Orange East Supervisory Union
Mathematics: Prekindergarten

September 2020

Pre-kindergarten Mathematics High Leverage Concepts and Strategies	
Concepts Understanding number values and sequences to 10 (counting, cardinality, conservation and stable order) 1:1 Correspondence	**Strategies** Counting by 1's Subitizing Organizing Tracking

Vermont Early Learning Standards: Guiding Principles	
Each and every child has promise. No matter their circumstances, we don't give up on children. Each and every child develops and learns trust and respect through nurturing, responsive, and predictable relationships with family members, early childhood professionals and other adults and children. Each and every child forms ideas of how the world works and their place in it through actively interacting with people, formal and natural environments and objects. Each and every child has a unique life story written by its family, community, culture, heritage, language, beliefs and circumstances. Each and every child learns and develops best when nutritional, physical and emotional needs are met, and when they feel safe and valued.	Families are a child's first, most consistent and important teachers. Each family deserves respect and support as partners and decision makers in the education and development of their children. Home language and culture are essential components of each family's identity; they are to be valued and maintained. Young children learn through play, physical activity, exploration, inquiry, engagement, asking questions, and communicating with adults and other children. Learning opportunities that are relevant, integrated across developmental domains, based on children's interests, and build on children's current knowledge and abilities are most effective in supporting each child's full potential.
Vermont Early Learning Standards (2015)	

Number Sense, Quantity, and Counting		
Vermont Early Learning Standards *Vermont Early Learning Standards align Common Core State Standards* ● Element 1: Number Sense, Quantity, and Counting ● Element 2: Number Relationships and Operations ● Element 3: Measurement, Classification and Data ● Element 4: Geometry and Spatial Reasoning		
Unit Name:	**Enduring Understanding:** ● There is a relationship between numerals and the quantities: connecting counting to cardinality ● Each word said is paired with only one object: one to one correspondence ● The last number counted is the amount of the entire set or group ● Each successive number name refers to a quantity that is one larger ● Written numbers represent an amount.	**Essential Questions:** ● What is a number? ● Why do we use numbers? ● What is counting and how can it be used?
Knows: *First year of PK (36-48 months)* ● Numbers to 10 in correct sequence ● One to one correspondence for up to 5 objects ● Identification of 1-3 objects without counting ● Numerals up to 5 and connects them to the quantities they represent *Second year of PK (48-60 months)* ● Numbers to 20 in sequence with only occasional errors ● Number sequence before or after numbers 1-10	**Understands:** Children count in sequence, recognize numerals, connect numerals with quantities, and compare quantities.	**Does:** *First year of PK* ● Recite numbers to 10 in correct sequence ● Count up to 5 objects using one number for each object independently ● Quickly identify number of 1-3 objects without counting ● Read numerals up to 5 and connect them to the quantities they represent *Second year of PK* ● Recite numbers to 20 in sequence with only occasional errors ● Say the next number that comes before or after in a sequence of 1-10

● Groups of up to 10 objects and understands that the last number represents the number of objects in the group ● Numbers of 1-5 objects without counting ● Numerals up to 10 and connects them to the quantities they represent ● Groups of up to 10 objects and identifies which group has more or less, or if they are the same (equal)		● Count a group of up to 10 objects and understand that the last number represents the number of objects in the group ● Quickly identify number of 1-5 objects without counting ● Read numerals up to 10 and connect them to the quantities they represent ● Compare groups of up to 10 objects and identify which group has more or less , or if they are the same (equal)

<table>
<tr><th colspan="3">Number Relationships and Operations</th></tr>
<tr><td colspan="3">Vermont Early Learning Standards
Vermont Early Learning Standards align Common Core State Standards
● Element 1: Number Sense, Quantity, and Counting
● Element 2: Number Relationships and Operations
● Element 3: Measurement, Classification and Data
● Element 4: Geometry and Spatial Reasoning</td></tr>
<tr><td>Unit Name (Element):</td><td>Enduring Understanding:
● Addition is putting together, adding to and is “more”
● Subtraction is taking apart, taking from and is “less”</td><td>Essential Questions:
● How can I tell if something is “more” or “less”?
● How can I tell if something is “less”?
● How can I tell if something is the “same” or “equal”?</td></tr>
<tr><td>Knows:
<u>First year of PK (36 -48 months)</u>
● Strategies (e.g. counting, matching) to compare groups as having more or fewer objects
● Objects or sets can be combined or separated
● Reasoning can be used to solve a mathematical problem

<u>Second Year of PK (48-60 months)</u>
● Reasoning and strategies solve math problems
● Objects can be regrouped to create a new amount
● One to one correspondence to match two equal sets and understand they are the same
● One to one correspondence to compare two sets and understand they are different (e.g., more, less, fewer, equal)</td><td>Understands:
● Children increasingly use numbers to describe relationships including “more”, “less,” “equal”, and to solve mathematical problems.</td><td>Does:
<u>First year of PK</u>
● Use various strategies (e.g., counting, matching) to compare groups as having more or
● fewer objects
● Demonstrate knowledge that objects or sets can be combined or separated
● Use emerging reasoning skills to determine a solution to a mathematical problem

<u>Second Year of PK</u>
● Use simple strategies to solve mathematical problems and communicate how they solved the problems
● Combine and separate small groups of objects to make new groupings, and identify the resulting number in the group
● Match two equal sets using one-to-one correspondence and understand they are the same
● Use a range of strategies such as</td></tr>
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		counting, matching to compare quantity in two sets of objects and describe the relationship with comparative terms (e.g., more, less, fewer, equal)

Measurement Classification and Data		
Vermont Early Learning Standards *Vermont Early Learning Standards align Common Core State Standards* ● Element 1: Number Sense, Quantity, and Counting ● Element 2: Number Relationships and Operations ● Element 3: Measurement, Classification and Data ● Element 4: Geometry and Spatial Reasoning		
Unit Name:	**Enduring Understanding:** ● Measurement is the dimension, quantity or capacity of an object as compared to a standard ● A category is a group of objects that have similar attributes.	**Essential Questions:** ● How do we measure things? ● Why do we measure things? ● When do you need to measure?
Knows: *First Year of PK (36-48 months)* ● Objects by one attribute such as color, length, weight or size ● Match objects of similar attributes (e.g., big/little, tall/short) ● Familiar categories (e.g., fruits or vegetables) with modeling and assistance ● Standard and non-Standard ways and tools to measure and compare (e.g., 3 hands long) with modeling and assistance ● Upcoming events based on prior knowledge (e.g., pick up toys and then sit on rug for story time) ● Variations of “full” (e.g. a little full, very full, just a little, etc.)	**Understands:** ● Children develop awareness of the differences of the objects and learn to sort, compare and classify objects by their attributes and properties. They also develop a rudimentary sense of time based mostly on common routines.	**Does:** *First Year of PK* ● Sort objects by one attribute such as color, length, weight or size ● Match objects of similar size ● Use language to label objects according to an attribute (e.g., big/little, tall/short) ● Classify familiar objects into categories (e.g., fruits or vegetables) with modeling and assistance ● Use Standard and non-Standard ways and tools to measure and compare (e.g., 3 hands long) with modeling and assistance ● Predict upcoming events based on prior knowledge (e.g., pick up toys and then sit on rug for story time)

Second Year of PK (48-60 months) ● Compare and group objects using attributes of length, weight, and size, and explain reasoning ● Classification of objects using two or more attributes (e.g., sets of large blue bears, small blue bears, large red bears, small red bears) and compare number of objects in each set ● Classification of familiar objects into categories (e.g., fruits or vegetables) ● Classify familiar objects into categories ● (e.g., fruits or vegetables) ● Order objects by size or length (i.e., ● seriation) ● Use Standard and non-Standard ways and tools to measure and compare ● Use terms such as before, after, now, later, tomorrow, and yesterday accurately		● Show an understanding of variations of full (e.g. a little full, very full, just a little, etc.) *Second Year of PK* ● Compare and group objects using attributes of length, weight, and size, and explain reasoning (e.g., "I put all the big black buttons in this pile and the small black ones there.") ● Sort objects using two or more attributes (e.g., sets of large blue bears, small blue bears, large red bears, small red bears) and compare number of objects in each set ● Classify familiar objects into categories (e.g., fruits or vegetables) ● Order objects by size or length (i.e., seriation) ● Use Standard and non-Standard ways and tools to measure and compare (e.g., 3 hands long) ● Use terms such as before, after, now, later, tomorrow, and yesterday accurately

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● Element 4: Geometry and Spatial Reasoning</td></tr>
<tr><td>Unit Name: Geometry and Spatial Sense</td><td>Enduring Understanding:
● . Shapes have attributes that can be analyzed (regardless of orientation)
● All objects have a position in space related to one another
● Shapes have names
● Shapes can be composed from other shapes
● Shapes can be 2-dimensional (flat, lying in a plane) or 3-dimensional (solid)</td><td>Essential Questions:
● How are shapes classified?
● How can I compare and contrast 2 and 3 dimensional shapes?
● How can I make model shapes?</td></tr>
<tr><td>Knows:
<u>First Year of PK (36-48 months)</u>
● Common two-dimensional shapes (e.g. square, rectangle, circle, triangle) regardless of orientation
● Position words such a behind, in, on accurately
● Two- and three-dimensional shapes to create pictures and structures
● Complete a 5-7 piece connecting puzzle by looking at the picture and/or shapes</td><td>Understands:
● Children increasingly recognize two- and three-dimensional objects and use spatial reasoning</td><td>Does:
<u>First Year of PK</u>
● Name common two-dimensional shapes (e.g. square, rectangle, circle, triangle) regardless of orientation
● Use position words such as behind, in, on accurately
● Use two- and three-dimensional shapes to create pictures and structures
● Complete a 5-7 piece connecting puzzle by looking at the picture and/or shapes

<u>Second Year of PK</u></td></tr>
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Second Year of PK (48-60 months) ● Common two- and three-dimensional shapes, and their parts and attributes ● Shapes make other shapes. ● Terms such as on top of, besides, in front, etc. to communicate ideas about the relative position of objects		● Name common two- and three-dimensional shapes, and their parts and attributes (e.g., “A triangle has 3 points.”) ● Combine (i.e., compose) and separate (i.e., decompose shapes to make other shapes. ● Use terms such as on top of, beside, in front, etc. to communicate ideas about the relative position of objects ● Follow simple directions related to relative position (beside, between, next to , etc.) ● Complete a 9-12-piece jigsaw puzzle by looking at the picture and/or shapes