND MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
		I can/am able to:	I can/am able to:	I can/am able to:	
Organiser—Number, money and measure	Patterns and Relationships	• Copy & continue more complex repeating patterns involving shapes, pictures, symbols & movements (using a variety of media)	• Use counting in real life scenarios to create more complex repeating patterns e.g. shapes, pictures & symbols, perhaps other opportunities indoors & out, such as dance, sound, music.	• Recognise & talk about number patterns & sequences in the natural & man-made world e.g. repeating shapes & symbols, tessellation of honeycomb, architecture, etc.	• Continues and creates repeating patterns involving shapes, pictures and symbols.
	I can continue & devise more involved repeating patterns or designs, using a variety of media. **MTH 1-13a**				
	Through exploring number patterns, I can recognise & continue simple number sequences & can explain the rule I have applied. **MTH 1-13b**	• Using manipulatives, pictorial representations and/or concrete materials, notice & continue number patterns by counting in 2, 5, & 10 e.g. using dot patterns, a hundred square, 5 frames, 10 frames & number lines.	• Using manipulatives, pictorial representations and/or concrete materials, notice that number patterns in 2, 4, 5, & 10s link to multiplication tables e.g. beginning to link repeated addition to multiplication (additive reasoning).	• Create & continue number patterns & sequences from any whole number up to 1000 using jumps of 2, 3, 4, 5, & 10 e.g. linking to multiplication tables.	• Counts forwards and backwards in 2s, 5s and 10s from any whole number up to 1000
		• Recognise & continue odd & even number sequences	• Recognise that adding two odd numbers results in an even total & that adding two even numbers will always result in an even total.	• Recognise that even numbers are divisible by two with no remainder, but odd numbers will have a remainder when divided by two.	• Describes patterns in number, for example, in the multiplication tables and hundred square
		• Explore & continue simple addition & subtraction number sequences e.g. where the rule is add or subtract 4 each time or filling in the missing number.	• Recognise, continue & explain the addition & subtraction rules for simple number sequences	• Create simple addition & subtraction number sequences using numbers up to 1000—describing my rules to others.	• Describes, continues and creates number patterns using addition, subtraction, doubling, halving, counting in jumps (skip counting) and known multiples.
		• Recognise relationships within addition e.g. 2+4 = 6, 4+2 = 6 (commutative law).	• Recognise patterns within addition & subtraction, e.g. 3+7, 13+7, 23+7, 56 - 10, 46 -10, 36 -10.	• Recognise patterns within addition & subtraction, e.g. 123+9, 133+9, 143 + 9 (discussing most efficient methods like add 10 subtract 1)	
		• Explore & continue number sequences where doubling or halving is the rule. (using even numbers only for halving)	• Use concrete materials, dot patterns & array diagrams to recognise relationships within multiplication, e.g. 4x5 = 5x4 (multiplicative reasoning & commutative law& links to area).	• Create & explain simple multiplication number sequences using numbers up to 1000.	

Please note opportunities to link these experiences and outcomes to fraction and area skills and knowledge. MNU 1-02a, 1-03a, 1-11b & 1-19a

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—FIRST LEVEL

FIRST LEVEL		NUMERACY AND MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser— Number, money and measure	Expressions and Equations	I can/am able to:	I can/am able to:	I can/am able to:	
	I can compare, describe & show number relationships, using appropriate vocabulary & the symbols for equals, not equal to, less than & greater than. **MTH 1-15a**	• Use the words 'equal to', 'not equal to', 'less than', 'greater than', correctly to describe & show number relationships e.g. The number of sheep in that field is greater than the number of sheep in the other field. • Within numbers to 20, use manipulatives to create & show whether number relationships are "equal to', 'not equal to', 'less than', 'greater than' e.g. Games or challenges using number frames, number strings, rekonreks.	• Use symbols (=. ≠, <, >) or words 'equal to', 'not equal to', 'less than', 'greater than', correctly to describe & show number relationships e.g. 45> 32, means 45 is greater than 32. • Within numbers to 100, complete number statements using <, >, = , ≠ . • Within numbers to 100, create number statements using <, >, = , ≠ .	• Use symbols (=. ≠, <, >) or words 'equal to', 'not equal to', 'less than', 'greater than', to describe & show number relationships from real-life contexts (linking to other areas of numeracy such as time, money & measure) e.g. 1000g = 1 kg, 45 mins > 1/4 hour • Within numbers to 1000, translate word problems from real-life contexts using <, >, = , ≠ (linking to other areas of numeracy such as time, money & measure) e.g. Would you rather have three £2 coins or one £5 note?	• Understands and accurately uses the terms 'equal to', 'not equal to', 'less than', 'greater than', and the related symbols (=. ≠, <, >) when comparing quantities.
	When a picture or symbol is used to replace a number in a number statement, I can find its value using my knowledge of number facts & explain my thinking to others. **MTH1-15b**	• Within numbers to 20, use manipulatives and/or my knowledge of Fact families, number stories to find the missing numbers in given statements when pictures or symbols are used to replace a number. • While adding, subtracting, multiplying & dividing, explain the thinking & knowledge I am using to help me complete number statements including the role of the equal sign as a balance.	• Within numbers to 100, use manipulatives and/or my knowledge of Fact families, number stories to find the missing numbers in given statements when pictures or symbols are used to replace a number. • Begin to use a basic notation method to explain/show my thinking while solving simple algebraic problems e.g. function machine • Begin to show my understanding that the statements on either side of an equals sign must balance (i.e. be equal) by creating my own simple algebraic problems.	• Within numbers to 1000, use manipulatives and/or my knowledge of Fact families, number stories to find the missing numbers in statements when pictures or symbols are used to replace a number. • While adding, subtracting, multiplying & dividing, use formal working to show how I solve simple algebraic problems • Explain & show my understanding that solving simple algebraic problems requires the use of opposite operations e.g. by solving given problems & creating problems for others to solve. (reciprocal teaching). • Say that this type of problem is called an equation.	• Applies understanding of the equals sign as a balance, and knowledge of number facts, to solve simple algebraic problems where a picture or symbol is used to represent a number, ◆ + 17 = 30 and ◆ X 6 = 30.

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—FIRST LEVEL

FIRST LEVEL	NUMERACY AND MATHEMATICS			
Experiences and Outcomes	Progression			Benchmarks
Organiser— Shape, position and movement Properties of 2D shapes & 3D objects	I can/am able to:	I can/am able to	I can/am able to	
I have explored simple 3D objects & 2D shapes & can identify, name & describe their features using appropriate vocabulary MTH 1-16a	• Name & identify common 2 D shapes such as circles, squares, rectangles & triangles. • Begin to recognise that when some 2D shapes gain the dimension of height, they become 3D prisms e.g. cubes, cuboids, cylinders, triangular prisms • Explore the properties of other 3 D objects & recognise these in my environment e.g. pyramids, cones, spheres. • Identify 2D shapes within 3D objects • Name & identify common 3 D objects such as cylinders, cubes, cuboids, triangular prisms. • With support, begin to use new vocabulary correctly when exploring the properties of common 2D shapes & 3D objects e.g. right angles, vertex/vertices, base, edges.	• With support, begin to name & identify a wider range of 2 D shapes including trapezium, parallelogram, rhombus, kite, & relevant polygons found in everyday life e.g. coins, honeycomb. • Name & recognise common 3 D objects e.g. cubes, cuboids, cylinders, prisms, pyramids, cones, spheres, hemispheres. • Recognise common 2 D shapes & 3 D objects regardless of their size or orientation. • Begin to recognise the component 2D shapes which make up a 3 D object e.g. A cuboid is made of squares & rectangles. • Compare & sort common 2D shapes & 3D objects according to their properties e.g. pairs of equal opposite sides, shapes with right angles, shape of each face on a prism. • Begin to recognise simple 3D objects when represented as 2 D images e.g. cubes, cuboids, cylinders	• Recognise, name & identify a wider range of 2 D shapes including trapezium, parallelogram, rhombus, kite & most polygons found in everyday life . • Describe the properties of 2D shapes e.g. square has 4 equal sides, 4 equal angles • Use appropriate vocabulary to describe the properties of 3 D objects e.g. a cylinder has 3 faces, 1 base & no vertices. • Recognise that a 3D object is made up of 2 D shapes & begin to explore how to show its composite shape e.g. drawing, making - indoors or outdoors, digital image. • Recognise 3 D objects when represented as 2 D images including triangular prisms & square based pyramids.	• Names, identifies and classifies a range of simple 2D shapes and 3D objects and recognises these shapes in different orientations and sizes. • Uses mathematical language to describe the properties of a range of common 2D shapes and 3D objects including side, face, edge, vertex, base and angle. • Identifies 2D shapes within 3D objects and recognises 3D objects from 2D drawings.

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—FIRST LEVEL

FIRST LEVEL		NUMERACY AND MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser— Shape, position and movement	Properties of 2D shapes & 3D objects	I can/am able to:	I can/am able to:	I can/am able to:	
	Link to: **MNU 1-16a above and MNU 1-19a below** I can explore & discuss how & why different shapes fit together & create a tiling pattern with them **MTH 1-16b**	• Play with & explore how shapes fit together to make other shapes & simple tiling patterns e.g. 4 small squares arranged to make a larger square. • Play with & explore different types of triangles to discover how to make new shapes & patterns e.g. 4 triangles make a square or rectangle. • Discover & describe how 2D shapes & 3D objects fit together in the world around me e.g. patterns in brickwork, tiles & fabric.	• By investigating which 2 D shapes will tile, begin to make simple designs & tiling patterns which incorporate more that one shape . • Begin to notice & learn why different types of triangles make certain new shapes & patterns e.g. 2 of their sides are equal = isosceles, all 3 sides equal = equilateral, 2 right-angled triangles can make a square or rectangle. • With support, begin to talk about how & why certain 2 D shapes fit together or make simple patterns e.g. the shapes have sides of equal length, angles/vertices which are the same, etc. • With support, copy examples of simple tiling patterns I discover in the world around me	• Create tiling patterns which incorporate two different shapes e.g. squares, rectangles, triangles, hexagons, pentagons • Talk about how & why the angles of certain 2 D shapes enable them to make new shapes or tiling patterns e.g. a kite = 2 different isosceles triangles OR 4 right-angled triangles arranged in 2 pairs. • Create tiling patterns which apply & incorporate my knowledge of the properties of different types of triangles e.g. 6 equilateral triangles will form a hexagon. • Explore & recreate tiling patterns I see in the world around me e.g. potential IDL link to pattern & printing in art & design	• Identifies examples of tiling in the environment and applies knowledge of the features of 2D shapes to create tiling patterns incorporating two different shapes.

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—FIRST LEVEL

FIRST LEVEL		NUMERACY AND MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser— Shape, position and movement	Angles, Symmetry and Transformation	With & without technology, I can/am able to:	With & without technology, I can/ am able to:	With & without technology, I can/am able to:	
	I can describe, follow and record routes & journeys using signs, words and angles associated with direction & turning. MTH 1-17a	• Understand that journeys are made of changes in direction. • Recognise the names of the 4 compass or cardinal points (north, south, east & west) & explore their relationship indoors & out e.g. drawing maps, games, etc. • Use positional vocabulary such as left & right, backwards & forwards, up & down to show & follow simple directions. • Use positional vocabulary such as left & right, backwards & forwards, up & down to make quarter turns, half-turns & full turns. • With support, interpret simple maps to follow routes e.g. through cones, Beebot, etc.	• Understand that journeys are made of changes in direction & that these changes result in angles & that angles are measured in units called degrees • Use the terms north, south, east & west when giving directions. • Give & understand directions for turning through angles including full turn, half turn, quarter turn, clockwise, anticlockwise, right turn, left turn, right angle • Make the connection that a quarter turn = right angle = 90^{o}. • Make the connection that a half turn = 2 right angles (= 180^{o}) • Make the connection that a 3/4 turn = 3 right angles (= 270^{o}) AND a full turn = 4 right angles (= 360^{o}) • Use signs, words & angles to follow & begin to create routes, journeys & simple maps.	• Say that a right angle has $90^{o.}$ • Recognise the names of the 8 compass points (north, south, east & west, north east, south east, north west, south west) • Follow & give directions using this language • Represent various routes or journeys using signs, words, angles & appropriate positional language	• Uses technology and other methods to describe, follow and record directions using words associated with angles, directions and turns including, full turn, half turn, quarter turn, clockwise, anticlockwise, right turn, left turn, right angle. • Knows that a right angle is 90o. • Knows and uses the compass points, North, South, East and West • Uses informal methods to estimate, compare and describe the size of angles in relation to a right angle. • Finds right angles in the environment and in well-known 2D shapes.

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—FIRST LEVEL

FIRST LEVEL		NUMERACY AND MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser— Shape, position and movement	Angles, Symmetry and Transformation	I can/am able to:	I can/am able to:	I can/am able to:	
	I have developed an awareness of where grid reference systems are used in everyday contexts & can use them to locate & describe position. **MTH 1-18a**	• With support, through practical activities, count/describe the position of objects within a grid. e.g. 3rd column, 2nd row.	• Through practical activities, begin to create grids which can be used to describe the position of objects e.g. to locate objects within the grid, game of Battleships	• Apply my ability to accurately plot, use & describe two figure grid references in a range of real-life contexts e.g. finding treasure, simple orienteering tasks.	• Describes, plots and uses accurate two figure grid references, demonstrating knowledge of the horizontal and vertical location.
		• With support, through practical activities, begin to understand & use appropriate vocabulary to describe the position of objects within a grid e.g. rows, columns, axis/axes, horizontal, vertical, grid reference.	• Begin to plot the position of objects within a grid using given two figure references e.g. navigation activities indoors & out .		
		• Use grid references (numbers & letters) to describe where an object sits within a grid e.g. understanding the convention that horizontal location is before vertical & using correct form (A,3).			
		• With support, use grid references (numbers & letters) to find landmarks or objects on simple maps e.g. say which column & row it sits within on the grid.	• Explore how a variety of real-life maps use references to help us locate landmarks or objects e.g. number + letter or number + number references (Digital maps, Ordnance survey maps, road maps).	• Say why people need to use grid references in everyday life & talk about jobs which need these skills e.g. air traffic control, archaeologists, armed forces.	• Identifies where and why grid references are used.
	I have explored symmetry in my own & the wider environment & can create & recognise symmetrical pictures, patterns & shapes. **MTH 1-19a**	• Explore & identify which simple 2D shapes are symmetrical e.g. vertical & horizontal lines of symmetry.	• With support, explore & identify 2D shapes, patterns & pictures which have more than one line of symmetry e.g. discovering diagonal & multiple lines of symmetry.	• Identify 2D shapes, patterns & pictures which have more than one line of symmetry e.g. wallpaper patterns, snow flakes, the work of artists, designers & architects, etc.	• Identifies symmetry in patterns, pictures, nature and 2D shapes.
		• Complete the missing half of a symmetrical pattern or shape to show my understanding of reflective symmetry—both vertical & horizontal lines of symmetry.	• Complete the missing elements of a symmetrical pattern, picture or shape which has more than one line of symmetry.	• Copy & create symmetrical patterns, pictures or designs influenced by examples I discover in my own & the wider environment e.g. nature, the work of artists, designers & architects, etc.	• Creates symmetrical pictures and designs with more than one line of symmetry.
		• Explore & identify symmetrical objects, pictures & patterns in the world around me e.g. architecture, trees & creatures reflected in water.	• With support, begin to copy & create symmetrical patterns or designs influenced by examples I discover in the world around me e.g. vertical, horizontal, diagonal lines of symmetry.		

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—FIRST LEVEL

FIRST LEVEL		NUMERACY AND MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser— Information Handling	Data and Analysis	I can/am able to:	I can/am able to:	I can/am able to:	
	I have explored a variety of ways in which data is presented and can ask and answer questions about the information it contains **MNU 1-20a**	• Explore & talk about how information/data can be displayed pictorially & in simple Venn & Carroll diagrams. (using real-life examples) • Using real life examples, begin to explore & talk about how information/ data can be displayed in block graphs e.g. the move to a numbered scale where one object or drawing represents one data value. • Ask & answer simple questions about the data displayed pictorially in simple Venn & Carroll diagrams & block graphs e.g. a blue car can be categorised as blue & also as a car.	• Explore & talk about how data can be displayed using Venn & Carroll diagrams & block graphs (including digital representations) e.g. comparing the same data in different formats. • Begin to explore & talk about how information/data can be displayed in bar graphs e.g. comparing & noticing differences between block & bar graphs. (using real-life examples) • Begin to ask & answer questions which show awareness of key information displayed e.g. Compare largest/ smallest quantities, what information fits into more than one category.	• Explore & talk about how data can be displayed using Venn & Carroll diagrams & block & bar graphs (including digital representations) e.g. • Explore & talk about how different charts, diagrams & graphs are used in real life e.g. format is chosen according to type of information & purpose of text. • Ask & answer questions which identify the key information being displayed in a range of formats.	• **Asks and answers questions to extract key information from a variety of data sets including charts, diagrams, bar graphs and tables.**
	I have used a range of ways to collect information and can sort it in a logical, organised and imaginative way using my own and others' criteria **MNU 1-20b**	• Explore a range of ways in which to collect information e.g. favourite foods, toys, etc. by conducting simple surveys with a small number of potential categories. • Explore a range of ways in which to sort, count & organise information using my own & others' criteria e.g. by grouping, counting, tally marks & knowledge of number.	• With support, select & identify collection methods which are best suited to particular purposes or real-life tasks. • With support, sort & record information accurately for a given purpose using my own & others' criteria e.g. using a tally table.	• Select & use the most appropriate way from a variety of different methods (including digitally) to gather & sort data for specific purposes.	• **Selects and uses the most appropriate way to gather and sort data for a given purpose, for example, a survey, questionnaire or group tallies.**
	Using technology and other methods, I can display data simply, clearly and accurately by creating tables, charts and diagrams, using simple labelling and scale **MTH 1-21a**	• Add data accurately to given diagrams & graphs —including digitally—where one object or drawing represents one data value. • Use a numbered scale where one object or picture represents one data value to create a pictogram or block graph. • With support, explore & identify appropriate titles & labelling when making simple diagrams & graphs.	• With support, begin to display data by creating Venn & Carroll diagrams & block & bar graphs, including digitally. • With support, begin to use a numbered scale where one object or picture represents more than one data value to create a pictogram, diagram or bar graph e.g. counting in 2, 5 & 10s • Begin to independently identify appropriate titles & labelling related to my categories & purpose when making simple Venn & Carroll diagrams & block & bar graphs.	• Create a variety of different tables, charts & diagrams to display data accurately, including digitally. • Apply knowledge of tables to identify appropriate scales for use in tables, charts and diagrams . • Identify & use appropriate titles & labelling related to my categories & purpose when making simple Venn & Carroll diagrams & block & bar graphs.	• Uses a variety of different methods, including the use of digital technologies, to display data, for example, as block graphs, bar graphs, tables, Carroll diagrams and Venn diagrams. • Includes a suitable title, simple labelling on both axes and an appropriate scale where one unit represents more than one data value in graphs.

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—FIRST LEVEL

FIRST LEVEL		NUMERACY AND MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser— Information Handling	Ideas of Chance and Uncertainty		I can/am able to:	I can/am able to:	I can/am able to:
	I can use appropriate vocabulary to describe the likelihood of events occurring, using the knowledge and experiences of myself and others to guide me.		• Say whether events might or might not happen e.g. that it will/won't rain.	• Give examples of everyday events saying or showing whether these are likely or unlikely, certain or uncertain, probable, and possible or impossible.	• Continue to extend my ability to give examples of the likelihood of everyday events by saying or showing whether these are fair or unfair e.g. an Olympic sprinter taking part in school races, "The tortoise and the hare " (this story could provoke interesting debate about all of this vocabulary)
	MNU 1-22a		• Begin to use the terms likely, unlikely, certain or impossible, to describe how likely an event will be.	• Routinely use the above vocabulary to make predictions about the likelihood of every day events from given or gathered data.	• Discuss events & data from everyday experiences using vocabulary that includes the words "equally likely, fair, unfair "
			• Give examples of events which are probable e.g. that we will feel hungry by tea time, that someone will do really well in class today, etc.	• Use an empty number line to show how these likelihoods could be ordered e.g. one end of line = impossible ,whilst the other end = certain	• Use a number line to show the likelihood of an event e.g. zero = impossible, 1 = certain; include the use of the 1/2 way point to position where likely, unlikely, probable events should be.

• Uses mathematical vocabulary appropriately to describe the likelihood of events occurring in everyday situations including, probable, likely/unlikely, certain/uncertain, possible/ impossible, and fair/unfair.

• Interprets data gathered through everyday experiences to make reasonable predications of the likelihood of an event occurring

SECOND LEVEL

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—SECOND LEVEL

SECOND LEVEL		NUMERACY and MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser—Number, money and measure	Estimation and rounding	**I can/am able to:**	**I can/am able to:**	**I can/am able to:**	
	I can use my knowledge of rounding to routinely estimate the answer to a problem then, after calculating, decide if my answer is reasonable, sharing my solution with others. *MNU 2-01a*	• Round to the nearest 1000. • Round 3 digit whole numbers to nearest ten. • Round 3 digit whole numbers to nearest hundred. • Use rounding skills to estimate. • Use rounding skills to check answers. • Use knowledge of estimation & rounding within a range of problem solving contexts including money or measure.	• Round to the nearest 10 000. • Round 4 digit whole numbers to the nearest thousand, hundred & ten. • Round decimal numbers to the nearest whole number. • Round numbers to 1 and 2 decimal places using a number line. • Use rounding skills to estimate. • Use rounding skills to check answers. • Use knowledge of estimation and rounding within a range of problem solving contexts including money or measure.	• Round to the nearest 100 000. • Round decimals up to at least 2 decimal places. • Round numbers larger than 4 digits & use in calculations to estimate answers then check against accurate calculations. • Use the rule for rounding involving half way between when dealing with decimal fractions e.g. 0.5 and above is rounded up, below 0.5 is rounded down. • Use knowledge of estimation & rounding within a range of problem solving contexts including money or measure.	• ***Rounds whole numbers to the nearest 1000, 10 000 and 100 000*** • ***Rounds decimal fractions to the nearest whole number, to one decimal place and two decimal places.*** • ***Applies knowledge of rounding to give an estimate to a calculation appropriate to the context .***

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—SECOND LEVEL

SECOND LEVEL		NUMERACY and MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser—Number, money and measure	Number and number processes	I can/am able to:	I can/am able to:	I can/am able to:	
	I have extended the range of whole numbers I can work with & having explored how decimal fractions are constructed, can explain the link between a digit, its place & its value ***MNU 2-02a***	• Count, read, write & order, forward & backwards, whole numbers up to 10 000 starting from any number in the sequence. • Place non-consecutive numbers in order of size up to 10 000. • Identify numerals & the value of digits in numerals to 10 000. • Partition whole numbers up to 10 000 into tens of thousands, thousands, hundreds, tens & ones. • Read, write & order numbers to 1 decimal place. • Understand zero as a placeholder in decimals. • Use decimals to 1 place in practical measurement, e.g. 10.1cm. • Partition decimal fractions up to1 decimal place. • Identify the place value of tenths. • Explore the link between expanded column addition & column addition with addition of 2 digit to 2 digit • With support, subtract 2 digit from 2 digit using decomposition. • Mentally add & subtract 2 digit numbers to & from whole numbers with 2 digits. • Add & subtract whole numbers up to 4 digits. • Add more than 2 whole numbers with varying number of digits, e.g. 312 + 7 + 12.	• Count, read, write & order, forward & backwards, whole numbers up to 100 000 starting from any number in the sequence. • Place non-consecutive numbers in order of size up to 100 000. • Identify numerals & the value of digits in numerals to 100 000. • Partition whole numbers up to 100 000 into hundreds of thousands, tens of thousands, thousands, hundreds, tens & ones. • Read, write & order numbers to 2 decimal places. • Use decimals to 2 places in money & practical measurement, e.g. 10.15m. • Partition decimal fractions up to 2 decimal places. • Identify the place value of tenths and hundredths. • Add 1, 2 or 3 digit numbers using carrying & column methods. • Subtract 1, 2 or 3 digit numbers using decomposition. • Mentally add & subtract 2 digit numbers to & from whole numbers with 3 digits. • Add & subtract whole numbers within 0 - 1 000 000 including multiples of 10 & 100 • Add more than 2 whole numbers with varying number of digits, e.g. 312 + 7 + 2345 + 12 (using partitioning & number line knowledge)	• Count, read, write & order, forward & backwards, whole numbers to 1 000 000 starting from any number in the sequence. • Place non-consecutive numbers in order of size up to 1 000 000. • Identify the numerals & the value of digits in numerals to 1 000 000. • Partition whole numbers up to 1 000 000 into millions, hundreds of thousands, tens of thousands, thousands, hundreds, tens & ones. • Read, write & order decimal fractions to 3 decimal places. • Use decimals to 3 places in practical measurement, e.g. 10.155km. • Partition decimal fractions up to 3 decimal places. • Add whole numbers and decimal fractions to 2 decimal places. • Subtract whole numbers and decimal fractions to 2 decimal places using decomposition. • Mentally add & subtract 2 digit numbers including decimals, e.g. 3.4 + 5.7 = 9.1 • Add & subtract decimal fractions to 2 decimal places within 0 - 1 000 000 including multiples of 10, 100 & 1000	• ***Reads, writes and orders whole numbers to 1 000 000, starting from any number in the sequence.*** • ***Explains the link between a digit, its place and its value for whole numbers to 1 000 000*** • ***Reads, writes and orders sets of decimal fractions to three decimal places*** • ***Explains the link between a digit, its place and its value for numbers to three decimal places*** • ***Partitions a wide range of whole numbers and decimal fractions to three decimal places, for example, 3·6 = 3 ones and 6 tenths = 36 tenths*** • ***Adds and subtracts multiples of 10, 100 and 1000 to and from whole numbers and decimal fractions to two decimal places.*** • ***Adds and subtracts whole numbers and decimal fractions to two decimal places, within the number range 0 to 1 000 000***

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—SECOND LEVEL

SECOND LEVEL		NUMERACY and MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser—Number, money and measure	Number and number processes	***Having determined which calculations are needed, I can solve problems involving whole numbers using a range of methods, sharing my approaches & solutions with others.*** ***MNU 2-03a*** ***I have explored the contexts in which problems involving decimal fractions occur & can solve related problems using a variety of methods.*** ***MNU 2-03b***	**I can/am able to:** • Say & show which calculations are needed to solve simple two step problems involving whole numbers. • With support, decide, from all strategies, which is the most effective to use & explain why, in addition, subtraction, multiplication & division calculations. • Build on table facts for 2, 3, 4, 5 and 10 to explore links to 6, 7, 8 & 9 times tables. • Add & subtract numbers with 1 decimal place, e.g.1 6.7 + 32.4 (using partitioning & number line knowledge) • Multiply & divide whole numbers (up to 3 digits) by 10 & 100 • Multiply a 1 digit number by a 2 digit number using partitioning & addition skills (not long division) • Multiply & divide 4 digit numbers with up to 1 decimal place by 10, e.g. 223 ÷ 10 or 15.2 x 10 • Multiply and divide multiples of 10 with 2 digits by a single digit, e.g. 30 X 5, 60 ÷ 3 • Multiply 1 digit numbers by a single digit • Divide whole numbers up to 3 digits (with remainders) by a single digit • Say where decimal fraction problems occur in real life	**I can/am able to:** • Say & show which calculations are needed to solve two or 3 step problems involving whole numbers. • Decide, from all strategies, which is the most effective to use & explain why, in addition, subtraction, multiplication & division calculations. • Use multiplication and division facts for tables 6, 7, 8 & 9. • Add & subtract numbers up to 2 decimal places, e.g. 12.53 + 34.71 (using partitioning & number line knowledge) • Multiply & divide whole numbers (up to 4 digits) by 10, 100 and 1000 • Multiply a 2 digit number by a 2 digit number using partitioning & addition skills (not long division) • Multiply & divide 4 digit numbers with up to 2 decimal place by 10 & 100, e.g. 223/100 or 15.24 x 100 • Multiply and divide multiples of 10 and 100 with 3 digits by a single digit, e.g. 350 ÷ 5 • Multiply decimal fractions up to 1 decimal places by a single digit • Divide whole number by a single digit to give an answer with 1 decimal place • Use appropriate vocabulary to say & show which processes are needed to solve decimal fraction problems	**I can/am able to:** • Describe & show the approaches & solutions I use to solve a wider range of problems involving whole numbers. • Select, from all strategies, which is the most effective to use & explain why, in addition, subtraction, multiplication & division calculations. • Use multiplication and division facts • Add & subtract numbers up to 3 decimal places, e.g. 12.567 + 34.786 • Multiply & divide numbers including decimals by 10, 100 & 1000 • Multiply a whole number by a 2 digit number using partitioning & addition skills (not long division) • Multiply & divide 4 digit numbers with up to 2 decimal place by 10, 100 & 1000 e.g. 2243/1000 or 15.29 x 1000 • Multiply and divide multiples of 10, 100 and 1000 with 4 digits by a single digit, e.g. 1350 ÷ 5 • Multiply decimal fractions up to 2 decimal places by a single digit • Divide whole numbers by a single digit to give an answer with 2 decimal places • Add, subtract, multiply & divide decimal fractions in applications involving money & measurement problem solving contexts	• ***Uses multiplication and division facts to the 10th multiplication tables*** • ***Multiplies and divides whole numbers by multiples of 10, 100 and 1000.*** • **Multiplies and divides decimal fractions to *two decimal places by 10, 100 and 1000.*** • ***Multiplies whole numbers by two digit numbers*** • ***Multiplies decimal fractions to two decimal places by a single digit*** • ***Divides whole numbers and decimal fractions to two decimal places, by a single digit, including answers expressed as decimal fractions, for example, 43 ÷ 5 = 8.6.***

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—SECOND LEVEL

SECOND LEVEL		NUMERACY and MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser—Number, money and measure	Number and number processes	Having explored the need for rules for the order of operations in number calculations, I can apply them correctly when solving simple problems *MTH 2-03c*	**I can/am able to:** • Show & talk about the different answers that you can get depending on which order you carry out the operations (÷ x + -) in simple number calculations e.g. 2 + 4 X 3 - 1 (add, multiply then subtract = 17) (add, subtract then multiply = 12) (**correct answer**: **multiply, add then subtract = 13**) • Explain, through the use of concrete materials, pictorial representations etc. which order gives the correct answer.	**I can/am able to:** • Accept and understand that there is an established order in which the operations must be done. • With support, begin to use the strategy which aids order of operation problems and calculations e.g. BODMAS when solving simple multi-step problems. The **BODMAS** acronym is: • **B**rackets (parts of a calculation inside brackets always comes first). • **O**rders (numbers involving powers or square roots). • **D**ivision. • **M**ultiplication. • **A**ddition. • **S**ubtraction.	**I can/am able to:** • Use the order of operations correctly when solving a wider range of multi-step problems. • Remember the strategy which aids order of operation problems and calculations e.g. BODMAS .	• Applies the correct order of operations in number calculations when solving multi-step problems.

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—SECOND LEVEL

SECOND LEVEL		NUMERACY and MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser—Number, money and measure	Number and number processes	***I can show my understanding of how the number line extends to include numbers less than zero & have investigated how these numbers occur & are used.*** ***MNU 2-04a***	**I can/am able to:** • Recognise that there are numbers less than zero by exploring a number line. • Investigate & talk about where negative numbers are used in everyday life e.g. cold weather temperature, floor levels in car parks, etc.	**I can/am able to:** • Read & order positive and negative numbers. • Place & identify negative numbers on a number line. • Explain what negative numbers mean when they occur in real life e.g. –2 is warmer than –6, and overdraft of £200 is less than one of £650.	**I can/am able to:** • Use the number line to carry out simple addition & subtraction of positive & negative numbers. • Solve real life number problems including addition & subtraction of positive & negative numbers.	**** See 2-02a, 03a, b, c above*** • ***Identifies familiar contexts in which negative numbers are used*** • ***Orders numbers less than zero and locates them on a number line***

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—SECOND LEVEL

SECOND LEVEL	NUMERACY and MATHEMATICS			
	Experiences and Outcomes	Progression		Benchmarks
Organiser—Number, money and measure	Multiples, factors and primes	I can/am able to:	I can/am able to:	I can/am able to:	
	Having explored the patterns & relationships in multiplication & division, I can investigate & identify the multiples & factors of numbers *MTH 2-05a*	• Know & use table facts for 6, 7, 8 & 9 • Explore factors by grouping materials, using a hundred square, etc. & my knowledge of all times tables • Investigate multiples of numbers using the hundred square & my knowledge of all times tables • Use known relationships between multiplication & division to find multiples & factor pairs for a number • Complete tasks & solve real-life problems using these relationships e.g. doubling the quantity needed from a recipe, translating millimetres into centimetres, etc	• Consolidate & use all table facts • Say what a factor is • Use multiplication & division to investigate & explore the relationships between, & common factors of 2 numbers including prime numbers • Describe & recognise a prime number • Complete tasks & solve real-life money, number & measure problems using factors for numbers up to 100	• Consolidate & use all table facts • Investigate the relationships in multiplication & division by identifying & exploring square numbers & square roots • Apply my knowledge and understanding of multiples and factors to solve relevant real-life problems in number, money and measurement	• Identifies multiples and factors of whole numbers and applies knowledge and understanding of these when solving relevant problems in number, money and measurement.

Please note that there are no Experiences and Outcomes at second level for Powers and Roots

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—SECOND LEVEL

SECOND LEVEL		NUMERACY and MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser—Number, money and measure	Fractions, decimal fractions and percentages	I can/am able to:	I can/am able to:	I can/am able to:	
	I have investigated the everyday contexts in which simple fractions, percentages or decimal fractions are used & can carry out the necessary calculations to solve related problems. ***MNU 2-07a***	• Use knowledge of division to find fractions of quantities for 3 digit numbers (1/2, 1/3, 1/4, 1/5, 1/10) • Understand that the % symbol relates to number of parts out of 100 e.g. 50% means 50 out of 100 , 100% means 100/100 = 1 whole • Mentally find percentages of simple whole numbers by using knowledge of division facts e.g. 50% uses knowledge from 2 x table, 25% uses knowledge from 4 x table, etc. • Use knowledge of division to find fractions of quantities up to 2 digits for 1/6, 1/7, 1/8, 1/9 • Investigate where & how fractions & percentages are used in everyday life e.g. shop sales, altering quantities needed from recipes	• Use knowledge of multiplication & division to find simple fractions of a quantity e.g. 3/4 of 12 • Use knowledge of multiplication & division to find percentages of a quantity (100%, 75%, 50%, 25%, 10% and 1%) • Use knowledge of multiplication & division to find simple fractions of a broader range of quantities e.g. 3/8 of 16, 5/8 of 32 • Use knowledge of fractions & percentages to solve a range of real-life problems e.g. Calculating sale discounts such as 10%, 20%.	• Use knowledge of multiplication & division to find a wider range of fractions of a quantity e.g. 1/3 of 60, 2/3 of 600 • Use knowledge of multiplication & division to find percentages of a quantity (66.6%, 33.3%, 20% and 5%) • Use knowledge of fractions & percentages to solve a range of real-life problems such as e.g. Calculating VAT on items, or the amount of interest gained on a bank balance	• ***Uses knowledge of equivalent forms of common fractions, decimal fractions and percentages, for example, 3/4= 0.75 = 75%, to solve problems.*** • ***Calculates simple percentages of a quantity, and uses this knowledge to solve problems in everyday contexts, for example, calculates the sale price of an item with a discount of 15%*** • ***Calculates simple fractions of a quantity and uses this knowledge to solve problems, for example, find 3/5 of 60***
	I can show the equivalent forms of simple fractions, decimal fractions and percentages & can choose my preferred form when solving a problem, explaining my choice of method. ***MNU 2-07b***	• Explain & show the equivalence of simple fractions to decimal fractions to percentages e.g. 1/2 = 0.5=50% supported by use of the hundred square • Choose whether I use a fraction, a decimal fraction or a percentage to complete calculations & solve real-life	• Explain & show the equivalence of common fractions to decimal fractions to percentages e.g. 1/1 =1=100%, 3/4 = 0.75 = 75%, 1/2 = 0.5 = 50%, 1/4 = 0.25 = 25%, 1/10 = 0.1 = 10% & 1/100 = 0.01 = 1% • Say why I choose to use fractions, decimal fractions or percentages to complete calculations & solve real-life problems	• Use my knowledge of equivalent fractions & percentages to calculate percentages with & without a calculator. • Choose the most efficient method to complete calculations & solve real-life problems using fractions, decimal fractions or percentages	• Creates equivalent fractions and uses this knowledge to put a set of most commonly used fractions in order
	I have investigated how a set of equivalent fractions can be created, understanding the meaning of simplest form, & can apply my knowledge to compare and order the most commonly used fractions **MTH 2-07c**	• Use my knowledge of multiplication & division facts to translate common fractions into equivalent fractions e.g. 1/5 = 2/10 = 20/100 • Reduce common fractions to their simplest form using my knowledge of multiplication, division, multiples & factors e.g. 20/100 = 1/5 (reduce until there are no further common factors)	• Use my knowledge of multiplication & division facts to create equivalent fractions from a wider range of common fractions e.g. 3/4, 3/8., 5/8 • Reduce a wider range of common fractions to their simplest form using my knowledge of multiplication, division, multiples & factors & begin to order these.	• Put fractions into their simplest form routinely when solving problems or making calculations • Place a wider range of fractions in order	• Expresses fractions in their simplest form

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—SECOND LEVEL

SECOND LEVEL		NUMERACY and MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser—Number, money and measure	Money	I can/am able to:	I can/am able to:	I can/am able to:	
	I can manage money, compare costs from different retailers, & determine what I can afford to buy. ***MNU 2-09a***	• Carry out basic money calculations involving the four operations using all coins & notes e.g. Monopoly, using coins & notes in role play • Investigate different retailers to explore what they charge for the same item e.g. everyday staple items (bread, milk, cereal), mid-range costs such as a Gamestation, & higher costs such as holidays • Understand that some purchases include hidden costs such as VAT • Say which purchases are essential & non– essential e.g. Appreciate the difference between wants & needs	• Use knowledge of all calculation methods to solve a range of money problems e.g. totalling the cost of a shopping list, splitting a bill for a meal • Identify the cost of purchases in various contexts to compare how these fit to a variety of budget constraints e.g. weekly shop, birthday or Christmas presents, pet ownership • Understand that some purchases have additional costs such as bag or delivery charges • Say which purchases are the most affordable & give reasons for my answers	• Use knowledge of all calculation methods to choose the most efficient ways to solve a more complex range of money problems • Solve a variety of budgeting tasks to identify the most affordable options • Understand that some purchases include further costs such as insurance cover, running costs & maintenance	• ***Carries out money calculations involving the four operations.*** • ***Compares costs and determines affordability within a given budget.***
	I understand the costs benefits & risks of using bank cards to purchase goods or obtain cash & realise that budgeting is important ***MNU 2-09b***	• Explore different ways to purchase goods (cash, card, vouchers, online payments) through tasks, games, role –play or visits to or from a bank/ building society • Understand the difference between a credit & debit card e.g. debit card payment is immediate, credit payment is deferred.	• Explore the pros and cons of purchasing goods using cash, card, vouchers, online payments through a range of real-life contexts e.g. security of payment, free insurance, risk of running up debt, ease of purchase for larger items • Understand what debt is & say how payment decisions contribute to working within a budget	• Through a range of real-life contexts, identify the most beneficial payment option when purchasing a variety of items or services, and justify my choice • Explore budgeting through a range of real-life contexts in order to demonstrate how to avoid debt	• ***Demonstrates understanding of the benefits and risks of using bank cards and digital technologies***
	I can use the terms profit and loss in buying & selling activities & can make simple calculations for this. ***MNU 2-09c***	• Through role play or enterprise activities, explore situations where goods are exchanged for more, or less than their purchase cost. e.g. making a profit, or a loss • Understand that a well-managed budget will make a balance of money grow, & that bad budgeting results in a reduction of balance - also that no profit or loss is called breaking even	• Complete tasks & solve real-life problems to calculate whether a profit or a loss is made e.g. class enterprise challenge, Myco tyco, goods for sale at the school Fayre	• Complete activities with a real-life context which involve maintaining a balance either paper-based or using software such as Excel	• ***Calculates profit and loss accurately, for example, when working with a budget***

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—SECOND LEVEL

SECOND LEVEL		NUMERACY and MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser—Number, money and measure	Time	I can/am able to:	I can/am able to:	I can/am able to:	
	I can use & interpret electronic & paper based timetables & schedules to plan events & activities, & make time calculations ***MNU 2-10a***	• Discuss the properties & differences of 12 hour and 24 hour notation. • Read and record both 12 hour and 24hr notation. • Convert between 12 hour & 24 hour notation.	• Investigate & discuss longer periods of time e.g. decades, centuries etc. • Apply my knowledge of the links with commonly used units of time to carry out simple conversion calculations e.g. change 1 ¾ hours into minutes.	• Convert common times into common units e.g. 90 minutes = 1.5 hours.	• ***Reads and records time in both 12 hour and 24 hour notation and converts between the two*** • ***Knows the relationships between commonly used units of time and carries out simple conversion calculations, for example, changes 1 3/4 hours into minutes.***
	I can carry out practical tasks & investigations involving timed events & can explain which unit of time would be most appropriate to use ***MNU 2-10b***	• Calculate durations of activities & events including situations bridging over several hours and using both 12 hour and 24 hour. • Use & interpret a range of timetables & calendars (electronic or otherwise) to plan an event or activity. • Investigate common units used in measuring speed, distance & time, e.g. speed limits, athletics etc. • Understand what is meant by miles per hour (mph) and kilometres per hour (kph).	• Calculate durations of activities & events including situations bridging over parts of hours and using both 12 hour and 24 hour. e.g. 1.15pm to 3.40pm. • Use empty number lines to calculate start time, end time or duration from a range of electronic or paper based timetables or calendars, e.g. TV guides, bus timetables, written problems etc. • Through practical activities, use a stopwatch to calculate metres per second.	• Solve real life problems (involving converting between units of time) & explain my choice of the unit of time I've used. • Solve practical problems using the most appropriate timing device & record using most appropriate units including hundredths of a second.	• ***Uses and interprets a range of electronic and paper based timetables and calendars to plan events or activities and solve real life problems*** • ***Calculates durations of activities and events including situations bridging across several hours and parts of hours using both 12 hour and 24 hour notation*** • ***Estimates the duration of a journey based on knowledge of the link between speed, distance and time.***
	Using simple time periods, I can give a good estimate of how long a journey should take, based on my knowledge of the link between time, speed & distance. ***MNU 2-10c***	• With support explore & discuss the link between distance, speed & time e.g. the time to travel 100m and the time to travel 200m if you were running at the same speed for both; what could you say about that?	• Investigate how long a journey will take using Multimaps , AA Route Finder or similar. • Estimate the time taken for simple journeys given information about the distance travelled and speed used,	• Make informed estimates for the duration of a journey using my knowledge of distance, speed & time.	• ***Chooses the most appropriate timing device in practical situations and records using relevant units, including hundredths of a*** • ***Selects the most appropriate unit of time for a given task and justifies choice.***

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—SECOND LEVEL

SECOND LEVEL		NUMERACY and MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser—Number, money and measure	Measurement	I can/am able to:	I can/am able to:	I can/am able to:	
	I can use my knowledge of the sizes of familiar objects or places to assist me when making an estimate of measure. ***MNU 2-11a***	• Estimate the size & distance of objects using the appropriate tools & units. • Estimate the size of familiar objects by comparing them to another object.	• Investigate the size of familiar objects & use this knowledge to estimate & compare length, mass, area or capacity.	• Demonstrate & apply my understanding of measurement of familiar objects by solving problems in context. • Select appropriate units of measurement when solving problems.	• ***Uses the comparative size of familiar objects to make reasonable estimations of length, mass, area and capacity.*** • ***Estimates to the nearest appropriate unit, then measures accurately: length, height and distance in millimetres (mm), centimetres (cm), metres (m) and kilometres (km); mass in grams (g) and kilograms (kg); and capacity in millilitres (ml) and litres (l).***
	I can use the common units of measure, convert between related units of the metric system & carry out calculations when solving problems. ***MNU 2-11b***	• Accurately measure the size & distance of objects using the appropriate tools & units. • Discuss & explain the value of units of measure e.g. 1000m = 1km, 1000g = 1kg, 10mm = 1cm etc. & can convert between them. • Record measurements in a variety of ways, e.g. 1 metre 25 centimetres = 1m 25cm = 125cm • Choose the most appropriate measuring device for a given task & read the scale on it accurately.	• Apply measuring skills accurately, using appropriate units of measure. • Convert between different units of metric measure e.g. km & m, cm & m, cm &mm, g & kg, l & ml. • Record measurements in a variety of ways using decimal notation up to 2 places, e.g. 1 metre 25 centimetres = 1.25m • Read scales on measuring devices calculating unmarked intervals. • Discuss & explain that in everyday life we use imperial units e.g. miles or stones.	• Measure accurately length, mass, area or capacity. • Convert between standard units, converting measurements of length, mass, volume & time from a smaller unit of measure to a larger unit (& vice versa) • Record measurements in a variety of ways using decimal notation up to 3 places, e.g. 1 metre 25 centimetres = 1.25m • Discuss & explain that in everyday life we use imperial units e.g. hectare or tonnes.	• ***Converts between common units of measurement using decimal notation, for example, 550 cm = 5.5 m; 3.009kg = 3009 g.*** • ***Chooses the most appropriate measuring device for a given task and carries out the required calculation, recording results in the correct unit*** • ***Reads a variety of scales accurately*** • ***Shows awareness of imperial units used in everyday life for example, miles or stones***

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—SECOND LEVEL

SECOND LEVEL		NUMERACY and MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser—Number, money and measure	Measurement	***I can explain how different methods can be used to find the perimeter & area of a simple 2D shape or volume of a simple 3D object.*** ***MNU 2-11c***	**I can/am able to:** • Calculate perimeter of squares & rectangles by adding the sides & record with appropriate units. • Use appropriate measuring tools to measure the perimeter of squares & rectangles. • Calculate the area of rectangles & squares by multiplying 2 adjoining sides & record with appropriate units. • Investigate & measure the volume of a range of containers using water.	**I can/am able to:** • Investigate & discuss in words and/or symbols a rule for calculating the perimeter of a square or rectangle. • Calculate the perimeter of 2D shapes involving same or mixed units. • Draw a square or rectangle accurately given perimeter or area. • Explore & recognise that 2D shapes with the same areas can have different • Investigate & discuss in words and/or symbols a rule for calculating the area of a square or rectangle. • Investigate & discuss in words and/or symbols a rule for calculating the area of a right angled triangle e.g. recognising the link to half a square or rectangle. • Calculate the area of composite shapes made from squares & rectangles & record with appropriate units. • Use cubes to measure containers. • Investigate & discuss in words and/or symbols a rule to calculate the volume of a range of containers e.g. use cubes	**I can/am able to:** • Use formula to calculate perimeter of squares & rectangles in problems and real life contexts & record with • Explore, recognise & show that area can be conserved e.g. investigate & draw a number of rectangles that all have the same area. • Calculate the area of a square or rectangle using the formula A= l x b & record with appropriate units. • Calculate the area of a right angled triangle using the formula A= ½(l x b) & record with appropriate units. • Calculate area of composite shapes made from squares, rectangles & triangles & record with appropriate units. • Calculate the area of parallelogram & record with appropriate units. • Calculate the volume of cubes and cuboids using the formula V = L x B x H & record with appropriate units.	• ***Calculates the perimeter of simple straight sided 2D shapes in millimetres (mm), centimetres (cm) and metres (m)*** • ***Calculates the area of squares, rectangles and right -angled triangles in square millimetres (mm^2), square centimetres (cm^2) and square metres (m^2)*** • ***Draws squares and rectangles accurately with a given perimeter or area*** • ***Demonstrates understanding of the conservation of measurement, for example, draw three different rectangles each with an area of 24 cm2*** • ***Calculates the volume of cubes and cuboids in cubic centimetres (cm^3) and cubic metres (m^3)***

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—SECOND LEVEL

SECOND LEVEL		NUMERACY and MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser—Number, money and measure	Mathematics—its impact on the world, past, present and future	I can/am able to:	I can/am able to:	I can/am able to:	
	I have worked with others to explore, & present our findings on, how mathematics impacts on the world & the important part it has played in advances & inventions. *MTH 2-12a*	• Research & discuss/present ways in which Mathematics has played an important role in advancing our world of work e.g. in the construction industry, engineering of bridges, etc. • Investigate & discuss/present how Mathematics has played an important role in advancing inventions now and in the past e.g. binary code led to the digital age, sequences of numbers for security, bearings in navigation (sea and air) etc. • Explore & discuss/present the ways in which Mathematics has played an important role in particular jobs/careers e.g. STEM careers, Arts, business.			• Researches and presents examples of the impact mathematics has in the world of life and work. • Contributes to discussions and activities on the role of mathematics in the creation of important inventions, now and in the past.

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—SECOND LEVEL

SECOND LEVEL		NUMERACY and MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser—Number, money and measure	Patterns and relationships	Having explored more complex number sequences, including well known named number patterns, I can explain the rule used to generate the sequence, & apply it to extend the pattern. MTH 2-13a	**I can/am able to:** • Continue a sequence using a rule explained in words, e.g. start at 3 & add 4 • Describe a simple sequence using words • Write the rule to a simple sequence • Find a missing number in a simple sequence	**I can/am able to:** • Describe more complex sequences using words • Write the rule to more complex sequence • Find a missing number in a complex sequence • Explore and discuss common sequences, e.g. Fibonacci, square numbers, triangular numbers etc.	**I can/am able to:** • Express a linear sequence in a table format • Apply knowledge of multiples, factors, square numbers and triangular numbers to generate number patterns for others to continue	• Explains and uses a rule to extend well known number sequences including square numbers, triangular numbers and Fibonacci sequences • Applies knowledge of multiples, square numbers and triangular numbers to generate number patterns.
	Expressions and equations	I can apply my knowledge of number facts to solve problems where an unknown value is represented by a symbol or letter MTH 2-15a	• Use function machines forward & backwards for addition & subtraction e.g. a - 30 = 40. • Use function machines forward & backwards for multiplication & division e.g. 4x = 12.	• Use function machines forward & backwards for equations including 2 or more operations e.g. 3x +1 = 10; 2x - 4 = 14.	• Use function machines forward & backwards using all operations for equations with one variable.	• Solves simple algebraic equations with one variable, for example, a - 30 = 40 and 4b = 20

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—SECOND LEVEL

SECOND LEVEL		NUMERACY and MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
		I can/am able to:	I can/am able to:	I can/am able to:	
Organiser—Shape, position and movement	Properties of 2D shapes and 3D objects	• Name & identify properties of right angled & equilateral triangles. • Name & classify 2D shapes & 3D objects & describe their properties e.g. angles, edges, vertices and faces. • Discuss & explain that a regular polygon is equiangular (all angles are equal in measure) & equilateral (all sides have the same length). • Identify how & where 3D objects are used in the environment	• Name & identify properties of isosceles & scalene triangles. • Discuss & describe the properties of the circle using terms such as radius, diameter & circumference. • Recall & explain that the diameter is twice the radius & that the radius is half of the diameter. • Distinguish between regular & irregular polygons based on reasoning about equal sides & angles	• Recognise & name common quadrilaterals & describe their properties. • Explain the term diagonal & investigate the number of diagonals in a range of 2D shapes. • Identify and describe 2D shapes & 3D objects within the real world & explain why their properties match their function e.g. the importance of triangles in a bridge structure	• Describes 3D objects and 2D shapes using specific vocabulary including regular, irregular, diagonal, radius, diameter and circumference. Applies this knowledge to demonstrate understanding of the relationship between 3D objects and their nets. • Identifies and describes 3D objects and 2D shapes within the environment and explains why their properties match their function • Knows that the radius is half of the diameter.
		Having explored a range of 3D objects and 2D shapes, I can use mathematical language to describe their properties, & through investigation can discuss where & why particular shapes are used in the environment MTH 2-16a			
		Through practical activities, I can show my understanding of the relationship between 3D objects & their nets. MTH 2-16b	• Explore & investigate nets by building skeletal structures e.g. using straws to build simple 3D objects a face at a time. • Draw simple 2D shapes using lengths e.g. squares, rectangles. • Draw informal representations of other 2D shapes e.g. triangles, kites, rhombus etc.	• Identify a 3D object from a net. • Use a pair of compasses to draw circles accurately given a radius/diameter. • Use digital technologies to draw 2D shapes. • Draw simple 3D objects using lengths e.g. cubes, cuboids.	• Create a net for a simple 3D object e.g. cube. • Draw informal representations of other 3D objects e.g. cylinders, prisms etc. • Make use of digital technologies & mathematical instruments to draw 3D objects • Explain that there are instances when not all parts of the 3D object can be seen.	• Uses digital technologies and mathematical instruments to draw 2D shapes and make representations of 3D objects, understanding that not all parts of the 3D object can be seen
		I can draw 2D shapes & make representations of 3D objects using an appropriate range of methods & effective use of resources MTH 2-16c			

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—SECOND LEVEL

SECOND LEVEL		NUMERACY and MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser—Shape, position and movement	Angle, symmetry and transformation	I can/am able to:	I can/am able to:	I can/am able to:	
	I have investigated angles in the environment, & can discuss, describe & classify angles using appropriate mathematical vocabulary. **MTH 2-17a**	• Discuss the properties of a right angle, straight angle & a full turn angles e.g. 90°, 180° & 360°. • Discuss the properties of acute angles e.g. is less than 90° • Discuss the properties of obtuse angles e.g. is more than 90° but less than 180° • Discuss the properties of reflex angles e.g. is more than 180°, but less than 360°	• Investigate & discuss the angles I find in my environment. • Describe & classify the angle I discover in the environment using appropriate mathematical vocabulary.	• Discuss the properties of supplementary angles e.g. adds to 180° & can carry out calculations using this knowledge. • Discuss the properties of complementary angles e.g. adds to 90° & can carry out calculations using this knowledge.	• Uses mathematical language including acute, obtuse, straight and reflex to describe and classify a range of angles identified within shapes in the environment. • Measure and draws a range of angles to within ± 2 ^{0}
	I can accurately measure & draw angles using appropriate equipment, applying my skills to problems in context **MTH 2 -17b**	• Use technologies to draw a range of angles e.g. using a programmable toy • Accurately measure angles up to 180°	• With or without technology, use my knowledge of angles to solve simple problems. • Accurately measure angles up to 360°	• With or without technology, use my knowledge & skills of angles to solve problems in context. e.g. missing angles in quadrilaterals & regular polygons • Construct and draw a range of angles using a ruler and a protractor .	• Knows that complementary angles add up to 90° and supplementary angles add up to 180° and uses this knowledge to calculate missing angles.
	Through practical activities which include the use of technology, I have developed my understanding of the link between compass points & angles & can describe, follow and record directions, routes & journeys using appropriate vocabulary **MTH 2-17c**	• Discuss & name the eight compass points. • Follow and give directions involving the eight compass points	• Use standard notation to record 3-figure bearings of all 8 compass points • Draw any bearing up to180°	• Use standard notation to record any 3 figure bearing • Draw any bearing	• Uses knowledge of the link between the eight compass points and angles to describe, follow and record directions.
	Having investigated where, why & how scale is used & expressed, I can apply my understanding to interpret simple models, maps & plans **MTH 2-17d**	• Explore scale and scale drawings through real life contexts, play and outdoor learning etc.	• Investigate simple scales on maps, models or plans and discuss what it represents & means e.g. 1cm:2km means that 1cm on the plan is actually 2km in real life. • Recognise that a scale drawing is an accurate representation of an area of land, building, object etc. but in a smaller form	• Apply my knowledge & understanding of scale to problems which involve the interpretation of simple models, maps & plans.	• Interprets maps, models or plans with simple scales, for example, 1cm:2km

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—SECOND LEVEL

SECOND LEVEL		NUMERACY and MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser—Shape, position and movement	Angle, symmetry and transformation	**I can/am able to:**	**I can/am able to:**	**I can/am able to:**	
	I can use my knowledge of the co-ordinate system to plot & describe the location of a point on a grid **MTH 2-18a/ MTH 3-18a**	• Use grid references to read, plot & record locations on a grid (1st quadrant only)	• Plot co-ordinates on a 4 quadrant grid using coordinate notation	• Apply my knowledge of using a 4 quadrant grid e.g. describe, plot and record in a real life context.	• Describe, plots and records the location of a point, in the first quadrant, using coordinate notation
	I can illustrate the lines of symmetry for a range of 2D shapes & apply my understanding to create & complete symmetrical pictures & patterns **MTH 2-19a/ MTH 3-19a**	• Identify and draw lines of up to 4 lines of symmetry on 2D shapes • Complete and/or create symmetrical shapes and patterns.	• Identify & draw all lines of symmetry on a wide range of 2D shapes • Complete and/or create symmetrical shapes & patterns using digital technologies.	• Identify, describe & represent the position of a shape following a reflection • Discuss, & show my understanding of shapes when reflected e.g. recognise that given a reflection of a shape, that the shape has not changed.	• Identifies and illustrates line symmetry on a wide range of 2D shapes and applies this understanding to complete a range of symmetrical patterns, with and without the use of digital technologies.

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—SECOND LEVEL

SECOND LEVEL		NUMERACY and MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser—Information Handling	Data and analysis	**In a range of contexts across my learning, I can/am able to:**	**In a range of contexts across my learning, I can/am able to:**	**In a range of contexts across my learning, I can/am able to:**	
	Having discussed the variety of ways and range of media used to present data, I can interpret and draw conclusions from the information displayed, recognising that the presentation may be misleading ***MNU 2-20a***	• With support, begin to interpret & draw conclusions from information displayed in a variety of ways & media.	• With increasing independence & accuracy, interpret & draw conclusions from information displayed in a variety of ways & media e.g. bar graphs, tables & charts & line graphs	• Interpret & draw accurate conclusions from information displayed in a variety of ways & media.	• ***Devises ways of collecting data in the most suitable way for the given task***
		• With support, begin to recognise when & how the method of display or presentation of data could mislead its audience.	• With support, begin to explore & comment on the reliability of information & data e.g. consider what its author might want the reader to believe & question how the information has been gathered.	• Analyse & draw appropriate conclusions about the reliability of information & data displayed in a variety of ways.	• ***Collects, organises and displays data accurately in a variety of ways including through the use of digital technologies, for example, creating surveys, tables, bar, graphs, line graphs, frequency tables, simple pie charts and spreadsheets.***
	I have carried out investigations and surveys, devising & using a variety of methods to gather information & have worked with others to collate, organise & communicate the results in an appropriate way ***MNU 2-20b***	• Begin to devise & use a wider range of methods to carry out investigations & surveys & gather information.	• With increasing independence, devise & use a variety of methods to carry out investigations & surveys & gather information e.g. individually & with others.	• Devise & accurately use a variety of methods to carry out appropriate investigations & surveys & gather information .g. individually & with others.	• ***Analyses, interpret and draws conclusions from a variety of data***
		• Apply my knowledge of tables, charts, diagrams & graphs with increasing independence to collate, organise & communicate the results of the investigations & surveys I conduct e.g. individually & with others.	• Apply my knowledge of tables, charts, diagrams & graphs to collate, organise & communicate the results of the investigations & surveys I conduct using increasingly suitable & appropriate methods. e.g. begin to calculate & communicate average (mean only)	• Collate, organise & communicate my results in an appropriate way using my knowledge of surveys, tables, bar & line graphs, frequency tables, simple pie charts (pre-sectioned) & spreadsheets e.g. including digital methods.	• ***Draws conclusions about the reliability of data taking into account, for example, the author, the audience, the scale and sample size used.***
	I can display data in a clear way using a suitable scale, by choosing appropriately from an extended range of tables, charts, diagrams & graphs, making effective use of technology **MTH 2-21a/MTH 3-21a**	• With support, begin to explore & use simple data bases e.g. to extract & to collate information.	• With support , explore & extend my ability to gather, organise & share my data & analysis using digital technologies e.g. beginning to create data bases & spreadsheets.	• Calculate averages (mean only) & share in an appropriate way when communicating my results.	• Displays data appropriately making effective use of technology and chooses a suitable scale when creating graphs.
		• With support, explore & extend the range of tables, charts, diagrams & graphs I can use, understand & create e.g. including digital methods.	• Display data using an extended range of tables, charts, diagrams & graphs & make increasingly appropriate choices about which method is most suitable e.g. including digital methods.	• Select the most appropriate method to display a variety of data e.g. using an extended range of tables, charts, diagrams & graphs—including digital methods.	
		• With support, display data by selecting & using scale with increasing skill & understanding e.g. including digital methods.	• Demonstrate my increasing ability to independently choose a suitable scale when creating graphs.	• Use a suitable scale when displaying data in a range of tables, charts, diagrams & graphs e.g. including digital methods.	

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—SECOND LEVEL

SECOND LEVEL		NUMERACY and MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser—Information Handling	Ideas of chance and uncertainty	**I can/am able to:**	**I can/am able to:**	**I can/am able to:**	
	I can conduct simple experiments involving chance and communicate my predictions and findings using the vocabulary of probability ***MNU 2-22a***	• Use appropriate vocabulary such as "highly likely, unlikely," etc., to predict the probability of an outcome/event. • Assign a numerical value to the likelihood of the occurrence of simple events on a 5 point scale. • Show that probability can be represented by a fraction. • Discuss & describe the term 'equal chance' & talk about equally likely events. • List all the possible outcomes of simple events using tree diagrams & organised lists.	• Investigate, through experimenting with tossing a coin, rolling a dice coloured beads etc. the possible outcomes of simple, random events. • Identify 1 as certain & 0 as impossible on the number line. • Place events on a number line to demonstrate simple probabilities e.g. the probability that you flip a coin and it lands heads up is 0.5. • Show that probability can be represented by a ratio e.g. 1:6 • Arrange events in order to determine which is most or least likely.	• Use data to predict the outcome of a simple experiment & explain the reasoning behind my prediction. • Understand that the more you carry out an experiment, the more confident you can become in predicting the result. • Use a number line from 0 to 1 (showing impossible to certain) to investigate & describe probability. • Place events on a number line to demonstrate the probability of any event. • Discuss & describe percentage chance e.g. 100% chance, 0% chance, 50% chance etc. • Discuss & describe the terms favourable outcome & total outcomes. • Discuss & describe how implications of chance are used in daily routines, decision making and the media.	• ***Uses the language of probability accurately to describe the likelihood of simple events occurring, for example equal chance; fifty-fifty; one in two, two in three; percentage chance; and 1:6*** • ***Plans and carries out simple experiments involving chance with repeated trails, for example, 'what is the probability of throwing a six if you throw a die fifty times?'*** • ***Uses data to predict the outcome of a simple experiment***

THIRD LEVEL

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—THIRD LEVEL

THIRD LEVEL		NUMERACY AND MATHEMATICS			
	Experiences and Outcomes	⟷	Progression	⟷	Benchmarks
Organiser—Number, money and measure	Estimation and rounding	**I can/am able to:**	**I can/am able to:**	**I can/am able to:**	
	I can round a number using an appropriate degree of accuracy, having taken into account the context of the problem. ***MNU 3-01a***	• Apply my ability to round numbers to 1 and 2 decimal places in a range of contexts • Use the context of the problem to decide on a suitable degree of accuracy e.g. money problems rounding to 2 decimal places • Use my knowledge of estimation to solve problems	• Round numbers to 3 decimal places • Explain my choice of strategy through my knowledge of estimation	• Apply my ability to round numbers to 3 decimal places in context • Estimate answers routinely by rounding	• ***Round decimal fractions to three decimal places.*** • ***Uses rounding to routinely estimate the answers to calculations.***

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—THIRD LEVEL

THIRD LEVEL		NUMERACY AND MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser—Number, money and measure	Number and number processes	I can/am able to:	I can/am able to:	I can/am able to:	
	I can use a variety of methods to solve number problems in familiar contexts, clearly communicating my processes and solutions. ***MNU 3-03a*** **Links to MNU 3-07a, MTH 3-07b, & 3-07c & MNU 3-08a**	• Recall & apply multiplication and division facts for all tables from 1 to 10 • Build on table facts to explore links to 11 and 12 times tables.	• Use multiplication and division facts for tables 11 and 12.	• Recall quickly and use multiplication and division facts accurately when making	• ***Recalls quickly multiplication and division facts to the 10th multiplication table*** • ***Uses multiplication and division facts to the 12h multiplication***
	I can continue to recall number facts quickly and use them accurately when making calculations ***MNU 3-03b***	• Explain & use a range of mental strategies to solve problems with whole numbers & decimal fractions (with up to 2 decimal places). • In addition to mental strategies, use column methods to solve problems with whole numbers & decimal fractions (with up to 2 decimal places). • Explore the use of a calculator to solve problems with whole numbers & decimal fractions (with up to 2 decimal places).	• Explain & use a range of mental strategies to solve problems with whole numbers & decimal fractions (with up to 3 decimal places). • In addition to mental strategies, use column methods to solve problems with whole numbers & decimal fractions (with up to 3 decimal places). • Explore the use of a calculator to solve problems with whole numbers & decimal fractions (with up to 3 decimal places).	• Call on a range of mental strategies to solve problems in familiar contexts and communicate my processes and solutions clearly. • Call on a range of methods to solve problems in familiar contexts and communicate my processes and solutions clearly.	• ***Solve addition and subtraction problems working with whole numbers and decimal fractions to three decimal places.***
	I can use my understanding of numbers less than zero to solve simple problems in context. ***MNU 3-04a***	• Add or subtract negative numbers with or without a number line to solve simple problems • Explore multiplication involving positive and negative whole numbers • Explore division involving positive and negative whole numbers • Explore the rules for multiplication & division of integers e.g. same sign = positive; different sign = negative	• Call on a range of methods to solve addition and subtraction problems involving negative numbers • Solve multiplication problems in familiar contexts involving integers • Solve division problems in familiar contexts involving integers • Recall and apply the rules for multiplication & division of integers to solve simple problems		• ***Solves addition and subtraction problems working with integers*** • ***Solves multiplication and division problems working with whole numbers and decimal fractions to three decimal places.*** • ***Solves multiplication and division problems working with integers.***

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—THIRD LEVEL

THIRD LEVEL		NUMERACY AND MATHEMATICS			
Experiences and Outcomes		Progression			Benchmarks
Organiser—Number, money and measure	Multiples, factors and primes		I can/am able to:	I can/am able to:	
	I have investigated strategies for identifying common multiples and common factors, explaining my ideas to others, and can apply my understanding to solve related problems **MTH 3-05a**		• Using concrete materials, pictorial representations, knowledge of tables etc. find common multiples of a small set of numbers.	• Identify the lowest common multiple of a set of numbers & explain my methods	• Solve problems relating to multiples, common multiples & lowest common multiples • Solve problems relating to factors, common factors & highest common factors	• Identify common multiples, including the lowest common multiple for whole numbers and can explain method used. • Identifies common factors, including the highest common factor for whole numbers and can explain method used.
			• Using concrete materials, pictorial representations, knowledge of tables etc. find the common factors of a small set of numbers.	• Identify the highest common factor of a set of numbers & explain my methods		
	I can apply my understanding of factors to investigate and identify when a number is prime. **MTH 3-05b**		• Use my knowledge of factors to define & identify prime numbers to 100.	• Use my knowledge of factors to define & identify prime numbers greater than 100 • Use pictorial representation such as a factor tree to identify prime factors	• Solve problems relating to prime numbers • Write a given number as a product of prime factors	• Identifies prime numbers to 100 and can explain method used. • Solves problems using multiples and factors. Writes a given number as a product of its prime factors.

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—THIRD LEVEL

THIRD LEVEL		NUMERACY AND MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser—Number, money and measure	Powers and roots	I can/am able to:	I can/am able to:	I can/am able to:	
	Having explored the notation and vocabulary associated with whole number powers and the advantages of writing numbers in this form, I can evaluate powers of whole numbers mentally or using technology. MTH 3-06a	• Understand the pattern/sequence in powers e.g., $2^2 = 2 \times 2$, $2^3 = 2 \times 2 \times 2$, $2^4 = 2 \times 2 \times 2 \times 2 \times 2$ etc. • Use the notation & vocabulary of powers having explored the advantages of writing numbers in this form.	• Evaluate whole number powers using a mental calculation strategy • Use a calculator or other technology to evaluate whole number powers.	• Solve problems with whole number powers, choosing the appropriate notation and calculation strategy.	• Explains the notation and uses associated vocabulary appropriately, for example, index, exponent and power. • Evaluates whole numbers as powers, for example, $2^4 = 16$. • Evaluates whole numbers as powers, for example, $27 = 3^3$.

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—THIRD LEVEL

THIRD LEVEL | **NUMERACY AND MATHEMATICS**

Experiences and Outcomes			Progression			Benchmarks
Organiser—Number, money and measure	Fractions, decimal fractions and percentages	***I can solve problems by carrying out calculations with a wide range of fractions, decimal fractions and percentages, using my answer to make comparisons and informed choices for real-life situations.*** ***MNU 3-07a*** **Please note ideally MTH 3-07c should be taught before MTH 3-07b** By applying my knowledge of equivalent fractions and common multiples, I can add and subtract commonly used fractions. **MTH 3-07b** Having used practical, pictorial and written methods to develop my understanding, I can convert between whole or mixed numbers and fractions **MTH 3-07c** ***I can show how quantities that are related can be increased or decreased proportionally and apply this to solve problems in everyday contexts.*** ***MNU 3-08a*** **Link to MNU 3-03a**	**I can/am able to:** • Convert between common fractions, decimals and percentages. • Solve simple comparison or informed choice type questions using my knowledge of fraction, decimal & percentage conversion to justify my choices. • Recall and apply prior learning to add and subtract fractions with like denominators. • Add and subtract mixed number and improper fractions with like denominators. • Through practical, pictorial or written methods, convert between whole or mixed numbers and improper fractions without a calculator. • Investigate and discuss quantities that are related/have a relationship either through proportion or ratio e.g. mixing paint colours, diluting juice etc. • Through exploration, understand the relationship between fractions, proportion & ratio. • Express quantities as a ratio & simplify the ratio where appropriate	**I can/am able to:** • Convert between any fraction, decimal and percentage e.g. 7%, 0.65 etc. • Solve comparison or informed choice type questions using my knowledge of fraction, decimal & percentage conversion to justify my choices. • Recall and apply prior learning to find common denominators when adding and subtracting fractions with different denominators. • Add and subtract mixed number and improper fractions with different denominators. • Convert between whole or mixed numbers and improper fractions in any calculation, with or without a calculator. • Explore the constant of proportionality i.e. the value that links/relates the quantities • Solve simple problems involving direct proportion e.g. cost of 5 items compared to cost of 7 • Share an amount in a given ratio	**I can/am able to:** • Solve real life problems with a range of fractions, decimal fractions and percentages including finding a fraction or percentage of a quantity (with/without a calculator). • In real life problems, add and subtract fractions including mixed numbers and improper and with any denominator. • In real life problems involving fractions, apply conversion skills & knowledge. • Solve real life problems that include quantities that increase & decrease proportionally using multiplication & division skills • Use ratio to solve real life problems	• ***Converts fractions, decimal fractions or percentages into equivalent fractions, decimal fractions or percentages*** • ***Uses knowledge of fractions, decimal fractions and percentages to carry out calculations with and without a calculator.*** • Adds and subtracts whole numbers and fractions, including when changing a denominator. • Converts between whole or mixed numbers, improper fractions and decimal fractions • ***Solves problems in which related quantities are increased or decreased proportionally*** • ***Expresses quantities as a ratio and where appropriate simplifies, for example, 'if there are 6 teachers and 60 children in a school find the ratio of the number of teachers to the total amount of teachers and children'.***

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—THIRD LEVEL

THIRD LEVEL		NUMERACY AND MATHEMATICS			
	Experiences and Outcomes	⟷	Progression	⟷	Benchmarks
Organiser—Number, money and measure	Money	***When considering how to spend my money, I can source, compare and contrast different contracts and services, discuss their advantages and disadvantages, and explain which offer best value to me.*** ***MNU 3-09a***	**I can/am able to:** • Investigate & explain what certain financial terms are or mean, e.g. debit/credit, APR, pa, direct debit/ standing order • Use the internet and other sources to find goods & services, compare them & discuss their advantages & disadvantages • Explore simple interest and VAT & use my knowledge of fractions, decimals & percentages to calculate both	**I can/am able to:** • Given real life problems involving financial conditions/constraints on a budget, demonstrate best value in goods and services when sticking to this budget • Explore compound interest & use my knowledge of fractions, decimals & percentages to calculate this	**I can/am able to:** • Through a range of real-life contexts, budget effectively by making best value decisions for specific personal financial situations, sharing and justifying choices	• ***Demonstrates understanding of best value in relation to contracts and services when comparing products.*** • ***Chooses the best value for their personal situation and justifies choices.*** • ***Budgets effectively, using digital technology where appropriate, showing development of financial capacity.***
		I can budget effectively, making use of technology and other methods, to manage money and plan for future expenses. ***MNU 3-09b***	• Investigate future expenses and how to plan/budget for them e.g. Christmas costs, planning for a holiday, buying a car etc. • Investigate and give examples of different currencies used in other countries • Convert between different currencies using up to date currency rates	• Use technology and other methods in real life scenarios to keep a budget including planning for an event e.g. planning a holiday • Solve problems involving currency exchange in a context	• Through a range of real life contexts, plan personal spending & budget in a responsible way (including planning for any future expenses)	• ***Demonstrates knowledge of financial terms, for example, debit/credit, APR, pa, direct debit/standing order and interest rate.*** • ***Converts between different currencies***

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—THIRD LEVEL

THIRD LEVEL		NUMERACY AND MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser—Number, money and measure	Time	**I can/am able to:**	**I can/am able to:**	**I can/am able to:**	
	Using simple time periods, I can work out how long a journey will take, the speed travelled at or distance covered, using my knowledge of the link between time, speed and distance. *MNU 3-10a*	• Use the formula which links speed, distance and time to calculate how long a journey will take, the speed travelled at or a distance covered (whole numbers only) • Interpret distance/time graphs and timelines for simple time periods	• Convert time into common fractions and decimal fractions of time e.g. ½. 0.5, ¼, 0.25, ¾, 0.75 • Calculate & measure time durations across hours and days	• In real life contexts, with simple time periods, apply my knowledge of the relationship & formula linking speed, distance and time to find each of the three variables	• ***Applies knowledge of the relationship between speed, distance and time to find each of the three variables.*** • ***Calculates time durations across hours and days***

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—THIRD LEVEL

THIRD LEVEL		NUMERACY AND MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser—Number, money and measure	Measurement	I can/am able to:	I can/am able to:	I can/am able to:	
	I can solve practical problems by applying my knowledge of measure, choosing the appropriate units and degree of accuracy for the task and using a formula to calculate area or volume when required. ***MNU 3-11a*** **Link to MNU 3-01a & 3-07a**	• Apply my knowledge of measure to detect unrealistic estimates or measurements. • Ensure units are consistent across problems/tasks by converting between units. • Choose the degree of accuracy (decimal places) to work with when applying my knowledge of measure	• Choose the appropriate degree of accuracy (to 3 decimal places) & units when solving practical problems by considering the information given or instrument used • Solve practical problems involving length, capacity, volume & area including where conversion between standard units to 3 decimal places is required		• ***Choose appropriate units for length, area and volume when solving practical problems.*** • ***Converts between standard units to three decimal places and applies this when solving calculations of length, capacity, volume and area.***
	Having investigated different routes to a solution, I can find the area of compound 2D shapes and the volume of compound 3D objects, applying my knowledge to solve practical problems **MTH 3-11b**	• Use my knowledge of measurement & formula to find the area of 2D shapes where the units are different • Use my knowledge of measurement & formula to find the volume of cubes and cuboids in practical problems • Investigate & explore the different ways to find the area of composite shapes made from squares, rectangles & triangles • Investigate & explore the different ways to find the volume of compound 3D objects made from cubes & cuboids	• Use my knowledge of formula to calculate an unknown length given an area • Use my knowledge of formula for cubes & cuboids to calculate an unknown length given a volume • Calculate the area of composite shapes made from squares, rectangles & triangles & record with appropriate units • Calculate the volume of compound 3D objects made from squares, cubes & cuboids & record with appropriate units	• Solve real life practical problems involving area of 2D shapes • Solve real life practical problems involving volume of cubes and cuboids • Solve real life practical problems involving the area of compound 2D shapes • Solve real life practical problems involving the volume of compound 3D objects	• Calculates the area of a 2D shape where the units are inconsistent. • Finds the area of compound 2D shapes constructed from squares, rectangles and triangles. • Finds the volume of compound 3D objects constructed from cubes and cuboids.

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—THIRD LEVEL

THIRD LEVEL		NUMERACY AND MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser—Number, money and measure	Mathematics —its impact on the world, past, present and future	I can/am able to:	I can/am able to:	I can/am able to:	
	I have worked with others to research a famous mathematician and the work they are known fro, or investigated a mathematical topic, and have prepared and delivered a short presentation. **MTH 3-12a**	• Independently or with others, choose & research famous mathematicians, the work they were known for & share this research with others e.g. Archimedes, Emmy Noether, Pythagoras, Hypatia, Leibnitz, Newton, Gauss etc. • Independently or with others, investigate a mathematical topic e.g. statistics, trigonometry, algebra etc. explaining relevance and impact & present my findings			• Researches and communicates using appropriate mathematical vocabulary and notation, the work of a famous mathematician or a mathematical topic and explains the relevance and impact they have on society, now and in the past.

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—THIRD LEVEL

THIRD LEVEL		NUMERACY AND MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser—Number, money and measure	Patterns and relationships	I can/am able to:	I can/am able to:	I can/am able to:	
	Having explored number sequences, I can establish the set of numbers generated by a given rule for a given sequence, expressing it using appropriate notation. MTH 3-13a	• Generate number sequences from a given rule • Extend a given pattern (including patterns in tabular form) • Recognise relationships between consecutive terms in a number sequence and use this to write a rule (include linear patterns)	• Use a rule for a sequence to calculate the value of any given element in the pattern • Record, using algebraic notation, an expression which describes the rule for a given sequence	• Solve simple sequences problems in context that involve whole number powers & include linear patterns	• Generates number sequences from a given rule, for example, T = 4n + 6. • Extends a given pattern and describes the rule. • Expresses sequence rules in algebraic notation, for example, the cost of hiring a car is £75 plus a charge of £0.05 per mile, 'm' driven, C = 0.05m + 75.

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—THIRD LEVEL

THIRD LEVEL		NUMERACY AND MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser—Number, money and measure	Expressions and equations	**I can/am able to:**	**I can/am able to:**	**I can/am able to:**	
	I can collect like algebraic terms, simplify expressions and evaluate using substitution **MTH 3-14a**	• Collect like terms to simplify an expression for additive and multiplicative terms	• Collect like terms (up to cubic terms) to simplify any algebraic expression	• Evaluate expressions & formulae that include simple powers e.g. squares and cubes	• Collects like terms, including squared terms, to simplify an algebraic expression. • Evaluates expressions involving two variables using both positive and negative numbers.
		• Substitute to evaluate expressions involving at least 2 variables using positive values	• Substitute to evaluate expressions & formulae for positive and negative values		• Solves linear equations, for example, ax ± b = c where a, b and c are integers.
	Having discussed ways to express problems or statements using mathematical language, I can construct, and use appropriate methods to solve, a range of simple equations. **MTH 3-15a**	• Solve a given simple linear equation using inverses/opposite operations and/or by balancing e.g. solve 2x - 4 = 14		• Solve problems involving linear equations using the most appropriate method where the equation is given or has to be constructed	• Creates a simple linear formula representing information contained in a diagram.
		• Express a problem or statement in words/mathematical language	• From given information, express a problem or statement as an equation or expression		
	I can create and evaluate a simple formula representing information contained in a diagram, problem or statement. **MTH 3-15b**	• Given information in a diagram, express a simple formula in words/ mathematical language	• From given information in a diagram, express a simple formula as an expression		• Evaluates a simple formula for example, C = 0.05m + 75

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—THIRD LEVEL

THIRD LEVEL		NUMERACY AND MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser—Shape, position and movement	Properties of 2D shapes and 3D objects	**I can/am able to:**	**I can/am able to:**	**I can/am able to:**	
	Having investigated a range of methods, I can accurately draw 2D shapes using appropriate mathematical instruments and methods **MTH 3-16a** **Link to MNU 3-19a**	• Apply previous learning to accurately draw 2D shapes using the appropriate mathematical instrument and method • Use the formula linking the radius and diameter of a circle (i.e. r = 0.5d and d = 2r) to support the accurate drawing of a circle	• Investigate and explore different methods to draw triangles and quadrilaterals accurately • Accurately draw triangles and quadrilaterals using the appropriate mathematical instrument and method (identified through the given information within the task or problem)	• Investigate and explore methods to draw regular polygons accurately (given the interior angle) • Accurately draw regular polygons when given the interior angle using the appropriate mathematical instrument and method (identified through the given information within the task or problem)	• Demonstrates a variety of methods to accurately draw 2D shapes, including triangles and regular polygons (given the interior angle), using mathematical instruments.

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—THIRD LEVEL

THIRD LEVEL		NUMERACY AND MATHEMATICS			
Experiences and Outcomes		Progression			Benchmarks
Organiser—Shape, position and movement	Angle, symmetry and transformation	I can/am able to:	I can/am able to:	I can/am able to:	
I can name angles & find their sizes using my knowledge of the properties of a range of 2D shapes & the angle properties associated with intersecting & parallel lines **MTH 3-17a**		• Discover & recall that the sum of the 3 angles of a triangle adds to 180° • Discover & recall that the angles around a point add to 360° • Use known angle facts to calculate missing angles in simple problems • Name angles using appropriate notation e.g. ∠ABC, where the angle at the vertex is the letter in the middle	• Explore & investigate vertically opposite angles, corresponding angles and alternate angles through intersecting and parallel lines • Recall angle facts & properties relating to vertically opposite angles, corresponding angles and alternate angles	• Use known angle facts to calculate missing angles in simple problems including intersecting and parallel lines • Use known angle facts to calculate missing angles in real life problems including triangles & quadrilaterals	• Names angles using mathematical notation, for example, ∠ ABC • Identifies corresponding, alternative and vertically opposite angles and uses this knowledge to calculate missing angles. • Uses the angle properties of triangles and quadrilaterals to find missing angles
Having investigated navigation in the world, I can apply my understanding of bearings & scale to interpret maps and plans & create accurate plans & scale drawings of routes & journeys. **MTH 3-17b**		• Investigate and explore how maps and plans are used in navigation • Measure bearings on a map or plan. • Measure & read distance from a scale map or plan. • Draw any bearing	• Apply previous and new learning of scale to draw routes or journeys as a simple scaled map or plan • I can calculate bearings & distances from a scale map or plan. • Draw bearings onto a map or plan to plot a route or journey.	• Create a scale map or plan & record routes or journeys with bearings & distances.	
I can apply my understanding of scale when enlarging or reducing pictures & shapes, using different methods, including technology **MTH 3-17c**		• Investigate & explore, through practical activities & technology, how pictures and shapes can be enlarged or reduced • Understand that a scale factor is a relationship between corresponding elements on a shape or picture e.g. corresponding sides	• With or without technology, enlarge and reduce objects, including pictures and shapes, by applying my knowledge of scale using simple scale factors • Identify a linear scale factor by expressing the relationship between corresponding elements in tabular form	• With or without technology, enlarge and reduce objects, including pictures and shapes, by applying my knowledge of scale	• Applies knowledge and understanding of scale to enlarge and reduce objects in size showing understanding of linear scale factor. • Uses bearings in a navigational context, including creating scale drawings.
I can use my knowledge of the coordinate system to plot & describe the location of a point on a grid. **MTH 3-18a**		• Understand that a fractional scale factor can create a reduction. • Apply previous and new learning relating to negative numbers & integers to explore the coordinate system outwith the 1st quadrant	• With support, plot & describe the location of a point on a grid outwith the 1st quadrant i.e. within 4 quadrants	• Plot & describe the location of a point on a grid outwith the 1st quadrant i.e. within 4 quadrants	
I can illustrate the lines of symmetry for a range of 2D shapes & apply my understanding to create & complete symmetrical pictures & patterns. **MTH 3-19a**		• Apply previous and new learning relating to 2D shape to identify & draw all lines of symmetry on a wider range of 2D shapes • Complete symmetrical pictures & patterns with or without digital technologies.	• With support reflect a 2D shape in the x-axis or y-axis • Begin to create symmetrical pictures & patterns with or without digital technologies.	• Reflect a 2D shape in the x-axis or y-axis • Create symmetrical pictures & patterns with or without digital technologies.	• Identifies all lines of symmetry in 2D shapes • Creates symmetrical patterns and pictures.

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—THIRD LEVEL

THIRD LEVEL		NUMERACY AND MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser—Information handling	Data and analysis	I can/am able to:	I can/am able to:	I can/am able to:	
	I can work collaboratively, making appropriate use of technology, to source information presented in a range of ways, interpret what it conveys and discuss whether I believe the information to be robust, vague or misleading. ***MNU 3-20a***	• With or without technology, working with others or on my own, find and/or collect information in text and/or numerical & pictorial form from a variety of sources	• Investigate and explore what is meant by a trend in data	• Interpret, describe and discuss the important features of a data set (sourced or given) and discuss whether I believe the information to be robust, vague or misleading.	• ***Sources information or collects data making use of digital technology where appropriate.*** • ***Interprets data sourced or given.***
		• Calculate the mean & range of a data set (sourced or given) and use this to interpret the information displayed	• Using sourced or given data, use appropriate language to discuss any trends in data.		• ***Describes trends in data using appropriate language, for example, increasing trend.***
	When analysing information or collecting data of my own, I can use my understanding of how bias may arise and how sample size can affect precision, to ensure that the data allows for a fair conclusions to be drawn. **MTH 3-20b**	• Investigate and discuss factors that affect the reliability or robustness of information that is given or collected e.g. the validity of the source, scale used, sample size, method of presentation etc.	• Apply my knowledge of bias and appropriate sample size when analysing given data to ensure that the data is reliable and robust • Identify whether given data is reliable and robust or not, justifying my conclusions	• Apply my knowledge of bias and appropriate sample size when collecting data to ensure that the data is reliable and robust e.g. use a representative sample • Identify whether my collected data is reliable and robust or not, justifying my conclusions	• ***Determines if information is robust, vague or misleading by considering, for example, the validity of the source, scale used, sample size, method of presentation and appropriateness of how the sample was selected.*** • Collects data by choosing a representative sample to avoid bias.
	I can display data in a clear way using a suitable scale, by choosing appropriately from an extended range of tables, charts, diagrams and graphs, making effective use of technology. **MTH 3-21a**	• Apply previous learning to organise and display a variety of data appropriately to solve problems (with or without technology)	• Apply knowledge of fractions, decimals, percentages & angles to construct pie charts (not pre-sectioned) • Interpret data represented in pie charts (not pre-sectioned) and discuss using appropriate language	• With or without technology, construct compound bar graphs and line graphs to organise and display data • Interpret data represented in compound bar graphs and line graphs and discuss using appropriate data	• Organises and displays data appropriately in a variety of forms, for example, compound bar and line graphs and pie charts, making effective use of technology as appropriate.

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—THIRD LEVEL

THIRD LEVEL		NUMERACY AND MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser—Information handling	Ideas of chance and uncertainty				
	I can find the probability of a simple event happening and explain why the consequences of the event, as well as its probability, should be considered when making choices. ***MNU 3-22a***	**For a range of purposes across my learning I can/am able to:** • Use a number line from 0 to 1 (showing impossible to certain) to investigate & describe probability. • Place events on a number line to demonstrate simple probabilities as a fraction or decimal fraction e.g. the probability that you flip a coin & it lands heads up is 0.5. • Define probability as the number of favourable outcomes ÷ the total number of outcomes. • Determine probability of a simple or real life event e.g. being first up in the morning • Calculate the probability that an event will not happen. • Investigate and discuss real life situations where probability is used e.g. sport and gambling	**For a range of purposes across my learning I can/am able to:** • Use a given probability to calculate an expected outcome. • Determine all possible outcomes from a single event and calculate the probability of each • Understand the term "mutually exclusive". • Discuss & demonstrate how the probability of an event can be used to make real life decisions e.g. a video post going viral has a higher probability if it includes a funny animation	**For a range of purposes across my learning I can/am able to:** • Use experiments & practical activities to make links between the frequency of an event occurring and the probability of the event occurring. • Investigate and discuss information collected in the past to make predictions or risk assessments for the future e.g. use of medical data to look at probability of measles outbreak in areas where vaccinations have decreased etc.	• ***Uses the probability scale of 0 to 1 showing probability as a fraction or decimal fraction.*** • ***Demonstrates understanding of the relationship between the frequency of an event happening and the probability of it happening.*** • ***Uses a given probability to calculate an expected outcome, for example, ' the probability of rain in June is 0.25 so how many days do we expect it to rain?'*** • ***Calculates the probability of a simple event happening, for example, 'what is the probability of throwing a prime number on a 12 sided die?'.*** • ***Identifies all of the mutually exclusive outcomes of a single event and calculates the probability of each.*** • ***Investigates real-life situations which involve making decisions on the likelihood of events occurring and consequences involved.***

FOURTH LEVEL

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—FOURTH LEVEL

FOURTH LEVEL		NUMERACY and MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser—Number and Number Processes	Estimation and rounding	Having investigated the practical impact of inaccuracy and error, I can use my knowledge of tolerance when choosing the required degree of accuracy to make real-life calculations. *MNU 4-01a*	**I can/am able to:** • Know and understand what a significant figure is • Know how many significant figures a number has • Round a number to 1 significant figure • Estimate answers by rounding to one significant figure • Analyse a problem and choose an appropriate degree of accuracy for rounding. • Know that in a multi-step calculation, rounding numbers inappropriately in the calculation will lead to an inaccurate answer • Know what is meant by tolerance through investigation in a practical context	**I can/am able to:** • Round a number to any number of significant figures in context • Estimate answers by rounding to any number of significant figures in the context of a problem • Consider the context when solving a rounding problem e.g. share the total bill for a meal between a number of people; the rounding has to ensure that the total bill is covered • Know that in a multi-step calculation, I need to round beyond the degree of accuracy throughout, before rounding the final answer to the required degree of accuracy • Write tolerance in the correct form • Interpret simple tolerances in real life contexts • Use a given tolerance to check accuracy and variation in simple real life contexts	**I can/am able to:** • Understand that rounding numbers inappropriately in a calculation will lead to an insufficiently accurate answer. • Interpret tolerances to justify and explain decisions in real life calculations • Use a given tolerance to check accuracy and variation in real life contexts	• ***Rounds answers to a significant figure.*** • ***Demonstrates that the context of the question needs to be considered when rounding.*** • ***Demonstrates the impact of inaccuracy and error, for example, the impact of rounding an answer before the final step in a multi-step calculation.*** • ***Uses a given tolerance to decide if there is an allowable amount of variation of a specified quantity, for example, dimensions of a machine a part, 235 mm*** ± 1mm

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—FOURTH LEVEL

FOURTH LEVEL		NUMERACY and MATHEMATICS			
Experiences and Outcomes		Progression			Benchmarks
Organiser—Number and Number Processes	Number and Number Processes	Having recognised similarities between new problems and problems I have solved before, I can carry out the necessary calculations to solve problems set in unfamiliar contexts. *MNU 4-03a* I have investigated how introducing brackets to an expression can change the emphasis and can demonstrate my understanding by using the correct order of operations when carrying out calculations. *MNU 4-03b*	I can/am able to: • Analyse a calculation or problem and identify similarities from previous problems or whether it involves multi-steps to solve • Communicate and justify the most effective strategy for a given calculation or problem • Explore & understand that calculations involving division by a 2 digit number can be completed using a column method involving long division • Explore long multiplication as a column method • Explore expressions & calculations involving brackets	I can/am able to: • Solve multi-step problems set in familiar contexts using the 4 operations ensuring correct order of operation • Complete a simple calculation using long division • Complete a simple calculation using long multiplication • Confidently use the strategy which aids order of operation problems and calculations e.g. BODMAS when solving simple multi-step problems. The **BODMAS** acronym is: • **B**rackets (parts of a calculation inside brackets always comes first). • **O**rders (numbers involving powers or square roots). • **D**ivision. • **M**ultiplication. • **A**ddition. • **S**ubtraction.	I can/am able to: • Solve multi-step problems set in unfamiliar contexts using the 4 operations ensuring correct order of operations • Use long division to solve simple problems in a familiar context • Use long multiplication to solve simple problems in a familiar context • Apply, in all calculations, the order of operations correctly .	• ***Interprets and solves multi-step problems using the four operations*** • ***Applies the correct order of operations in all calculations, including those with brackets.***

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—FOURTH LEVEL

FOURTH LEVEL		NUMERACY and MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser—Number and Number Processes	Powers and roots	I have developed my understanding of the relationship between powers and roots and can carry out calculations mentally or using technology to evaluate whole number powers and roots, of any appropriate number. **MTH 4-06a**	**I can/am able to**: • Use the notation & vocabulary of roots • Understand that powers and roots are inverse operations and specifically that the square root is the inverse operation of squaring • Evaluate square roots of square numbers up to 144 • Use my knowledge of negative number multiplication to understand and explain why square roots of whole numbers also have negative values	**I can/am able to**: • Evaluate whole number powers & roots of any appropriate number using a mental calculation strategy. • Use a calculator or other technology to evaluate whole number powers & roots of any appropriate number	**I can/am able to:** • Solve problems with whole number powers and roots of any appropriate number, choosing the appropriate notation and strategy.	• ***Shows understanding that square roots of whole numbers can have positive and negative values, for example, $\sqrt{9}=\pm 3$*** • ***Uses knowledge of the inverse relationship between powers and roots to evaluate whole number roots of any appropriate number, $\sqrt[3]{27}=3$.***
		Within real-life contexts, I can use scientific notation to express large or small numbers in a more efficient way and can understand and work with numbers written in this form. **MTH 4-06b**	• Investigate the uses of scientific notation in real life • Explain the applications and benefits of using scientific notation • Understand the mathematics behind the written form of scientific notation e.g. 700 = 7 x 100 and since 100 = 10^2 then 700 = 7 x 10^2	• Use scientific notation to express large and small numbers.	• Convert between scientific notation and decimal notation. • Solve real life problems by reading values in scientific notation and performing simple calculations with numbers expressed in scientific notation.	• ***Uses knowledge of mathematical notation to express numbers in scientific notation.***

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—FOURTH LEVEL

FOURTH LEVEL		NUMERACY and MATHEMATICS			
Experiences and Outcomes		Progression			Benchmarks
Organiser—Number and Number Processes	Fractions, decimal fractions and percentages	I can choose the most appropriate form of fractions, decimal fractions and percentages to use when making calculations mentally, in written form or using technology, then use my solutions to make comparisons, decisions and choices. *MNU 4-07a*	I can/am able to: • Choose the most efficient form of fractions, decimal fractions or percentages in calculations (mental, written or with technology) • Use my calculations to support and justify my methods, comparisons and choices,	I can/am able to: • Choose the most efficient & appropriate form of fractions, decimal fractions or percentages in problems and calculations and justify my methods, comparisons and choices.	I can/am able to:	• ***Chooses the most efficient form of fractions, decimal fractions or percentages when making calculations.*** • ***Uses calculations to support comparisons, decisions and choices.*** • ***calculates the percentage increase or decrease of a value.*** • ***Applies addition, subtraction and multiplication skills to solve problems involving fractions and mixed numbers***
		I can solve problems involving fractions and mixed numbers in context, using addition, subtraction or multiplication. **MTH 4-07b**	• Solve problems involving fractions and mixed numbers using 4 operations.	• Calculate the percentage increase/ decrease of a value • Express one value as a percentage of another	• Apply all skills and knowledge to solve problems in context	
		Using proportion, I can calculate the change in one quantity caused by a change in a related quantity and solve real life problems. *MNU 4-08a*	• Increase & decrease quantities proportionally to solve problems in everyday contexts e.g. percentage increase/decrease	• Solve simple problems involving indirect proportion	• Solve real life problems which involve changes in related quantities	• ***Uses knowledge of proportion to solve problems in real-life which involve changes in related quantities.***

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—FOURTH LEVEL

FOURTH LEVEL		NUMERACY and MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser—Number and Number Processes	Money	I can discuss and illustrate the facts I need to consider when determine what I can afford, in order to manage credit and debit and lead a responsible lifestyle. *MNU 4-09a*	**I can/am able to:** • Read & understand information from wage slips, earnings summaries, budgets etc. • Understand the vocabulary associated with income e.g. gross, net pay, earnings, deductions, overtime, bonus etc.	**I can/am able to:** • Understand the terms credit & debit & explain their advantages & disadvantages • Explain and show my budgeting skills through completion of spending and saving problems • Apply my knowledge of currency conversions to determine best value	**I can/am able to:** • Plan ahead & budget to make and explain decisions that lead to a responsible lifestyle.	• ***Applies understanding of credit & debit in relation to earnings and deductions.*** • ***Uses budgeting skills to manage income effectively and justifies spending and saving choices.*** • ***Calculates net income by selecting appropriate information.*** • ***Compares a range of personal finance products.*** • ***Communicates the impact of financial decisions.*** • ***Applies knowledge of currency conversion to determine best value.***
		I can source information on earnings and use it when making calculations to determine net income. *MNU 4-09b*	• Investigate and source real life examples of different earnings • Apply and recall previous learning to calculate total monthly/weekly bills, total income & total	• Calculate income & deductions in order to find gross & net pay in budgeting problems • Create a budget taking into account income & expenditure over the short and long term.		
		I can research, compare and contrast a range of personal finance products and , after making calculations, explain my preferred choices. *MNU 4-09c*	• Calculate compound interest • Understand the vocabulary of financial products e.g. APR, repayment schemes, mutual etc. • Understand where to find information on personal financial products (such as savings accounts, loans, insurance, retirement plans, bonds etc.) to source & compare them.	• Use calculations to determine the difference between financial products e.g. hire purchase & loans/mortgages to make informed decisions to decide which the best product to take is. • Use a range of factors such as quality, depth of cover, reputation, future earnings, economy & ethical aspects to make my decisions.	• Justify and communicate financial decisions and the impact of them.	

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—FOURTH LEVEL

FOURTH LEVEL		NUMERACY and MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser—Number and Number Processes	Time	I can/am able to:	I can/am able to:	I can/am able to:	
	I can research, compare and contrast aspects of time and time management as they impact on me *MNU 4-10a*	• Apply time and time management skills to scheduling tasks within a given period of time (including across midnight) • Investigate different time zones in different countries	• Apply time and time management skills to solve real life problems of general time management, traveling and transportation, rest and relaxation etc.	• Interpret the solutions to time problems and relate to the personal impact of these solutions demonstrating effective time management.	• ***Demonstrates effective time management skills, for example, working with different time zones or making plans, including across midnight.***
	I can use the link between time, speed and distance to carry out related calculations. *MNU 4-10b*	• Calculate time durations across hours, days and months. • Convert time into any fraction and decimal fraction of time. • Use the link between speed, distance and time in problems to calculate an unknown (include common fractions or decimal fractions of time and durations across hours, days and months)	• Use the link between speed, distance and time in problems to calculate an unknown, including any fraction and decimal fraction of time.	• Use the link between speed, distance and time in problems to calculate an unknown, including fractions and decimal fractions of time and where the units need to be converted.	• ***Carries out calculations involving speed, distance and time involving decimal fraction hours.*** • ***Calculates time durations across hours, days and months.***

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—FOURTH LEVEL

FOURTH LEVEL		NUMERACY and MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser—Number and Number Processes	Measurement	I can/am able to:	I can/am able to:	I can/am able to:	
	I can apply my knowledge and understanding of measure to everyday problems and tasks and appreciate the practical importance of accuracy when making calculations. ***MNU 4-11a***	• Apply my knowledge & understanding of measure to a range of everyday problems and tasks. • Understand that rounding numbers inappropriately in a calculation will lead to an insufficiently accurate answer. • Consider & discuss the practical importance of accuracy when making calculations and/or completing practical tasks	• Through completion of practical everyday tasks, demonstrate my understanding of tolerance & its significance.	• Use and understand that volume is the area of the cross-section x height (V=Ah)	• ***Demonstrates understanding of the impact of truncation and premature rounding.*** • ***Calculates the area of kites, parallelograms and trapeziums.*** • ***Uses formulae and calculates the surface area of cylinders, cuboids and triangular prisms.*** • ***Calculates the volume of triangular prisms and cylinders using formulae.***
	Through investigating real-life problems involving the surface area of simple 3D shapes, I can explore ways to make the most efficient use of materials and carry out the necessary calculations to solve related problems. **MTH 4-11b**	• Investigate how to find the area of a trapezium & a kite using my • Explore & investigate what is the surface area of cuboids, cylinders & triangular prisms relating to real life and materials e.g. cost efficiency of making drinks cans out of metal sheets etc.	• Find the area of a trapezium & kite using the appropriate formula • Use knowledge of area & related formula to calculate the surface area of cylinders, cuboids and triangular prisms.	• Find the area of any 2D shape • Use appropriate formulae to calculate the surface area of cylinders, cuboids and triangular prisms in practical contexts including efficiency problems	
	I have explored with others the practicalities of the use of 3D objects in everyday life and can solve problems involving the volume of a prism, using a formula to make related calculations when required. **MTH 4-11c**	• Independently or otherwise, explore & investigate practicalities of the use of 3D objects relating to • Explore & investigate what is the cross section of a 3D object including triangular prisms and cylinders & how it relates to	• Apply my knowledge of area & surface area to explore & use formulae in simple problems to calculate the volume of triangular prisms and cylinders. • Find the volume of any prism when the area of the cross-section is given	• Use formulae (where necessary) to solve problems involving the volume of a triangular prism or cylinder in practical real life contexts.	

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FALKIRK NUMERACY & MATHEMATICS PROGRESSION PATHWAY—FOURTH LEVEL

FOURTH LEVEL		NUMERACY and MATHEMATICS			
Experiences and Outcomes		Progression			Benchmarks
Organiser—Number and Number Processes	Mathematics—its impact on the world, past. Present and future	I have discussed the importance of mathematics in the real world, investigated the mathematical skills required for different career paths and delivered, with others, a presentation on how mathematics can be applied in the workplace MTH 4-12a	**I can/am able to:** • Independently or with others, investigate the role mathematics plays in the real world using appropriate technology. • Independently or with others, Investigate the mathematical skills required for a range of subjects & share this with others.	**I can/am able to:** and deliver, with others, a presentation of careers including those in STEM	**I can/am able to:** • ***Contributes to discussions and presentations on the role of mathematics in everyday life and in the workplace.*** • ***Investigates the mathematical skills required for a range of careers, including those in STEM subjects.***

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FOURTH LEVEL — **NUMERACY and MATHEMATICS**

Organiser	Experiences and Outcomes	Progression			Benchmarks
Number and Number Processes	Patterns and relationships	**I can/am able to:**	**I can/am able to:**	**I can/am able to:**	
	Having explored how real life situations can be modelled by number patterns, I can establish a number sequence to represent a physical or pictorial pattern, determine a general formula to describe the sequence, then use it to make evaluations and solve related problems. **MTH 4-13a**	• Recall previous learning on number sequences • Investigate how real life situations can be modelled using patterns and graphs e.g. cost to hire a car Links can be made here to the learning in MTH 4-13B	• Determine a general formula to describe a linear sequence (for sets of numbers not in context). • Determine a general formula to describe a linear sequence in context.	• Use a general formulae to find missing terms and solve related problems in real life contexts (for linear sequences only).	• ***Determines a general formula for the nth term to describe a sequence and uses it to solve related problems, linear examples only.***
	I have discussed ways to describe the slope of a line, can interpret the definition of gradient and can use it to make relevant calculations, interpreting my answer for the context of the problem. **MTH 4-13b**	• Discuss, describe & understand the concept of slope in real life context e.g. road signs, mountains/hills, ski jumps etc. • Use and understand the language of gradient e.g. positive gradient, negative gradient, no gradient, undefined gradient • Understand the link between the gradient of a straight line and the formula that generates the points on that line e.g. the link between the gradient and the coefficient of the x-coordinate	• Investigate & discover that gradient is the change in vertical distance divided by the change in horizontal distance • Understand and use the formula for gradient i.e. m = vertical distance ÷ horizontal distance • Find the gradient for a straight line represented on a coordinate diagram	• Solve real life problems involving gradient of a line and make interpretations based on the context of the question or problem	• ***Calculates the gradient of lines in a coordinate diagram.*** • ***Draws conclusions about the gradient of a line, for example, 'does the ramp meet building regulations?'***
	Having investigated the pattern of the coordinate points lying on a horizontal or vertical line, I can describe the pattern using a simple equation. **MTH 4-13c**	• Recall and apply prior learning and knowledge of the coordinate system to investigate patterns of coordinates in a horizontal or vertical line • Recognise the link of no gradient with a horizontal line and an undefined gradient with a vertical line	• Understand the term y-intercept • Understand and can use the term for a horizontal straight line (y = k) • Understand and can use the term for a vertical straight line (x = k).	• Describe the graph of a straight line using the notation y = mx + c for simple equations	• ***Communicates the gradient of vertical and horizontal lines and states the equation of these lines as x= a or y = b or equivalent.***
	I can use a given formula to generate points lying on a straight line, plot them to create a graphical representation then use this to answer related questions. **MTH 4-13d**	• Recall and apply prior learning and knowledge of evaluating formula to generate points from a given formula • Recall and apply prior learning and knowledge of the coordinate system to plot points generated from a given formula	• Recognise and use the pattern of points plotted in a straight line and from a formula for a linear sequence to create a graph with appropriate axes and labels	• Create a graph representing a linear sequence (i.e. straight line) form a formula and use this graph to answer related questions in real life contexts	• ***Uses a given formula to plot a straight line onto a Cartesian diagram.***

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FOURTH LEVEL		NUMERACY and MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser—Number and Number Processes	Expressions and equations		**I can/am able to:**	**I can/am able to:**	
	Having explored the distributive law in practical contexts, I can simplify, multiply and evaluate simple algebraic terms involving bracket. ***MTH 4-14a***	• Using my knowledge of collecting like terms and simplifying equations, explore the distributive law in practical contexts. • Expand a simple bracket e.g. 3(x + 1) • Simplify expressions involving a single bracket e.g. 5 (2x + 4) + 2x –1	• Evaluate simple expressions involving brackets • Use the distributive law to solve simple equations e.g. 5 (x + 2) = 35	• Simplify, multiply and evaluate algebraic terms involving brackets using the distributive law. • Use the distributive law to solve equations e.g. 7 (x - 3) = 3x—9	• ***Expands brackets using the distributive law and simplifies*** • ***Solves an extended range of linear equations involving the distributive law, for example, ax ± b = cx ± d, where a, b, c and d are integers.*** • ***Solves linear inequalities, including on simple closed intervals.***
	I can find the factors of algebraic terms, use my understanding to identify common factors and apply this to factories expressions. **MTH 4-14b** Links can be made here to the learning in MNU 4-05a	• Use previous common factors knowledge and apply understanding to factorising algebraic terms with a numeric common factor. • Investigate and discuss factors of algebraic terms.	• Factorise simple expressions by taking out a common factor (algebraic and/or numeric).	• Factorise expressions by taking out a common factor (algebraic and/or numeric). • Use factorising to solve equations.	• ***Solves problems by expressing the given information appropriately as an equation, inequation or formula.*** • ***Evaluates algebraic expressions involving a bracket.*** • ***Factories expressions with a numeric common factor.***
	Having discussed the benefits of using mathematics to model real life situations, I can construct and solve inequalities and an extended range of equations. **MTH 4-15a**	• Investigate and solve simple linear inequalities e.g. $7x + 3 \leq 24$ • Investigate and begin to discuss & use set notation and language.	• Solve linear inequalities on simple closed intervals e.g. $6x - 4 \geq x + 16$, $x \in \{1,2,3,4,5,6,7,8,9,\}$ • Investigate & discuss where and how mathematics is used to model real life situations. • Express given info as an equation, inequation or expression.	• Construct and solve inequalities and an extended range of equations that represent real life situations.	

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FOURTH LEVEL		NUMERACY and MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser—Number and Number Processes	Properties of 2D shapes and 3D objects	I can/am able to:	I can/am able to:	I can/am able to:	
	I have explored the relationships that exist between the sides, or sides and angles, in right-angled triangles and can select and use an appropriate strategy to solve related problems, interpreting my answer for the context. MTH 4-16a	• Investigate, discuss & present my findings of Pythagoras the Mathematician	• Use the Theorem of Pythagoras to calculate the hypotenuse and shorter sides in simple problems	• Investigate and use the converse of Pythagoras theorem.	• ***Calculates the length of any side of a right-angled triangle using the Theorem of Pythagoras.***
		• Investigate through practical means, Pythagoras's theorem & the related relationship between the sides in a right angled triangle	• Use the Theorem of Pythagoras to calculate the hypotenuse and shorter sides in real life problems		
		• Identify & explain the hypotenuse and shorter sides in a right angled triangle			
		• Through measurement and investigation explore the relationship in terms of a ratio between the sides and a 30^0 right angled triangle Trigonometry intro	• Find missing angles in a right angled triangle using trigonometric ratios for simple problems	• Solve real life problems using trigonometry including coordinate systems.	• ***Calculates the size of an angle in a right-angled triangle using trigonometry.***
		• Identify & label the sides in a right angled triangle e.g. hypotenuse, opposite and adjacent	• Find missing side lengths in a right angled triangle using trigonometric ratios for simple problems		• ***Calculates the length of a side in a right-angled triangle using trigonometry.***
			• Begin to identify between trigonometry and Pythagoras to solve problems.	• Fluently choose between trigonometry and Pythagoras to solve problems in real life contexts.	• ***Uses the formula C = πd or C = 2πr to calculate the circumference of a circle.***
	Having investigated the relationships between the radius, diameter, circumference and area of a circle, I can apply my knowledge to solve related problems. MTH 4-16b	• Investigate through practical means, π & the relationship between π & circumference of a circle	• Correctly use the formulae C = πd or C = 2πr to solve simple circumference		
		• Investigate through practical means, the relationship between π & area of a circle e.g. graphical description of circle broken into 4 wedges and then thinner wedges etc. Area of a circle	• Correctly use the formulae C = πd or C = 2πr to solve simple circumference problems where d or r is the unknown.	• Solve circumference and area problems finding any related unknown other than π	• ***Uses the formula $A = \pi r^2$ to calculate the area of a circle.***
			• Correctly use the formulae $A = \pi r^2$ to solve simple area problems where A is the unknown.		• ***Calculates diameter and radius of a circle when given the area or circumference.***
		• Know and remember the value of pi to 2 decimal places e.g. π = 3.14	• Correctly use the formulae $A = \pi r^2$ to solve simple area problems where r is the unknown.	• Solve related circumference and area problems for compound shapes including parts of circles.	

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FOURTH LEVEL		NUMERACY and MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser—Number and Number Processes	Angles, symmetry and transformation	**I can/am able to:**	**I can/am able to:**	**I can/am able to:**	
	Having investigated the relationship between a radius and a tangent and explored the size of the angle in a semicircle, I can use the facts I have established to solve related problems. **MTH 4-17a**	• Investigate, discuss & understand the relationship between a radius and a tangent e.g. tangents to a circle • Investigate & discuss the size of an angle in a semicircle e.g. angle in a semicircle	• Calculate missing angles in simple problems using my understanding of the relationship between a radius and tangent • Calculate missing angles in a semicircle & solve simple related problems.	• Apply my knowledge & understanding of triangles, angles and circles to solve problems in context.	• ***Applies knowledge of the relationship between the tangent and radius to calculate sizes of missing angles*** • ***Applies knowledge of triangles, angles and circles, including semi -circles, to solve problems.***
	I can apply my understanding of the properties of similar figures to solve problems involving length and area. **MTH 4-17b**	• Recall previous learning on ratio and scale to explore similar triangles & similar figures e.g. similar figures • Understand and describe the terms congruent and corresponding • Identify when shapes are congruent or similar.	• Identify & use scale factor to find a missing length in simple similar figures problems • Investigate, discuss & understand the relationship between similar area and scale factor	• Apply my understanding of similarity to calculate missing lengths in similar figure problems • Apply my understanding of similarity to solve problems in context involving area	• ***Uses similarity to find unknown lengths of 2D shapes.***
	I can plot and describe the position of a point on a 4-quadrant coordinate grid. **MTH 4-18a** I can apply my understanding of the 4-quardrant coordinate system to move, and describe the transformation of, a point or shape on a grid. **MTH 4-18b**	• Recall previous learning of the coordinate system to identify, plot & describe the location of a point within 4 quadrants • Explore & use the terms Cartesian grid, Cartesian coordinates. • Apply my knowledge of using a 4 quadrant grid to accurately represent a point or shape following step by step instructions to move/transform the original shape	• Solve problems in 4 quadrants using coordinate notation e.g. treasure hunt • Begin to predict the result of a transformation on a point or shape including a reflection or translation	• Predict & identify the result of a transformation on a point or shape • Accurately draw the result of a transformation on a point or shape within a Cartesian Grid.	• ***Uses a four-quadrant Cartesian grid to read and plot coordinates.*** • ***Applies understanding of translation to reflect or translate an object on a four-quadrant grid.*** • ***Identifies transformation by reflection or translation of a point or shape on a grid.***
	Having investigated patterns in the environment, I can use appropriate mathematical vocabulary to discuss the rotation properties of shapes, pictures and patterns and can apply my understanding when completing or creating designs. **MTH 4-19a**	• Investigate, identify & discuss rotational symmetry in real life contexts e.g. wind turbines, car wheels, starfish etc. • Understand & use accurately the term 'order of rotation' e.g. rotational symmetry	• Complete simple pictures, patterns or designs using my knowledge and understanding of rotational symmetry. • Begin to create pictures, patterns or designs using my knowledge and understanding of rotational symmetry.	• Complete & create pictures, patterns or designs using my knowledge and understanding of rotational symmetry.	• ***Describes rotational properties of shapes, pictures and patterns, including the order of rotation*** • ***Uses knowledge of rotational symmetry to complete designs.***

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FOURTH LEVEL		NUMERACY and MATHEMATICS			
	Experiences and Outcomes	Progression			Benchmarks
Organiser—Number and Number Processes	Data and analysis	I can/am able to:	I can/am able to:	I can/am able to:	
	I can evaluate and interpret raw and graphical data using a variety of methods, comment on relationships I observe within the data and communicate my findings to others. ***MNU 4-20a*** Links should be made here to the Experiences & Outcomes below.	• Recall previous learning on trends in data & explore further relationships such as correlation, shifts, runs, outliers etc.	• With support, interpret relationships & conclusions that I draw/evaluate from raw or graphical data in context, using a wide range of methods. • With support, communicate, discuss & present relationships & conclusions that I draw/evaluate from raw or graphical data in context, using a wide range of methods.	• Independently carry out a statistical investigation, analyse & present findings, discuss & justify my conclusions using correct/appropriate language. • Given raw and/or graphical data, independently analyse & present findings, discuss & justify my conclusions using correct/appropriate language.	• ***Interprets raw and graphical data.*** • ***Uses statistical language, for example, correlations, to describe identified relationships.***
	In order to compare numerical information in real-life contexts, I can find the mean, median, mode and range of sets of numbers, decide which type of average is most appropriate to use and discuss how using an alternative type of average could be **MTH 4-20b**	• Recall previous learning regarding the mean & range of a data set & use this to calculate the mean & range for comparison of data in real-life contexts. • Explore & understand the uses of median and mode of a data set.	• Calculate the mean, median, mode & range of a data set in real-life contexts & use this information to discuss/make analysis and comparisons. • Select & justify which average I use appropriate to the given data & discuss using correct language e.g. whether the average is robust or not; flawed or not; misleading or not etc.	• Apply my learning of mean, median, mode and range to a wide range of data and statistical diagrams, where appropriate, to solve real-life problems.	• ***Calculates the mean, median, mode and range of a data set.***
	I can select appropriately from a wide range of tables, charts, diagrams and graphs when displaying discrete, continuous or grouped data, clearly communicating the significant features of the data. **MTH 4-21a**	• Recall previous learning to organise, display & interpret a variety of data appropriately to solve problems (with or without technology) • Explore & understand the uses of a stem and leaf diagram • Explore & understand the uses of a scatter diagram • Explore & understand the uses of a grouped frequency table • Explore & understand the uses of a cumulative frequency diagram	• Draw a stem & leaf diagram & interpret it using my knowledge of the mean, median & range. • Investigate upper & lower quartile and complete a 5 figure summary & use this to analyse & compare data. • Complete a scatter diagram, including line of best fit & use this to solve problems in context. • Complete a frequency table for discrete and grouped data & discuss the important features of the data. • Complete a cumulative frequency diagram for discrete data & discuss the important features of the data.	• Display & select data, justify my choice, from my knowledge & understanding of a range of tables, charts, diagrams etc. • Interpret & communicate confidently the significant features of a data set using appropriate language & terms. • Draw a back to back stem & leaf diagram & interpret it using my knowledge of the mean, median, range, upper & lower quartiles etc. • Create & interpret a scatter diagram, including line of best fit & use this to solve real-life problems. • Create and interpret a frequency table for discrete and grouped data in real-life contexts. • Draw and interpret a cumulative frequency curve for discrete data in real-life contexts.	• ***Selects the most appropriate statistical diagram to display a given data set, for example, stem and leaf.*** • ***Justifies the most appropriate statistical diagram to display a given data set.*** • ***Uses different types of charts to display discrete, continuous and grouped data appropriately.***

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FOURTH LEVEL		NUMERACY and MATHEMATICS			
Experiences and Outcomes		Progression			Benchmarks
Organiser—Number and Number Processes	Ideas of chance and uncertainty	By applying my understanding of probability, I can determine how many times I expect an event to occur, and use this information to make predictions, risk assessment, informed choices and decisions. *MNU 4-22a*	**For a range of purposes across my learning I can/am able to:** • Recall previous learning about the links between frequency of an event occurring & the probability of the event occurring • Calculate relative frequency of an event e.g. in a class of 30, the number of students who have 3 meals each day is 25 so P(3meals) = $\frac{25}{30} = \frac{5}{6}$ • Calculate the expectation of an event from a relative frequency, as in the example above & use this to make decisions e.g. using the probability from above, if a whole year group of students were surveyed, how many students would be predicted to eat 3 meals a day?	**For a range of purposes across my learning I can/am able to:** • Investigate & discuss the probability of multiple events e.g. you throw 2 dice, what is the probability that both are 6s? • Understand what is meant when 2 events are independent • Understand what is meant when 2 events are dependent • Investigate & use probability spaces or probability trees when working out what the probability of 2 things happening is	**For a range of purposes across my learning I can/am able to:** • In practical activities, make predictions of future events e.g. in a game of monopoly, if you are on 'Pennsylvania Avenue' and would like to land on 'GO' on your next turn, how likely is this? • Use information collected in the past to make predictions or risk assessments for the future e.g. use graduate data from colleges or universities to predict skills shortages or job surpluses etc. & discuss how this might have a bearing on your future career choices.	• ***Calculates the probability and determines the expected occurrence of an event*** • ***Applies knowledge and skills in calculating probability to make predictions.***