

Developmental Continuum Summary for Mathematical Concepts

Number																	
	K-2				3-5				6-7			8-9					
Counting	- One-to-one correspondence - Conservation - Cardinality - Stable order counting - Sequencing 1-10		- Counting on and counting back - Skip counting by 2 and 5 - Sequencing to 20		- Skip counting by 2, 5, 10 and one more - Sequencing to 100		- Skip counting by any number from any starting point		- Skip counting is related to multiplication		- Multiplying - Flexible counting strategies						
Quantity - a number tells how many or how much	- Perceptual subitizing (I see 5) - Conceptual subitizing (I see 3 and 2)	- Partitioning to 10 - Numbers to 10 can be arranged and recognized - name one-half	- Partitioning to 20 - Numbers to 20 can be arranged and recognized	- Partitioning to 100 - Numbers to 100 can be arranged and recognized	- Fractions - Understanding part of whole - Understanding part of a set - Meaning of numerator - Meaning of denominator			- Decimals Concept			- Percents (whole Number 0-100)	- Ratio	- Integers	- Squares and Cubes - Square roots - Percents (including fractional and decimal)	- Exponents - Numerical radicals		
Comparison (Relationships) - referents	- Compare quantities 1-10 - Ordinals	- Compare and order numbers to 20		- Compare and order numbers to 100		- Comparing fractions - Ordering fractions	- Comparing decimals and fractions		- Equivalent fractions	- Decimals: comparing and ordering		- Proper and improper fractions	- Comparing integers	- Relating decimals, fractions and percents	- Proportional reasoning - Rates		
Estimation	- Benchmark of 5		- Benchmark of 10		- Benchmarks of 25, 50, 100 - Estimating sums and differences to 20		- Estimating large quantities - Estimating of all operations to 100		- Fractions, decimal, percent benchmarks: zero, half, whole		- Estimating decimal sums and differences		- Estimating decimal products and quotients		- Estimating fraction operations - Estimating integer operations		- Estimating square roots
Representation - concrete - pictorial - symbolic	- Sets - Linking sets to numerals		- Whole numbers				- Fractions			- Decimals			- Percentage		- Ratio	- Squares and cubes - Square roots	- Exponents
Base Ten	- Making 10	- 10 and some more (teen numbers)	- Understanding quantity of digits 0-9	- Relationship of digit places and their value to 99 (2 digit numbers)		- Extend to larger numbers - 1000 - 10 000 - 100 000			- Extend to decimals - 10ths - 100ths			- Extend decimals to millions and thousandths					
Financial Literacy	- Recognize and describe coins		- Count and order small collection of coins			- Represent money values in multiple ways and count the change to nearest 5 c.		- Solve problems involving purchasing and calculation of change		- Create simple financial plans		- Investigate and calculate % discounts (10%, 25%, 50%)		- % calculations (discounts, taxes, tips, etc.)	- Investigate and calculate "best buys"	- Simple personal budgets	
Classification	- Even and odd				- Whole number - Fraction - Decimal				- Factors and multiples			- Prime and composite	- Rational and irrational - Factors and prime factors				
Operations - pictorially - symbolically - concretely	- Putting together and taking apart using sets	- Adding and subtracting numbers to 10 - Mental math strategies - Addition and subtraction are related	- Adding and subtracting numbers to 20	- Adding and subtracting numbers to 100 - Fluency with mental math strategies for addition and subtraction	- Adding and subtracting large whole numbers - Groups of... (concept of multiplication)	- Multiplication and division of single-digit numbers - Relationships of operations: - Multiplication and division - Multiplication and addition - Division and subtraction		- Multiplication and Division to 100 - Dividing with remainders - Fluency with mental math strategies - Adding and subtracting decimals to hundredths	- Multiplying and dividing 2,3 digits and beyond - Adding and subtracting decimals beyond hundredths		- Order of Operations	- Multiplying and dividing decimals - Dividing with remainders expressed as fractions	- Adding and subtracting fractions - Adding and subtracting integers	- Multiplying and dividing fractions - Multiplying and dividing integers			
	-	-	-	-	-	-	-	-	-	-	-	-	-	-			

Patterns & Relations										
	K-2			3-5			6-7		8-9	
<ul style="list-style-type: none"> - Classifying - Identifying - Reproducing - Creating - Representing - Extending 	<ul style="list-style-type: none"> - Sorting and classifying using a single attribute - Identify patterns in our world - Repeating patterns 2-3 elements - Identify the core - Represent repeating patterns using manipulatives, sounds and actions 	<ul style="list-style-type: none"> - Identify sorting rules - Repeating patterns with multiple elements/multiple attributes - Translate from 1 representation to another - Letter coding of pattern - Predict an element in repeating patterns with a variety of strategies 	<ul style="list-style-type: none"> - Sort and classify numbers - Patterns using visuals (ten frames, 100 chart) - Numerical patterns 	<ul style="list-style-type: none"> - Identify numerical pattern rules - Increasing patterns using manipulatives, sounds, actions and numbers (0 to 100) - Recognize the same patterns with different representations 	<ul style="list-style-type: none"> - Decreasing patterns - Identify numerical rules - Represent in multiple ways 	<ul style="list-style-type: none"> - Represent increasing and decreasing patterns in charts, graphs, and tables 	<ul style="list-style-type: none"> - Pattern rules for increasing and decreasing patterns extended to include symbols and variables 	<ul style="list-style-type: none"> - Increasing and decreasing patterns represented using expressions, tables and graphs (first quadrant) 	<ul style="list-style-type: none"> - Linear relations (discrete) represented by: <ul style="list-style-type: none"> - table - graph (four quadrants) - expression 	<ul style="list-style-type: none"> - 2-variable linear relations (continuous) - interpolation and extrapolation - rate of change - functions and relations
Algebraic Thinking: Relations <ul style="list-style-type: none"> - represent mathematical relationships - explain relationships among quantities (identity or analyze change) 	<ul style="list-style-type: none"> - Systematically-recursive pattern using additive reasoning - Generalizing change by adding 1 (counting) - Describing relationship concretely (example: how do I get from 4 to 6 to 8) 	<ul style="list-style-type: none"> - Describe relationship through change verbally 	<ul style="list-style-type: none"> - Describe relationship through change numerically 	<ul style="list-style-type: none"> - Describe pattern rules using words and numbers (e.g.: starting at 6 and adding 2) 	<ul style="list-style-type: none"> - Describe pattern rules using symbols and variables - Linear patterns examined using multiplicative reasoning when analyzing the relationship between the position number and its value 	<ul style="list-style-type: none"> - Describe functional relationships using words, symbols and variables - Writing expressions and equations - Evaluate expressions using substitution 		<ul style="list-style-type: none"> - Polynomials <ul style="list-style-type: none"> - Meaning - Addition and subtraction - Multiplication and division of polynomials with monomials 		
Algebraic Thinking: Equations	<ul style="list-style-type: none"> - Describe equality as a balance and inequality as an imbalance - Missing part-part whole thinking to verbalize equations 	<ul style="list-style-type: none"> - Demonstrate and explain the meaning of equality and inequality 	<ul style="list-style-type: none"> - Record equations symbolically using = and \neq 	<ul style="list-style-type: none"> - Solve equations by inspection - Solve 1-step equations involving an unknown number (e.g.: $___ + 4 = 15$) 	<ul style="list-style-type: none"> - 1-step equations with variable - Express a given problem as an equation using symbols (e.g.: $4 + x = 15$) 	<ul style="list-style-type: none"> - Write and solve 1-step equations using preservation of equality 	<ul style="list-style-type: none"> - Solve 2 step equations (whole number coefficients) 	<ul style="list-style-type: none"> - Solve linear equations involving integers and fractions 	<ul style="list-style-type: none"> - Solving multi-step linear equations 	

Spatial Sense													
	K-2				3-5				6-7			8-9	
Linear Measurement	<ul style="list-style-type: none"> - Direct comparison based on a single attribute (height, width, length) - Measurement with non-standard units. - Single unit - Indirect comparison based on a single attribute and explain reasoning 	<ul style="list-style-type: none"> - Multiple copies of the unit - Estimation of measurements using non-standard units (using personal referents) 	<ul style="list-style-type: none"> - Measurement with standard units: - Estimation of measurements (using standard referents) 	<ul style="list-style-type: none"> - Perimeter of simple regular and irregular shapes 	<ul style="list-style-type: none"> - Compare perimeter and area – related but not dependent on each other 	<ul style="list-style-type: none"> - Perimeter of more complex irregular shapes - Develop perimeter formulas 		<ul style="list-style-type: none"> - Circumference 					
Area						<ul style="list-style-type: none"> - Squares and rectangles (tiles, grids) 	<ul style="list-style-type: none"> - Triangles, parallelograms, trapezoids 	<ul style="list-style-type: none"> - Develop area formulas 	<ul style="list-style-type: none"> - Circles 	<ul style="list-style-type: none"> - Surface area of regular solids 	<ul style="list-style-type: none"> - Surface area of composite solids 		
Volume						<ul style="list-style-type: none"> - Developing formulas for rectangular prisms 					<ul style="list-style-type: none"> - Volume of regular solids 	<ul style="list-style-type: none"> - Volume of composite solids - Prisms, pyramids, cones, spheres 	
Capacity						<ul style="list-style-type: none"> - Measurement units and referents for volume and capacity - Relating capacity to volume 							
Mass													
Time	<ul style="list-style-type: none"> - Daily events in a timeline to show a sequence of events 		<ul style="list-style-type: none"> - Comparison using non-standard duration - Referents for time (which takes longer) 		<ul style="list-style-type: none"> - Standard units of time (days, months, years) 	<ul style="list-style-type: none"> - Standard units of time (seconds, minutes, hours, am, pm) 	<ul style="list-style-type: none"> - Telling of time to the hour, half hour, and quarter hour (digital and analog) 	<ul style="list-style-type: none"> - Telling of time to the minute - 24 hour 	<ul style="list-style-type: none"> - Elapsed time 				
Angle									<ul style="list-style-type: none"> - Measuring, classifying and constructing angles 	<ul style="list-style-type: none"> - Angles and polygons 	<ul style="list-style-type: none"> - Angles and parallel lines 	<ul style="list-style-type: none"> - Primary trigonometric ratios 	
Geometry	<ul style="list-style-type: none"> - Sorting 3-D objects using a single attribute - Build and describe 3-D objects 	<ul style="list-style-type: none"> - Sorting 3-D objects and 2-D shapes using one attribute and explain the sorting rule 	<ul style="list-style-type: none"> - Replicate composite 2-D shapes and 3-D objects - Compare 2-D shapes to 3-D objects in the environment 	<ul style="list-style-type: none"> - Sort 2-D shapes and 3-D objects using two attributes and explain the sorting rule - Describe, compare, and construct 2-D shapes including: triangles, squares, rectangles, circles - Identify 2-D shapes as parts of 3-D objects in the environment 	<ul style="list-style-type: none"> - Describe and sort regular and irregular polygons - Describe, compare and construct 3-D objects according to the shapes of the faces and the number of edges and vertices. 	<ul style="list-style-type: none"> - Describe & sort quadrilaterals - Describe and construct rectangular and triangular prisms - Identify prisms in the environment. 	<ul style="list-style-type: none"> - Describe & sort triangles - Describe and construct rectangular and triangular pyramids - Identify pyramids in the environment. 	<ul style="list-style-type: none"> - Further properties of 2-D shapes (e.g.: diagonals) - Describe and construct cylinders, cones, & spheres - Identify cylinders, cones, & spheres in the environment. 	<ul style="list-style-type: none"> - Describe and construct composite 3-D objects - Nets and views of 3-D objects 	<ul style="list-style-type: none"> - Pythagorean Theorem - Scale diagrams of 2-D shapes 			
Transformations	<ul style="list-style-type: none"> - Describing relative positions (e.g., up, down, in, out) 		<ul style="list-style-type: none"> - Describe relative positions on maps (e.g.: pathways, directions, distance) 		<ul style="list-style-type: none"> - Understanding preservation of shape (the orientation of shape will not change its properties) 	<ul style="list-style-type: none"> - Line symmetry 	<ul style="list-style-type: none"> - Single transformations (translation, reflection, rotation) 	<ul style="list-style-type: none"> - Single transformation on a grid (first quadrant) 	<ul style="list-style-type: none"> - Multiple transformation on a grid 	<ul style="list-style-type: none"> - Single transformation on a grid (four quadrants) 	<ul style="list-style-type: none"> - Similarity - Congruence 		

Statistics & Probability

Statistics & Probability								
	K-2	3-5				6-7	8-9	
Data analysis	- Create and describe concrete graphs (one to one correspondence)	- Collecting, representing, and analyzing data using tallies - Creating, representing, and analyzing data using pictographs (one to one correspondence)	- Collecting, representing, and analyzing data using bar graphs (one to one correspondence)	- Creating, representing, and analyzing data using pictographs and bar graphs (many to one correspondence)	- Creating, representing, and analyzing data using double bar graphs	- Creating, representing, and analyzing data using line graphs	- Creating, representing, and analyzing data using circle graphs	- Central tendency, outliers, and range - Surveying and sampling
Probability	- Categorizing familiar events using vague informal probability words (e.g., likely, unlikely, maybe)	- Conduct, record, and draw conclusions from the results of experiments		- Single outcome probability experiments (notion of independence)		- Single outcome sample space to determine theoretical probability and relate to experimental	- Two independent events - sample space to determine theoretical probability and relate to experimental	- Calculate theoretical probability of two independent events