Number

BIG IDEA:
Numbers tell us how many and how much.

PURPOSE:
Counting and subitizing help us quantify collections of objects.

F–3

Conceptual Thread: APPLYING THE PRINCIPLES OF COUNTING

INDICATORS

Says the number name sequence starting with 1 and counting forward. Coordinates number words with counting actions, saying one word for each object (i.e., one-to-one correspondence/ tagging).	Says the number name sequence backward from numbers to 10. Knows that the last counting word tells "how many" objects in a set (i.e., cardinality).	Says the number name sequence forward through the teen numbers. Creates a set to match a verbal number or written numeral.	Says the number name sequences forward and backward from a given number. Knows that rearranging objects in a set does not change the quantity (i.e., conservation of number).	Uses number patterns to bridge tens when counting forward and backward (e.g., 39, 40, 41).	Fluently skip-counts by factors of 10 (e.g., 2, 5, 10) and multiples of 10 from any given number.	Uses number patterns to bridge hundreds when counting forward and backward (e.g., 399, 400, 401).	Fluently skip-counts by factors of 100 (e.g., 20, 25, 50) and multiples of 100 from any given number.

Conceptual Thread: RECOGNIZING AND WRITING NUMERALS

INDICATORS

		Names, writes, and matches numerals to numbers and quantities to 10.		Names, writes, and matches two-digit numerals to quantities.		Names, writes, and matches three-digit numerals to quantities.	

Conceptual Thread: RECOGNIZING QUANTITIES BY SUBITIZING

INDICATORS

		Instantly recognizes quantities to 5 (i.e., perceptual subitizing).		Uses grouping (e.g., arrays of dots) to determine quantity without counting by ones (i.e., conceptual subitizing).			

Number

BIG IDEA:
Numbers are related in many ways.

PURPOSE:
Number relationships provide the basis for developing flexibility with different representations of numbers and fluency with operations.

F–3

Conceptual Thread: COMPARING AND ORDERING QUANTITIES (MULTITUDE OR MAGNITUDE)

INDICATORS

Perceptually compares quantities to determine more/less or equal quantities. Knows that each successive number is one more than the previous number (i.e., hierarchical inclusion).	Compares (i.e., more/ less/equal) and orders quantities to 10. Uses ordinal number names (e.g., first, second, third).	Adds/removes object(s) to make a set equal to a given set. Knows what number is one or two more and one or two less than another number.	Compares and orders quantities and written numbers using benchmarks.	Determines how many more/less one quantity is compared to another. Orders three or more quantities to 20 using sets and/or numerals.	Determines and describes the relative position of objects using ordinal numbers. Uses ordinal numbers in context (e.g., days on a calendar: the 3rd of March).	Orders three or more quantities using sets and/or numerals.

Conceptual Thread: ESTIMATING QUANTITIES AND NUMBERS

INDICATORS

Estimates small quantities of objects (to 10) of the same size.	Uses relevant benchmarks to compare and estimate quantities (e.g., more/less than 10).	Uses relevant benchmarks (e.g., multiples of 10) to compare and estimate quantities.	Estimates large quantities using visual strategies (e.g., arrays).

Conceptual Thread: DECOMPOSING WHOLES INTO PARTS AND COMPOSING WHOLES FROM PARTS

INDICATORS

Decomposes/ composes quantities to 5.	Decomposes quantities to 10 into parts and remembers the whole.	Composes and decomposes quantities to 20.	Composes two-digit numbers from parts (e.g., 14 and 14 is 28), and decomposes two-digit numbers into parts (e.g., 28 is 20 and 8).

Number

BIG IDEA:
Quantities and numbers can be grouped by or partitioned into equal-sized units.

PURPOSE:
Unitizing provides a necessary foundation for multiplication, division, fractions, decimals, and ratios.

Conceptual Thread: UNITIZING QUANTITIES INTO ONES, TENS, AND HUNDREDS (PLACE-VALUE CONCEPTS)

INDICATORS								
Composes teen numbers from units of ten and ones and decomposes teen numbers into units of ten with leftover ones.	Bundles quantities into tens and ones.	Writes, reads, composes, and decomposes two-digit numbers as units of tens and leftover ones.	Determines 10 more/less than a given number without counting.			Writes, reads, composes and decomposes three-digit numbers using ones, tens, and hundreds.		

Conceptual Thread: UNITIZING QUANTITIES AND COMPARING UNITS TO THE WHOLE

INDICATORS								
	Partitions into and skip-counts by equal-sized units and recognizes that the results will be the same when counted by ones (e.g., counting a set by 1s or by 5s gives the same result).	Recognizes that, for a given quantity, increasing the number of sets decreases the number of objects in each set.	Recognizes and describes equal-sized sets as units within a larger set (doubling or tripling).	Keeps track of how many sets and how many in each set (e.g., 5 sets of 3 objects).	Recognizes number patterns in repeated units (e.g., when skip-counting by 2s, 5s, 10s).		Partitions whole into equal-sized units and identifies the number of units and the size of, or quantity in, each unit.	

Conceptual Thread: PARTITIONING QUANTITIES TO FORM FRACTIONS

INDICATORS								
Visually compares fraction sizes and names fractional amounts informally (e.g., halves).	Partitions wholes into equal-sized parts to make fair shares or equal groups.	Partitions wholes (e.g., intervals, sets) into equal parts and names the unit fractions.	Relates the size of parts to the number of equal parts in a whole (e.g., a whole cut into 2 equal pieces has larger parts than a whole cut into 3 equal pieces).	Compares unit fractions to determine relative size.	Counts by unit fractions (e.g., counting by $\frac{1}{4}$: $\frac{1}{4}, \frac{2}{4}, \frac{3}{4}$). Uses fraction symbols to name fractional quantities.	Uses the same unit fraction to build other fractions (e.g., $\frac{1}{3}$ and $\frac{1}{3}$ make $\frac{2}{3}$).	Compares related fractions (e.g., same numerator, same denominator, unit fractions, familiar fractions) to determine more/less or equal.	Partitions a number line (from 0 to 1) into equal parts and names the parts using fractions.

Number

BIG IDEA:
Quantities and numbers can be added and subtracted to determine how many or how much.

PURPOSE:
Addition and subtraction capitalize on the base-ten number system to make computation more efficient than counting.

F–3

Conceptual Thread: DEVELOPING CONCEPTUAL MEANING OF ADDITION AND SUBTRACTION

INDICATORS

- Models add-to and take-from situations with quantities to 10.
- Uses symbols and equations to represent addition and subtraction situations.
- Models and symbolizes addition and subtraction problem types (i.e., join, separate, part-part-whole, and compare).
- Relates addition and subtraction as inverse operations.
- Uses properties of addition and subtraction to solve problems (e.g., adding or subtracting 0, commutativity of addition).

Conceptual Thread: DEVELOPING FLUENCY OF ADDITION AND SUBTRACTION COMPUTATION

INDICATORS

- Fluently adds and subtracts within 5.
- Fluently adds and subtracts with quantities to 10.
  Fluently recalls complements to 10 (e.g., 6 + 4; 7 + 3).
- Extends known sums and differences to solve other equations (e.g., using 5 + 5 to add 5 + 6).
- Fluently adds and subtracts with quantities to 20.
- Develops efficient mental strategies and algorithms to solve equations with multi-digit numbers.
  Estimates sums and differences of multi-digit numbers.
- Fluently recalls complements to 100 (e.g., 64 + 36; 73 + 27).

Number

BIG IDEA:
Quantities and numbers can be grouped by, and partitioned into, units to determine how many or how much.

PURPOSE:
Multiplicative thinking through the operations of multiplication and division extends to problems using proportions, rates, and ratios.

F–3

Conceptual Thread: DEVELOPING CONCEPTUAL MEANING OF MULTIPLICATION AND DIVISION

INDICATORS

	Models and solves equal sharing problems to 10.	Groups objects in 2s, 5s, and 10s.	Models and solves equal sharing problems to 100.	Models and solves equal grouping problems to 100.	Models equal groups and uses multiplication symbol (×) to symbolize operation. Uses repeated addition of groups to solve problems.	Models and symbolizes single-digit multiplication problems involving equal groups or measures (i.e., equal jumps on a number line), and relates them to addition.	Uses properties of multiplication and division to solve problems (e.g., multiplying and dividing by 1, commutativity of multiplication).	Models and symbolizes equal sharing and grouping division problems, and relates them to subtraction. Begins to model single-digit and multi-digit multiplication and related division situations.

Conceptual Thread: DEVELOPING FLUENCY FOR MULTIPLICATION AND DIVISION COMPUTATION

INDICATORS

								Fluently multiplies and divides to 25.

Patterning and Algebra

BIG IDEA:
Regularity and repetition form patterns that can be generalized and predicted mathematically.

PURPOSE:
Predicting and generalizing patterns contribute to the reasoning necessary for algebra and algebraic thinking.

F–3

Conceptual Thread: IDENTIFYING, SORTING, AND CLASSIFYING ATTRIBUTES AND PATTERNS MATHEMATICALLY (E.G., NUMBER OF SIDES, SHAPE, SIZE)

INDICATORS

Identifies different attributes of objects (e.g., buttons with different sizes, colours, shapes, number of holes).	Identifies variations of an attribute (e.g., buttons can have 0, 2, or 4 holes).	Sorts a set of objects in different ways using a single attribute (e.g., buttons sorted by the number of holes or by shape).	Identifies the sorting rule used to sort sets.	Records and symbolizes attributes in different ways (e.g., using drawings, words, letters).	Sorts and classifies objects with multiple attributes (e.g., big red 3-sided shape).		Sorts and classifies repeating patterns based on the repeating unit (core) (e.g., AAB, ABB).	Sorts a set of objects based on two attributes.			

Conceptual Thread: IDENTIFYING, REPRODUCING, EXTENDING, AND CREATING PATTERNS THAT REPEAT

INDICATORS

Identifies and reproduces repeating patterns by matching elements involving sounds, actions, shapes, objects, etc.	Extends repeating patterns. Distinguishes between repeating and non-repeating sequences.	Identifies the repeating unit (core) of a pattern.	Predicts missing element(s) and corrects errors in repeating patterns. Recognizes similarities and differences between patterns.	Reproduces, creates, and extends repeating patterns based on copies of the repeating unit (core).	Represents the same pattern in different ways (i.e., translating to different symbols, objects, sounds, actions).	Compares repeating patterns and describes how they are alike and different.	Recognizes, extends, and creates repeating patterns based on two or more attributes (e.g., shape and orientation).	Identifies the repeating unit of patterns in multiple forms (e.g., circular, 2-D, 3-D).			

Conceptual Thread: REPRESENTING AND GENERALIZING INCREASING/DECREASING PATTERNS

INDICATORS

				Identifies and extends non-numeric increasing/ decreasing patterns (e.g., jump-clap; jump-clap-clap; jump-clap-clap-clap, etc.).	Identifies and extends familiar number patterns and makes connections to addition (e.g., skip-counting by 2s, 5s, 10s).	Identifies, reproduces, and extends increasing/ decreasing patterns concretely, pictorially, and numerically using repeated addition or subtraction.	Extends number patterns and finds missing elements (e.g., 1, 3, 5, ___, 9, ...).	Creates an increasing/ decreasing pattern (concretely, pictorially, and/ or numerically) and explains the pattern rule.	Generalizes and explains the rule for arithmetic patterns including the starting point and change (e.g., for 28, 32, 36, the rule is start at 28 and add 4 each time).	Extends and represents patterns involving simple multiplicative relationships (e.g., doubling: 1, 2, 4, 8, 16, ... and tripling: 1, 3, 9, 27, 81, ...).	Represents one-step addition and subtraction functions with equations (e.g., Input → +5 → Output).

Patterning and Algebra

BIG IDEA:
Patterns and relations can be represented with symbols, equations, and expressions.

PURPOSE:
Algebraic tools, such as variables, are efficient ways to represent, generalize, and analyze number patterns and properties.

F–3

Conceptual Thread: UNDERSTANDING EQUALITY AND INEQUALITY, BUILDING ON GENERALIZED PROPERTIES OF NUMBERS AND OPERATIONS

INDICATORS

Compares sets to determine more/less or equal.	Creates a set that is more/less or equal to a given set.	Models and describes equality (balance; the same as) and inequality (imbalance; not the same as).	Writes equivalent addition and subtraction equations in different forms (e.g., 8 = 5 + 3; 3 + 5 = 8).	Records different expressions of the same quantity as equalities (e.g., 2 + 4 = 5 + 1).	Decomposes and combines numbers in equations to make them easier to solve (e.g., 8 + 5 = 3 + 5 + 5).	Investigates addition and subtraction as inverse operations.	Explores properties of addition and subtraction (e.g., adding or subtracting 0, commutativity of addition).	Investigates multiplication and division as inverse operations. Explores properties of multiplication and division (e.g., multiplying and dividing by 1, commutativity of multiplication).	Writes equivalent multiplication and division equations in different forms (e.g., 3 × 4 = 12; 12 = 4 × 3).	Justifies equivalence/non-equivalence of expressions using relational thinking (e.g., 25 + 88 – 0 = 88 + 25).

Conceptual Thread: USING SYMBOLS, UNKNOWNS, AND VARIABLES TO REPRESENT MATHEMATICAL RELATIONS

INDICATORS

			Uses the equal (=) symbol in equations and knows its meaning (i.e., equivalent; is the same as).	Understands and uses the equal (=) and not equal (≠) symbols when comparing expressions.	Uses placeholders (e.g., ☐) for unknown values in equations.	Solves for an unknown value in a one-step addition and subtraction problem (e.g., n + 5 = 15).	Understands and uses the “greater than” (>) and “less than” (<) symbols when comparing expressions.		Solves for an unknown in a one-step multiplication problem (e.g., 3 × n = 12).	Uses variables (i.e., letters or icons) to describe relations (e.g., 10 = ☐ + ○).

Measurement

BIG IDEA:
Many things in our world (e.g., objects, spaces, events) have attributes that can be measured and compared.

PURPOSE:
Measurable attributes are a way to quantify and compare seemingly different objects.

Conceptual Thread: UNDERSTANDING ATTRIBUTES THAT CAN BE MEASURED

INDICATORS

Explores measurement of visible attributes (e.g., length, capacity, area) and non-visible attributes (e.g., mass, time, temperature). Uses language to describe attributes (e.g., long, tall, short, wide, heavy).	Understands that some things have more than one attribute that can be measured (e.g., an object can have both length and mass). Understands conservation of length (e.g., a string is the same length when straight and not straight), capacity (e.g., two differently shaped containers may hold the same amount), and area (e.g., two surfaces of different shapes can have the same area). Extends understanding of length to other linear measurements (e.g., height, width, distance around).

Conceptual Thread: DIRECTLY AND INDIRECTLY COMPARING AND ORDERING OBJECTS WITH THE SAME MEASURABLE ATTRIBUTE

INDICATORS

	Directly compares and orders objects by length (e.g., by aligning ends), mass (e.g., using a balance scale), and area (e.g., by covering). Compares objects indirectly by using an intermediary object. Uses relative attributes to compare and order (e.g., longer/longest, taller/tallest, shorter/shortest).	Compares and orders objects in more than one way using different measurable attributes.

Measurement

BIG IDEA:
Assigning a unit to a continuous attribute allows us to measure and make comparisons.

PURPOSE:
Measuring with units is a way we can count and compare "how much" based on continuous attributes that are not immediately countable.

F–3

Conceptual Thread: SELECTING AND USING NON-STANDARD UNITS TO ESTIMATE, MEASURE, AND MAKE COMPARISONS

INDICATORS					
Uses relative language to describe measures (e.g., close/far, tall, taller, tallest). Understands that units must be the same for measurements to be meaningful (e.g., must use same sized cubes to measure a desk). Understands that there should be no gaps or overlaps when measuring.	Uses whole number measures to estimate, measure, and compare (e.g., this book is 8 cubes long and my pencil is 5 cubes long). Demonstrates ways to estimate, measure, compare, and order objects by length, area, capacity, and mass with non-standard units by • using an intermediary object • using multiple copies of a unit • iterating a single unit Selects and uses appropriate non-standard units to estimate, measure, and compare length, area, capacity, and mass. Uses non-standard units as referents to estimate length (e.g., paper clips), area (e.g., square tiles), mass (e.g., cubes), and capacity (e.g., cups).			Recognizes that smaller units or partial units (e.g., halves) can increase precision.	

Conceptual Thread: SELECTING AND USING STANDARD UNITS TO ESTIMATE, MEASURE, AND MAKE COMPARISONS

INDICATORS					
			Uses standard sized objects to measure (e.g., 10 centicube rod).	Demonstrates ways to estimate, measure, compare, and order objects by length, perimeter, area, capacity, and mass with standard units by • using an intermediary object of a known measure • using multiple copies of a unit • iterating a single unit Selects and uses appropriate standard units to estimate, measure, and compare length, perimeter, area, capacity, mass, and time. Uses the measurement of familiar objects as benchmarks to estimate another measure in standard units (e.g., doorknob is 1 m from the ground; room temperature is 21°C).	

Conceptual Thread: UNDERSTANDING RELATIONSHIPS AMONG MEASUREMENT UNITS

INDICATORS					
	Compares different sized units and the effects on measuring objects (e.g., small cubes vs. large cubes to measure length).	Understands the inverse relationship between the size of the unit and the number of units (length, area, capacity, and mass).		Understands that decomposing and rearranging does not change the measure of an object.	Understands relationship of units of length (mm, cm, m), mass (g, kg), capacity (mL, L), and time (e.g., seconds, minutes, hours).

Geometry

BIG IDEA:
2-D shapes and 3-D solids can be analyzed and classified in different ways by their attributes.

PURPOSE:
Analyzing and classifying help us create categories of different objects by noticing and reasoning about their similarities.

Conceptual Thread: INVESTIGATING GEOMETRIC ATTRIBUTES AND PROPERTIES OF 2-D SHAPES AND 3-D SOLIDS

INDICATORS								
Explores and makes distinctions among different geometric attributes of 2-D shapes and 3-D solids (e.g., sides, edges, corners, surfaces, open/closed).	Recognizes, matches, and names familiar 2-D shapes (e.g., circle, triangle, square, rectangle) and 3-D solids (e.g., cube, cone).	Compares 2-D shapes and 3-D solids to find the similarities and differences.	Recognizes 2-D shapes and 3-D solids embedded in other images or objects.	Identifies 2-D shapes in 3-D objects in the environment.	Analyzes geometric attributes of 2-D shapes and 3-D solids (e.g., number of sides/edges, faces, corners).	Classifies and names 2-D shapes and 3-D solids based on common attributes.	Constructs and compares 2-D shapes and 3-D solids with given attributes (e.g., number of vertices, faces).	Classifies and names 2-D shapes and 3-D solids using geometric properties (e.g., a rectangle has 4 right angles).

Conceptual Thread: INVESTIGATING 2-D SHAPES, 3-D SOLIDS, AND THEIR ATTRIBUTES THROUGH COMPOSITION AND DECOMPOSITION

INDICATORS								
Models and draws 2-D shapes and 3-D solids from component parts.	Constructs composite pictures or structures with 2-D shapes and 3-D solids.	Constructs and identifies new 2-D shapes and 3-D solids as a composite of other 2-D shapes and 3-D solids.	Decomposes 2-D shapes and 3-D solids into other known 2-D shapes and 3-D solids.	Completes a picture outline with shapes in more than one way.	Constructs composite 2-D shapes and 3-D solids from verbal instructions, visualization, and memory.	Decomposes 2-D shapes and 3-D solids, and rearranges the parts to form new 2-D shapes and 3-D solids.	Equipartitions shapes and predicts total number of parts (e.g., partitions rectangle into squares).	Constructs 3-D solids from nets.

BIG IDEA:
2-D shapes and 3-D solids can be transformed in many ways and analyzed for change.

PURPOSE:
Noticing how objects change and stay the same when they are transformed and move through space develops spatial reasoning.

Conceptual Thread: EXPLORING 2-D SHAPES AND 3-D SOLIDS BY APPLYING AND VISUALIZING TRANSFORMATIONS

INDICATORS					
	Matches familiar 2-D shapes and 3-D solids (e.g., square, triangle, cone) in different orientations.	Identifies congruent 2-D shapes and 3-D solids through physical movement (e.g., by rotating).	Identifies congruent 2-D shapes and 3-D solids through visualizing transformations.	Predicts (visualizes) and describes the transformation (i.e., rotation, reflection, translation) needed to match two congruent shapes.	Performs and describes the transformations of shapes on a grid (includes direction and turn).

Geometry

BIG IDEA: (cont'd)
2-D shapes and 3-D solids can be transformed in many ways and analyzed for change.

PURPOSE:
Noticing how objects change and stay the same when they are transformed and move through space develops spatial reasoning.

Conceptual Thread: EXPLORING SYMMETRY TO ANALYZE 2-D SHAPES AND 3-D SOLIDS

INDICATORS

Physically explores symmetry of images by folding, cutting, and matching parts.	Identifies 2-D shapes and 3-D solids that have symmetry (limited to line or plane symmetry) (e.g., slicing an apple through its core).	Constructs and completes 2-D/3-D symmetrical designs.	Identifies line(s) of symmetry on regular 2-D shapes.	Compares and classifies 2-D shapes based on lines of symmetry.	Identifies 2-D shapes that have rotational symmetry.

BIG IDEA:
Objects can be located in space and viewed from multiple perspectives.

PURPOSE:
Representing space and spatial relations from different reference points is necessary for navigation and describing how objects move through space.

Conceptual Thread: LOCATING AND MAPPING OBJECTS IN SPACE

INDICATORS

Uses positional language and gesture to describe locations and movement, and give simple directions (e.g., in, on, around, right, left).	Uses relative positions to describe the location and order of objects (e.g., between, beside, next, before).	Locates objects in environment (e.g., playground) by interpreting a map.	Provides instructions to locate an object in the environment (e.g., listing instructions to find a hidden object in classroom).	Makes simple maps based on familiar settings.	Describes the movement of an object from one location to another on a grid map (e.g., moving 5 squares to the left and 3 squares down).	Describes the relative position of two locations on a map.

Conceptual Thread: VIEWING AND REPRESENTING OBJECTS FROM MULTIPLE PERSPECTIVES

INDICATORS

Recognizes and draws 2-D images of 3-D solids.	Recognizes 3-D solids from multiple perspectives.	Visualizes and describes the view of a 3-D solid from multiple perspectives (e.g., top/front/side views).	Visualizes and creates 2-D representations (e.g., top/front/side views) of 3-D objects.	Completes 3-D compositions from 2-D drawings.	Creates simple perspective drawings of 3-D objects from different views.

Data Management and Probability

BIG IDEA:
Formulating questions, collecting data, and consolidating data in visual and graphical displays help us understand, predict, and interpret situations that involve uncertainty, variability, and randomness.

PURPOSE:
Engaging in a process for comparing past events and predicting future uncertainties helps us make sense of our world and make better decisions.

Conceptual Thread: FORMULATING QUESTIONS TO LEARN ABOUT GROUPS, COLLECTIONS, AND EVENTS BY COLLECTING RELEVANT DATA

INDICATORS	Formulates questions that can be addressed through simple surveys (e.g., Should we get bananas for the class picnic?).	Formulates questions that can be addressed by counting collections (e.g., How many of us come to school by bus, by car, walking?) and questions that can be addressed through observation (e.g., How many people do/do not use the crosswalk?).	Formulates questions that can be addressed through simple experiments (e.g., Which way will the cup land?). Clarifies and refines questions to make them statistical in nature (e.g., Do you like bananas or strawberries? vs. Should we purchase bananas or strawberries for our class fruit snack?).

Conceptual Thread: COLLECTING DATA AND ORGANIZING IT INTO CATEGORIES

INDICATORS	Collects data from simple surveys concretely (e.g., shoes, popsicle sticks) or using simple records (e.g., check marks, tallies).	Collects data by determining (most) categories in advance (e.g., yes/no; list of choices). Orders categories by frequency (e.g., most to least). Generates data by counting or measuring (e.g., linking cube tower: number of cubes or height). Limited to whole units.	Chooses an appropriate method to collect, categorize, and organize data. Collects and compares data from multiple trials of the same experiment.

Conceptual Thread: CREATING GRAPHICAL DISPLAYS OF COLLECTED DATA

INDICATORS	Creates displays by arranging concrete data or with simple picture graphs (using actual objects or images).	Creates displays using objects or simple pictographs (may use symbol for data). Organizes display so categories are ordered by frequency. Creates one-to-one displays (e.g., line plot, dot plot, bar graph). Displays data collected in more than one way and describes the differences (e.g., bar graph, pictograph).	Creates simple many-to-one displays (e.g., pictograph where each symbol represents 5 data points). Creates displays in different formats and scales (e.g., horizontal/vertical, one-to-one/many-to-one, bar graph, line plot). Creates displays to represent data with two or more attributes (e.g., Carroll diagram, Venn diagram).

Data Management and Probability

BIG IDEA: (cont'd)
Formulating questions, collecting data, and consolidating data in visual and graphical displays help us understand, predict, and interpret situations that involve uncertainty, variability, and randomness.

PURPOSE:
Engaging in a process for comparing past events and predicting future uncertainties helps us make sense of our world and make better decisions.

Conceptual Thread: READING AND INTERPRETING DATA DISPLAYS

INDICATORS		
Determines the most frequent response/outcome on the data display. Interprets displays by noting outcomes that are more/less/same.	Interprets displays by noting how many more/less than other categories.	Reads and interprets information from data displays (e.g., orders by frequency, compares frequencies, determines total number of data points). Describes the shape of data in informal ways (e.g., range, spread, gaps, mode). Critiques whether the display used is appropriate for the data collected.

Conceptual Thread: USING THE LANGUAGE OF CHANCE TO DESCRIBE AND PREDICT EVENTS

INDICATORS			
	Describes the likelihood of an event (e.g., impossible, unlikely, certain).	Makes predictions based on the question, context, and data presented. Lists the possible outcomes of independent events (e.g., tossing coin, rolling number cube, spinning a spinner). Compares the likelihood of two events (e.g., more likely, less likely, equally likely).	Predicts the likelihood of an outcome in simple probability experiments or games. Investigates and describes the fairness of games. Understands that data collected about past events can help predict the likelihood of future events, but not with certainty.

Conceptual Thread: DRAWING CONCLUSIONS BY MAKING INFERENCES AND JUSTIFYING DECISIONS BASED ON DATA COLLECTED

INDICATORS		
Uses data collected and displayed to answer initial question directly.	Poses and answers questions about data collected and displayed.	Makes simple inferences about a population based on sample data collected. Explains why a game is fair or unfair. Judges the validity of statements made from displayed data.