Counting and Cardinality

	M4	M5	M6	M7	M8	M9
COUNTING	Counting: Chanter - *Learning Trajectories*	Counting: Reciter - *Learning Trajectories*	Counting: Reciter - *Learning Trajectories*	Counting: Reciter (10) - *Learning Trajectories*	Counting: Corresponder Counting: Counter (Small Numbers) - Learning Trajectories	Counting: Counter (10) (b) - *Learning Trajectories*
	Verbally counts (not always in the correct order) e.g. says, "One, two, ten? as pupil pretends to count. May begin a nonverbal object "counting" such as copying an adult's item-by-item placement of objects. e.g. A child says: "onetwothreefour…." as one sound, rather than as distinct number words. After watching an adult put one to six "food tokens" into an animal puppet, a child imitates the puppet-feeding with attention to number.	Counts small number of objects (2-3), sometimes counting the same object twice or using numbers out of order.	Counts small number of objects (3-5), sometimes counting the same object twice or using numbers out of order.	Counts small number of objects to 10, but may occassionally skip numbers or count the same object twice.	Accurately counts objects in a line to 5 and answers the "how many" question with the last number counted. Begins to understand that the last number represents how many objects are in a group (referred to as "cardinality") e.g. A student is asked "How many blocks do we have?" The student sees four blocks, points to each while counting... "1, 2, 3, 4", then exclaims "Four!" in answer to the question.	Accurately reads and writes numerals to represent 1-10. Verbal counting to 20 is developing.
				Counting: Corresponder - *LearningTrajectories*	Counting: Counter (10) (a) - *Learning Trajectories*	Counting: Producer (Small Numbers) - *Learning Trajectories*
				Begins to coordinate verbal counting with objects by pointing to small groups laid in a line (referred to as one-to-one correspondence). e.g. A child counts each of four objects, pointing to each while saying . . . "1, 2, 3, 4"	Counts arrangements of objects to 10 with understanding of the cardinal principle. May be able to read and write numerals to represent 1–10.	Accurately produces a group of 5 objects when asked. e.g. A studeny is asked to bring five crayons to the table. The student goes to the crayon box and gets a group of 5 crayons.
					Numeral meanings - *NCETM*	
					Begins to match a number symbol and numicon tile with a number of objects (up to 10)	
SUBITIZING	Subitizing: Very Small Number recogniser - *Learning Trajectories*		Subitizing: Maker of Small Collections - *Learning Trajectories*	Subitizing: Small Collection Namer - *Learning Trajectories*	Subitizing: Perceptual Subitizer to 4 - *Learning Trajectories*	Subitizing: Perceptual Subitizer to 5 - *Learning Trajectories*
	Begins connecting small quantities to number words to form an explicit idea of cardinality, or "how-many-ness." At this stage students will be focusing on the numbers "one" and "two" (only over time do they begin to understand that all groups labelled with the same number word have the same amount). e.g. May be able to recognise "one" or "two" when asked, but may not yet verbally name these quantities.		Makes a small collection (usually 1–2 and possibly 3) with the same number as another collection. Might also be verbal but often is not. e.g. When shown a collection of 3, a child makes another collection of 3 in the same arrangement.	Quickly recognises groups of 1, 2, and 3 with increasing accuracy without having to count them out individually. (referred to as "subitizing") e.g. When asked, "How many blocks do you have?" a student shows a teacher one block in each hand and says "Two".	Student instantly recognises (without counting) collections up to 4 when they are briefly shown to them and verbally names the number of items (if non-verbal, uses visual supports to communicate). e.g. When shown four objects briefly, says "four."	Student instantly recognises (without counting) collections up to 5 when they are briefly shown to them and verbally names the number of items (if non-verbal, uses visual supports to communicate). e.g. A student is shown the five side of a game die (4 dots arranged as a square, with one dot in the middle). When asked "How many?" the student answers "Five!"
						Subitizing: Conceptual Subitizer to 5 - *Learning Trajectories*
						Verbally labels all arrangements to 5 when shown only briefly, by seeing the parts and quickly knowing the whole (if non-verbal, uses visual supports to communicate). e.g. A child rolls a pair of dice and knows there are 5 dots because they see a 2 and a 3.
						Subitizing: Conceptual Subitizer to 7 - *Learning Trajectories*
						Verbally labels all arrangements to 6, then 7, when shown only briefly (if non-verbal, uses visual supports to communicate). e.g. A child rolls a pair of dice and knows there are 7 dots because they see a 2 and a 5.

Comparison

	M4	M5	M6	M7	M8	M9
COMPARING NUMBER	More than/ Less than (a) - *NCETM*	More than/ Less than (c) - NCETM	Comparing Number: Early Comparison (c) - *Learning Trajectories*	Comparing Number: First-Second Ordinal Counter - *Learning Trajectories*	Comparing Number: Matching Comparer - *Learning Trajectories*	Comparing Number: Spatial Extent Estimator—Small/Big - *Learning Trajectories*
	Students use a few basic words to refer to change in the amount of objects, such as asking for "more" or saying "all gone" when a plate is empty.	Students are supported to start to focus on the numerosity of comparison when shown more small things and fewer large things i.e. the number of things, not the size of them.	Object Corresponder: Puts objects into one-to-one correspondence, although they may not fully understand that this creates equal groups. e.g. Student puts a straw in each cup (doesn't worry if extra straws are left), but doesn't necessarily know there are the same number of straws and cups.	Identifies the "first" and often "second" objects in a sequence. e.g. In a line of a bear, cat, dog, and sheep, the child identifies the bear as the first in line but is unable to identify the dog as the third animal in line.	Compares groups of 1–6 by matching. e.g. A student gives one toy bone to every dog and says there are the same number of dogs and bones. A student may count the collections, but does not rely on the results of counting to compare them. Instead, notices whether the quantities match.	Estimates which set is more or less if the differences are clear (e.g., one is double the other). Names a "small number" (e.g. from 1-4) for sets that cover little space and a "big number" (10-20 or more) for sets that cover a lot of space. Students may classify numbers as "little"/"big". e.g. A child is shown 13 objects spread out for 1 second. When asked, "How many?", the child responds, "Thirty!"
	More than/ Less than (b) - *NCETM*	More than/ Less than (d) - NCETM	Comparing Number: Perceptual Comparer (a) - *Learning Trajectories*	Comparing Number: Early Comparer of Similar Items - *Learning Trajectories*	Comparing Number:Counting Comparer (Same Size) - *Learning Trajectories*	Comparing Number: Counting Comparer (5) - *Learning Trajectories*
	Students to compare collections and are supported to identify which group has more objects. The objects must be the same. The groups should be obviously different with one group having a widely different number of objects.	Students begin to perceive the relationships of "more than" and "less than" when working with very small numbers. Uses words to include "more," "less," or "same."	Compares collections that are quite different in number (e.g., one is at least twice the other). e.g. Shown 10 blocks and 25 blocks, points to the 25 as having more.	Compares collections of 1 to 4 items verbally or nonverbally ("just by looking"). The items must be the same. May compare the small collections using number words "two" and "three", and "three" and others. e.g. A student identifies /// and /// as equal and different from // or / / .	Begins to accurately count and compare objects that are about the same size and are in small groups (up to about 5) with adult assistance, such as counts a pile of 2 blocks and a pile of 4, and determines whether the piles have the same or different numbers of blocks.	Counts to determine and compare number amounts even when the larger group's objects are smaller in size, such as buttons, compared with the smaller group's objects that are larger in size, such as balls. Identifies whether the number of objects in one group is more than, less than, or the same as objects in another group for up to at least five objects. e.g. A child accurately counts two equal collections of 4 blocks and says they have the same number. When asked if the collection of larger blocks has more or less, the child says "They are the same."
		Comparing Number: Early Comparison (a) - *Learning Trajectories*	Comparing Number: Perceptual Comparer (b) - *Learning Trajectories*	Comparing Number: Early Comparer of Dissimilar Items - *Learning Trajectories*	Conservation - *NCETM*	Comparing Number: Mental Number Line to 5 - *Learning Trajectories*
		Many-to-One Corresponer: Students understand that two small groups have the "same number" by looking at them and matching the items from one group to the items in the other group. e.g. Students may put one block in each of some cake tins but then put a couple blocks in other cake tins.	Compares similar collections but only involving very small numbers. Compares collections using number words "one" and "two". e.g. Shown groups of 2 and 4, points to the group of 4 as having more.	Matches small, equal collections consisting of different items, showing that they are the same number. e.g. A student matches collections of 3 shells and 3 dots, then declares that they "have the same number."	Students to have the opportunity to recognise amounts that have been rearranged and to generalise that, if nothing has been added or taken away, then the amount is the same.	Uses knowledge of counting number relationships to determine relative size and position when given perceptual support. e.g. When shown a 0 at one end of a line segment and a 5 at the other, a child places a "3" approximately in the middle.
		Comparing Number: Early Comparison (b) - *Learning Trajectories*				Comparing Number: Serial Orderer to 5 - *Learning Trajectories*
		One-to-One Object Corresponder: Puts objects into 1-to-1 correspondence when it is clear the materials are a physical "pair." In other situations, such as setting the table, may start to do 1-to-1, but then may keep on passing out items until they are all dispersed, or may skip some (due to the lack of clear matching, such as cups "near" plates). e.g. A student puts one block in each cake cup but is bothered that some blocks remain after all cups have been filled. The student may begin to find additional cups to put each block into something.				Orders quantities (dots) or numerals up to 5. Similarly orders lengths marked into units. e.g.Given cards with 1 to 5 dots, puts in order. Given towers of cubes, puts in order (1 to 5).
						Comparing Number: Ordinal Counter - *Learning Trajectories*
						Identifies and uses ordinal numbers from "first" to "tenth." e.g. A student can identify who is "fifth in line."
						Comparing Number: Counting Comparer (10) - *Learning Trajectories*
						Compares with counting, even when larger collection's objects are smaller, up to 10. e.g. A student accurately counts two collections of 9 blocks each, and says they have the same number, even if one collection has larger blocks.
						Comparing Number: Mental Number Line to 10 - *Learning Trajectories*
						Uses internal images and knowledge of number relationships to determine relative size and position e.g. when asked "Which number is closer to 6: 4 or 9?", a child accurately responds "4".

Composition

	M4	M5	M6	M7	M8	M9
COMPOSING NUMBER	Composing Numbers: Parts Combiner (a) - *Learning Trajectories*		Part–whole: identifying smaller numbers within a number (conceptual subitizing – seeing groups and combining to a total) - *NCETM*	Inverse operations - *NCETM*	A number can be partitioned into different pairs of numbers - *NCETM*	A number can be partitioned into more than two numbers - *NCETM*

		Students begin to recognise that the whole can be separated into parts and recombined to make the whole. e.g. "You're showing me that leaf, how many points do you see on it? Yes, I see three points too! Three of these points make a whole leaf!"		Students need opportunities to see small numbers within a larger collection. 'Number talks' allow children to discuss what they see. e.g. with giant ladybirds: 'There are 5 spots altogether. I can see 4 and 1, I can see 3 and 2, and I can see 1 and 1 and 1 and 1 and 1.' Encourage exploration of all the ways that 'five' can be and look. Students are encouraged to look closely at numbers to see what else they can see. This reinforces the concept of conservation.	Students need opportunities to partition a number of things into two groups, and to recognise that those groups can be recombined to make the same total. Encourage children to say the whole number that the 'parts' make altogether.	Students need opportunities to explore a range of ways to partition a whole number. The emphasis here is on identifying the pairs of numbers that make a total. Children can do this in two ways – physically separating a group, or constructing a group from two kinds of things.	Students need opportunities to explore the different ways that numbers can be partitioned, i.e. into more than two groups. Situations to promote this include increasing the number of pots to put a given amount into, e.g. planting ten seeds into three or more pots.
		Composing Numbers: Parts Combiner (b) - *Learning Trajectories*		Composing Numbers: Inexact Part-Whole Recogniser - *Learning Trajectories*			Number bonds: knowing which pairs make a given number - *NCETM*
		Students recognise that the whole can be more than two parts and recombined in different orders. e.g. putting lego/ snapping blocks together to make a whole and separating them back into parts.		Knows that a whole is bigger than parts, but may not accurately quantify (label with numbers). e.g. When shown four red blocks and two blue blocks and asked how many there are in all, names a "big number," such as 5 or 10.			Students need opportunities to say how many are hidden in a known number of things e.g. 'Five toys go into a tent, then two come out. How many are left in the tent?' The child should respond that there are still three toys in the tent.
							Composing Numbers: Composer to 4, then 5 - *Learning Trajectories*
							Knows number combinations. Quickly names parts of any whole, or the whole given the parts e.g. Shown four, then one is secretly hidden, and then is shown the three remaining, quickly says "one" is hidden.
	ADDING/ SUBTRACTING		Adding & Subtracting: Preverbal +/- - *Learning Trajectories*		Adding & Subtracting: Small Number +/- (a) - *Learning Trajectories*	Adding & Subtracting: Find Result +/- (a) - *Learning Trajectories*	Adding & Subtracting: Find Change +/- - *Learning Trajectories*
			Adds and subtracts very small collections (totals up to three), often making a collection rather than answering verbally. e.g. Shown 2 objects then 1 object going under a napkin, makes a set of 3 objects to "match."		Begins to add very small collections of objects with adult support e.g. the teacher says, "You have 3 grapes and get 1 more. How many in all?" the student counts out 3, then counts out 1 more, then counts all 4: "1, 2, 3, 4. I have 4!" Solves addition problems by joining objects together using manipulatives and fingers to represent objects.	Represents addition and subtraction in different ways, such as with fingers, objects, and the part-part whole model. e.g. Asked, "You have 6 balls and get 2 more. How many in all?" counts out 6 balls, then adds 2, then counts all 8 (join, result unknown problem). Asked, "You have 2 red balls and 3 blue balls. How many in all?" counts out 2 red, then counts out 3 blue, then counts all 5 (part-part-whole, whole unknown problem).	Finds the missing addend (e.g., 5 + _ = 7 or 9 - _ = 3) to solve Join and Separate, Change Unknown problems by adding on or taking away objects. Compares by matching in simple situations.
					Adding & Subtracting: Small Number +/- (b) - *Learning Trajectories*	Adding & Subtracting: Find Result +/- (b) - *Learning Trajectories*	
					Begins to subtract very small collections of objects with adult support. e.g. When asked, "You have 4 toys and give 1 to your friend. How many do you have left?," a student puts up 4 fingers, then tucks one down, counting the remaining 3: "1, 2, 3…3!" Solves subtraction problems by separating, using manipulatives and fingers to represent objects.	Solves addition and subtraction word problems. Adds and subtracts up to 5 to or from a given number. e.g. Asked, "You have 5 balls and give 2 to Tom. How many do you have left?" counts out 5 balls, then takes away 2, and then counts remaining 3 (separate, result unknown problem).	
						Adding & Subtracting: Make it N - *Learning Trajectories*	
						Adds on objects to "make one number into another," without needing to count from 1. Does not (necessarily) represent how many were added (this is not a requirement of this intermediate-difficulty problem type). e.g. "This puppet has 4 balls but she should have 6. Make it 6," puts up 4 fingers on one hand, immediately counts up from 4 while putting up 2 more fingers, saying, "5, 6."	
	MULTIPLICATION/ DIVSION	Multiplying/Dividing: Nonquantitative Sharer: Foundations - *Learning Trajectories*			Multiplying/Dividing: Beginning Grouper and Distributive Sharer - *Learning Trajectories*	Multiplying/Dividing: Grouper and Distributive Sharer - *Learning Trajectories*	Multiplying/Dividing: Concrete Modeler x/÷ - *Learning Trajectories*
		Gives some, but not necessarily an equal number to each person e.g. A student gives three blocks to one friend and one block to another friend, and keeps five blocks for him or herself.			Makes small groups (fewer than 5). Shares by "dealing out," but usually only between 2 people. May not appreciate the numerical result. e.g. To share 4 blocks, gives each person a block, checks each person has one, and repeats this.	Makes small equal groups (fewer than 6). Deals out equally between two or more recipients, but may not understand that equal quantities are produced. e.g. Shares 6 blocks by dealing out blocks to themselves and a friend one at a time.	Solves small-number multiplying problems by grouping – making each group and counting all. Solves division/sharing problems with informal strategies, using concrete objects; up to 20 objects and 2-5 people. May not understand equivalence of groups. e.g. A child distributes 20 objects by giving 2 blocks to each of 5 people, then 2 more to each person until blocks are gone.
	Pattern						
		M4	M5	M6	M7	M8	M9
	PATTERNING	Patterning: Foundations - *Learning Trajectories*	Continuing an AB pattern - *NCETM*	Patterning: Pattern recogniser - *Learning Trajectories*	Patterning: Patterner AB (a) - *Learning Trajectories*	Spotting an error in an AB pattern - *NCETM*	Patterning: Patterner - *Learning Trajectories*
		Detects and uses patterning implicitly and intuitively, such as in movement activities or common nursery rhymes that repeat words and action. May be attentive to repeating patterns without recognising them explicitly or accurately, often attending to individual attributes such as colour. e.g. recognises patterns in a story or song.	Students need the opportunity to see a pattern, to talk about what they can see, and to continue a pattern. At first, they will do this one item at a time, e.g. red cube, blue cube, red cube…verbalising the pattern helps. Students may then be asked to say what they would add next to continue it.	Recognises a simple pattern, usually ABABAB, as a pattern, even if doesn't yet name or describe it. e.g. A student engages in pattern recognition as they observe things that repeat in their environments such as colours, shapes, and events (i.e., bathroom tiles that are "this colour and other colour and this colour and other colour").	Recognises, describes, and builds repeating ABAB patterns. These involve the following, which many children learn in this order, although this can vary by the task	When working with AB patterns, students also need the opportunities to spot and correct errors. It is easiest to spot an extra item, then a missing item, then items swapped around. When presented with an AB pattern, children can be encouraged to describe it to make sure it is right. Then, to detect an error, they can track the pattern from the start. To begin with, children may know there is something wrong, but might not be able to say what the error is. They then might take several attempts to correct it, before being able to repair the error in one move.	Recognises, describes, and builds repeating patterns, including AB but also patterns with core units such as AAB, ABC, and AABC.
					Patterning: Patterner AB (b) - *Learning Trajectories*		Patterning: Pattern Translator and Unit recogniser (a) - *Learning Trajectories*
					Fixes AB patterns: Fills in the missing element of an ABAB_B pattern.		Recognises Core Units. Identifies the core unit of a sequential pattern (e.g., "red, blue, purple" in an ABCABCABC pattern).
					Patterning: Patterner AB (c) - *Learning Trajectories*		Patterning: Pattern Translator and Unit recogniser (b) - *Learning Trajectories*
					Duplicates AB: Duplicates ABABAB pattern e.g. Students may first may have to work close to the model pattern, but eventually can build the same pattern away from the model pattern or when the model is out of sight.		Translates Pattern. Translates patterns into new media; that is, abstract and generalize the pattern (e.g., sees a "red, blue, purple" pattern of connecting cubes and builds the same pattern with toothpicks, – | \, – | \, – | \, naming both of them: "Those are ABC patterns."
					Patterning: Patterner AB (d) - *Learning Trajectories*		Patterning: Pattern Translator and Unit recogniser (c) - *Learning Trajectories*
					Extends AB: Extends AB patterns to add multiple units to the end of the pattern. This is easier for children if the pattern ends with a complete unit, but they eventually learn to extend those that end with a partial unit. e.g. patterns represented by two attributes of change (shape and colour) are easier than those represented by just one (e.g., orientation).		Given objects in an ABBABBABB pattern, identifies the core unit of the pattern as "ABB."
							Patterning: Pattern Translator and Unit recogniser (d) - *Learning Trajectories*
							Can recreate a pattern using new materials, such as making a ABCABC pattern using toothpicks to recreate an ABCABC colour pattern.
	Shape and Space						
		M4	M5	M6	M7	M8	M9
	2D SHAPES	Shapes: Shape Matcher Identical, Sizes, & Orientations (a) - *Learning Trajectories*	Shapes: Shape Matcher Identical, Sizes, & Orientations (c) - *Learning Trajectories*	Shapes: Shape Recogniser-Typical - *Learning Trajectories*	Shapes: Shape Matcher—More Shapes, Sizes, & Orientations, Combinations (a) - *Learning Trajectories*	Shapes: Shape recogniser—Circles, Squares, and Triangles - *Learning Trajectories*	Shapes: Side recogniser - *Learning Trajectories*
		Identical: Matches familiar shapes (circle, square, typical triangle) that have the same size and orientation.	Sizes: Matches familiar shapes with different sizes.	Student recognises and names some two-dimensional shapes (circle, triangle, square, rectangle). .	Shape Matcher—More Shapes: Compares and matches a wider variety of shapes with the same size and orientation.	Student recognises and name two-dimensional shapes (circle, triangle, square, rectangle). They name shapes from everyday objects in the classroom environment. Differentiates between 2D and 3D shapes and recognises faces of 3D shapes as 2D shapes.	Child describes what makes a shape a shape (identifies shape attributes). The child describes the characteristics of a shape, for example, that triangles have three sides, rectangles have four edges and four corners, squares are like rectangles, but all the sides are the same, and/or circles are round.
		Shapes: Shape Matcher Identical, Sizes, & Orientations (b) - *Learning Trajectories*			Shapes: Shape Matcher—More Shapes, Sizes, & Orientations, Combinations (b) - *Learning Trajectories*	Shapes: Constructor of Shapes from Parts—Looks Like - *Learning Trajectories*	Shapes: Most Attributes Comparer - *Learning Trajectories*
		Orientations: Matches familiar shapes with different orientations. e.g. fits shapes into a shape sorter box with increasing success.			Shape Matcher—Sizes and Orientations: Compares and matches a wider variety of shapes with different sizes and orientations.	Uses manipulatives representing parts of shapes, such as sides, to make a shape that "looks like" a goal shape. May think of angles as a corner (which is "pointy") e.g. When asked to make a triangle with sticks, a child creates a shape with three connecting sides.	Looking at two shapes such as rectangles, compares differences in attributes such as number of sides and length, but may ignore others, such as widths or right angles.
					Shapes: Shape Matcher—More Shapes, Sizes, & Orientations, Combinations (c) - *Learning Trajectories*	Shapes: Shape recogniser-All Rectangles - *Learning Trajectories*	Shapes: Corner (Vertex, Angle) recogniser - *Learning Trajectories*
					Shape Matcher—Combinations: Compares and matches combinations of shapes to each other.	Recognises rectangles of all sizes, shapes, and orientations.	Recognises angles as separate geometric objects, at least in the limited context of "corners."

	COMPOSING 2D SHAPES	Composing 2D Shapes: Separate Shapes Actor: Foundations - *Learning Trajectories*			Composing 2D Shapes: Piece Assembler - *Learning Trajectories*		Composing 2D Shapes: Picture Maker - *Learning Trajectories*
		Students manipulate shapes as individuals, although they may put shapes together through playful explorations or by copying simple arrangements e.g. students playing with pattern blocks make simple pictures of their own design.			Makes pictures in which each shape represents a unique role (e.g., one shape for each body part) and shapes touch. Fills simple puzzles in which all shapes are outlined, often using trial and error e.g. a student draws a picture and uses a yellow hexagon for a sun, an orange square for a house, and a green triangle for a tree.		Puts several shapes together to make one part of a picture (e.g., making a dinosaur out of different shapes using triangles for the head and feet and rectangles for the body and arms).
	DISEMBEDDING SHAPES			Disembedding shapes: Intuitive Disembedder: Foundations - *Learning Trajectories*		Disembedding shapes: Simple Disembedder - *Learning Trajectories*	
				Can remember and reproduce only one or a small collection of nonoverlapping (isolated) shapes e.g. a student names a triangle when playing with a set of 3 pattern blocks. During picture stories, student is able to identify different shapes on the page.		Identifies frame of complex figure. Finds some shapes in arrangements in which figures overlap, but not in those in which figures are embedded within others e.g. with a picture of a smaller circle inside a larger circle, traces the outline of the larger circle.	
	3D SHAPES	3D shapes: 3D Perceiver: Foundations - *Learning Trajectories*			3D shapes: 3D Prototype recogniser - *Learning Trajectories*		
		Students are fully supported to build a tower out of shapes (blocks, lego, bricks) whilst the teacher uses prepositional language.			Children can recognise some prototypical 3D shapes, such as the sphere and cube, using formal or informal names. However, may use 2D vocabulary to name some 3D shapes and describe solids using a variety of informal characteristics, such as "pointyness" or "slenderness."		
	COMPOSING 3D SHAPES	Composing 3D shapes: Separate Blocks Actor: Foundations - *Learning Trajectories*	Composing 3D shapes: Line Maker - *Learning Trajectories*	Composing 3D shapes: Piece Assembler (3D) - *Learning Trajectories*	Composing 3D shapes: Picture Maker (3D) - *Learning Trajectories*		Composing 3D shapes: Shape Composer (3D) - *Learning Trajectories*
		Student either places blocks randomly or manipulates shapes as individuals, but does not combine them to compose a larger shape. May pound, clap together, or use slide blocks or single blocks to represent an object, such as a house or truck.	Shows use of relationship of “next to” to make a (one-dimensional) line of blocks e.g. A student creates a row of blocks along the floor.	Builds vertical and horizontal components within a building, but within a limited range, such as building a “floor” or a simple “wall.” These, then, are two-dimensional structures e.g. a student creates a “house” for people figurines in the block center by covering a small area with horizontal blocks.	Uses multiple spatial relations, extending in multiple directions and with multiple points of contact among components, showing flexibility in integrating parts of the structure. Produces arches, enclosures, corners, and crosses, although may use unsystematic trial and error and simple addition of pieces. e.g. student uses blocks to build a bridge, archway or house through trial and error.		Composes shapes with anticipation, understanding what 3D shape will be produced with a composition of 2 or ore other (simple, familiar) 3D shapes. Can produce arches (with vertical interior space), enclosures (with internal horizontal space), corners, and crosses systematically. Builds enclosures and arches several blocks high. Later in this level, students add depth to make 3D structures, and they add roofs across structures multiple blocks high (but they may have no internal spaces) e. g. a student makes a “zoo” by combining blocks lining the floor for elephants, walls around tigers, and arches for smaller animals to live in and on.
		Composing 3D shapes: Stacker - *Learning Trajectories*	Composing 3D shapes: Same Shape Stacker - *Learning Trajectories*				
		Shows use of the spatial relationship of “on” to stack blocks, although choice of blocks may be unsystematic e.g. a student stacks blocks of different shapes and sizes (and delights in knocking them down).	Shows use of relationship of “on” to stack congruent blocks, or those that show a similarly helpful relationship to make stacks or lines e.g a child stacks similar blocks directly on top of each other.				
	SPATIAL VISUALISATION		Spatial Visualization: Concrete Slider, Flipper, Turner - *Learning Trajectories*		Spatial Visualization: Simple Slider and Turner - *Learning Trajectories*		Spatial Visualization: Beginning Slider, Flipper, Turner - *Learning Trajectories*
			Can move shapes to a location by physical trial and error e.g. a student can move two shapes together to make a new shape.		Slides and turns objects accurately in easy tasks, guided by an early intuition that starts the motion and then adjusts (the motion, direction, or amount) in real time as the motion is carried out e.g. when asked to use building blocks or pattern blocks to duplicate a simple "picture", children slide blocks together.		Uses the correct motions guided by more developed intuition, but not always accurate in direction and amount (adjusts these with trial and error). Knows a shape has to be flipped to match another shape, but may flip it in the wrong direction. e.g. places the correct numicon shapes on top of the numicon overlays to make a picture of a building or boat.
	SPATIAL ORIENTATION	Spatial Orientation: Path Intergrator - *Learning Trajectories*	Spatial Orientation: Place Learner - *Learning Trajectories*	Spatial Orientation: Local-Self Framework User - *Learning Trajectories*			Spatial Orientation: Small Local Framework User - *Learning Trajectories*
		Remembers and can repeat movements they have made including the approximate distances and directions e.g. a student moves to a place of their choice, navigating obstacles to arrive at a destination within sight or points to a door to indicate they want to leave the room.	Creates “mental maps” by storing locations, distances, and directions to landmarks and solves spatial problems. Uses the walls of a room as a frame of reference; uses spatial vocabulary, such as "in," "on," and "under," along with vertical directionality terms as “up” and "down" e.g. after shown a toy hidden in a sandpit, a student uses the location of objects around the sandpit to find the toy.	Uses distant landmarks to locate nearby objects even if they've moved, especially when the target is known and describes spatial relations using words like 'beside' and 'between' e.g. a student knows how to walk from the front door of their school to their classroom.			Locates objects after movement, even if target is not specified ahead of time. Searches a small area comprehensively, often using a circular search pattern. Uses words referring to frames of reference such as "in front of" and "behind" or "left" and "right." e.g. a student plays a game with a partner where they have to give their partner directions to complete a simple maze.
	Measures						
		M4	M5	M6	M7	M8	M9
	LENGTH/ SIZE/ WEIGHT	Length: Length Sensor: Foundations (a) - *Learning Trajectories*	Length: Length Sensor: Foundations (b) - *Learning Trajectories*	Length: Length Quantity recogniser (a) - *Learning Trajectories*	Length: Length Quantity recogniser (b) - *Learning Trajectories*	Length: Length Direct Comparer - *Learning Trajectories*	Length: Length Indirect Comparer - *Learning Trajectories*
		Students compare and group objects into "big" and "small" where the difference is great.	Finds big and small objects on request where there is a great difference.	Identifies length/distance as an attribute. May understand length as an absolute descriptor (e.g. all adults are tall), but not as a comparative (e.g. one person is taller than another).	Student begins to understand that attributes can be compared, such as one child can be taller than another child. Uses comparative language, such as shortest, heavier, or biggest.	Physically aligns two objects to determine which is longer or if they are the same length. Uses terms: long, longer, longest.	Compares the length of two objects by representing them with a third object. Uses terms: long, longer, longest, short, shorter, shortest. When asked to measure, may assign a length by guessing or moving along a length while counting (without equal-length units). May be able to measure with a ruler, but often lacks understanding or skill (e.g., ignores starting point) e.g. compares length of two objects with a piece of string.
			Length: Length Sensor: Foundations (c) - *Learning Trajectories*			Weight: Weight Direct Comparer	Weight: Weight Indirect Comparer
			Students compare and group objects into "heavy" and "light" where the difference is great.			Compares to objects to determine which is heavier or if the are the same weight. Uses terms heavy, heavier, heaviest.	Compares the weight of two objects by representing them with a third object. Uses terms: heavy, heavier, heaviest, light, lighter, lightest.
			Length: Length Sensor: Foundations (d) - *Learning Trajectories*				Length: Serial Orderer to 5 - *Learning Trajectories*
			Students intuitively compare, order, and build with many types of materials, and increasingly learn vocabulary for specific dimensions (big, tall, long, small, short) e.g. students are supported to build a tower and can identify it as "tall" or "short".				Orders lengths, marked in 1 to 5 units. Also, can compare unmarked lengths that are clearly different using broad categories (“big” and “small”) and so can order 3 to 5 such objects but only by trial-and-error. With an increase in working memory, begins to build a mental image of the final ordering in which the lengths increase “bit by bit” with each successive length the smallest increase. This leads to more accurate and somewhat more efficient ordering e.g. Given towers of cubes, a student puts in order: 1 to 5 or when an adult pulls out one of 5 ordered tower cubes, a child can say which one is missing.
	AREA		Area: Area Sensor: Foundations - *Learning Trajectories*		Area: Area Quantity recogniser - *Learning Trajectories*	Area: Physical Coverer and Counter - *Learning Trajectories*	Area: Complete Coverer and Counter - *Learning Trajectories*
			Students can colour in or paint a whole area. Use terms to narrate the experience: top, sides, whole, area, covered, more, bigger. e.g."You covered a lot of your paper with red", "You are using many colours to paint the whole area!", "I think you need a bigger paper with more space [or “area”]"		Students can copy an array onto a piece of paper. May simply draw squares (usually!) inside the rectangle or other types of shapes or short paths on or around the rectangle.	Student can use physical shape tiles to overlay another shape until it is completely covered. Can pick out an object that will completely cover another.	Draws a complete covering of a specific region without gaps or overlaps and in approximations of rows e.g. when given a sheet with an array that is made up of squares with the middle section missing, can roughly draw in the missing squares.
	VOLUME	Volume: Volume Sensor: Foundations - *Learning Trajectories*	Volume: Volume Quantity recogniser - *Learning Trajectories*		Volume: Volume Filler - *Learning Trajectories*		
		A student is able to fill and empty a container during sensory play. Teacher to use terms: full, empty, big, small e.g. a student takes delight in filling up a bucket with sand, dumping it out and saying "big hill!"	Students can fill containers with objects (cubes), sand, or water and talk about capacity (e.g., "That bucket holds a lot of water!"). They make direct comparisons or order things based on measurable attributes (e.g. "This bucket is bigger/ biggest").		Can compare two containers by pouring one into the other (although can be confused at “which holds more” at first). Fills a container using another (smaller container) and counts the number needed to completely fill the larger container (but may not use accurately filled scoops and may not focus on quantifying the total volume or capacity). In packing situations, places cubes into a rectangular box to fill it. Eventually packs entire box with cubes in an organized way. Compares objects by physically or mentally aligning; refers to at least two dimensions of objects. May be able to compare two containers using a third container and transitive reasoning e.g. Pours one container into another to see which holds more. Pours one container into two others, concluding that one holds less because it overflows, and the other is not fully filled.		
	ANGLE AND TURN	Angle and Turn measurement: Angle and Turn Sensor: Foundations - *Learning Trajectories*		Angle and Turn measurement: Intuitive Angle Builder - *Learning Trajectories*			
		Students are sensitive to angles-as-turning, both turning objects and their own body e.g. turns their car/ bike/ tricycle at an angle that will make the car drive toward a pretend garage.		Intuitively uses some angle measure notions in everyday settings, such as building with blocks, solving puzzles, and walking. e.g. Places blocks parallel to one another and at right angles (with the perceptual support of the blocks themselves) to build a "road." Understands 'turning' at an angle when walking or riding a tricycle or other riding toy.			
	CLASSIFICATION AND DATA ANALYSIS		Classification & Data: Similar/Dissimilar Maker - *Learning Trajectories*		Classification & Data: Simple Sorter - *Learning Trajectories*	Classification & Data: Sorter by Similar Attributes - *Learning Trajectories*	

			Student groups things into two or more collections. The student gathers objects into at least two piles. The student may divide an entire set of objects into two or more sets and/or select only some objects from the set to include in his or her piles. The objects the student groups do not need to be similar or related to one another. e.g. In play, puts several red toy animals together, and then sees several red cats, so puts other cats with them regardless of the colour.		Student represents information (data) in concrete ways. The student organises simple information using concrete objects (for example: a toy, a block, him- or herself) to show what group or category the information belongs in. e.g. Told a simple rule for classifying pictures, sorts with adult assistance, such as modeling the sorting or reminding the child of the attribute.	Sorts objects according to an explicit attribute (although still may decide to switch attributes during the sorting). The end result may appear to reflect adult categorisations, but often has a different basis, such as general resemblance. e.g. Students guess the sorting rule by watching the teacher sort a pile of shapes.	