



***The Zula Patrol Curriculum Alignment with
Virginia Standards of Learning Grades Pre-K - 3***

Legend

SM = Simple Machines Exploration Mission Module

MSCR = Mixtures, Solutions, and Chemical Reactions Exploration Mission Module

FR = Force Exploration Mission Module

HB = Habitats Exploration Mission Module

MA = Matter Exploration Mission Module

LT = Light Exploration Mission Module

H2O = Water Exploration Mission Module

PALC = Plants, Animals, and Life Cycles Mission Module

RS = Rocks and Soil Mission Module

WE = Weather Mission Module

All = All current and future Zula activities and lesson plans

FK = Future Mission Exploration Modules

Pre-Kindergarten

Science

Scientific Investigation, Reasoning, and Logic – Block 1

The child will make observations, separate objects into groups based on similar attributes, compare lengths and mass, and develop questions based upon observation using the five senses.

- a) Identify basic properties of objects by direct observation (All)
- b) Describe objects using pictures and words (All)
- c) Sequence objects according to size (SM, MSCR, FK)
- d) Separate a set of objects into two groups based on one physical attribute (SM, RS, H2O, MSCR, LT, FR, FK)
- e) Compare the length and mass of different objects (H2O, HB, LT, MSCR, SM, FR, FK)
- f) Identify the body parts that correspond with each of the five senses (FK)

Force, Motion, and Energy – Block 2

The child will describe and categorize properties of materials using magnets.

- a) Describe the effects magnets have on other objects; they stick to some but not to others. Introduce the words “attracted to” and “not attracted to” (FK)
- b) Describe the effects magnets have on other magnets; they stick together or push apart (FK)

Matter – Block 3

The child will develop language to describe an object’s position, movement and physical properties. The child will also describe properties of water.

- a) Identify colors (red, orange, yellow, green, blue, purple) and white and black (All)
- b) Identify shapes (circle, triangle, square, and rectangle) of an object (SM, FR, FK)
- c) Identify textures (rough/smooth) and feel (hard/soft) (SM, FR, H₂O, FK)
- d) Describe relative size and weight (big/little, large/small, heavy/light, wide/thin, long/short) (H₂O, SM, FK)
- e) Describe position (over/under, in/out, above/below) and speed (fast/slow) (SM, FR, LT, MSCR, FK)
- f) Recognize water in its three forms (solid, liquid, gas) (H₂O, MA, FK)

Life Processes – Block 4

The child will compare the growth of a person to the growth of a plant and an animal and be able to describe basic life processes and basic needs of each.

- a) Describe what living things need to live and grow (food, water, and air) (PALC, HB, FK)
- b) Recognize that “baby” plants and animals are similar but not identical to their parents and to one another (PALC, FK)

Interrelationships in Earth/Space Systems – Block 5

The child will be able to create a shadow.

- a) Create a shadow and describe how it was created (LT)

Earth Patterns, Cycles, and Change – Block 6

The child will identify simple patterns in his/her daily life. The child will identify things that change over time.

- a) Make daily weather observations (WE, FK)
- b) Observe and classify the shapes and forms of many common natural objects including seeds, cones, and leaves (PALC, FK)
- c) Recognize the order or stages of animal and plant growth (PALC, HB, FK)
- d) Describe home and school routines (FK)

Resources – Block 7

The child will practice reusing, recycling and conserving energy on a daily basis.

- a) Recognize that some objects can be recycled (FK)
- b) Recognize that some objects can be reused (FK)
- c) Identify ways that energy can be conserved (FK)

Literacy

Oral Expression – Block 1

The child will develop listening and speaking skills by communicating experiences and ideas through oral expression.

- a) Listen with increasing attention to spoken language, conversations, and stories read aloud. (All)
- b) Correctly identify characters, objects, and actions in a picture book, as well as stories read aloud, and begin to comment about each (All)
- c) Make predictions about what might happen in a story (All)
- d) Use two words to ask and answer questions that include actions (All)
- e) Use appropriate language for a variety of purposes, e.g., ask questions, express needs, get information (All)
- f) Engage in turn taking exchanges and rules of polite conversation with adults and peers (All)
- g) Listen attentively to stories in a whole-class setting (All)

Vocabulary – Block 2

The child will develop an understanding of words and word meanings through the use of appropriate vocabulary.

- a) Use single words to label objects (All)
- b) Listen with increasing understanding to conversations and directions (All)
- c) Follow simple, one-step oral directions (All)
- d) Engage in turn taking exchanges with adults and peers (All)
- e) Use new vocabulary with increasing frequency to express and describe feelings and ideas (All)
- f) Expose children to a wide-variety of experiences to build vocabulary (All)

Print and Book Awareness – Block 5

The child will demonstrate knowledge of print concepts.

- a) Identify the front of a book (All)
- b) Identify the location of the title of a book (All)
- c) Identify where reading begins on a page (first word or group of words) (All)
- d) Demonstrate directionality of reading left to right on a page (All)
- e) Identify part of the book that “tells the story” (print as opposed to pictures) (All)
- f) Turn pages one at a time from the front to the back of a book (All)

Written Expression – Block 6

The child will write using a variety of materials.

- a) Distinguish print from pictures (All)
- b) Copy or write letters using various materials (All)

Mathematics

Number and Number Sense – Block 1

The child will count with understanding, and use numbers to tell how many, describe order, and compare.

- a) Count to 20 or more (SM, H2O, FK)
- b) Count a group (set/collection) of three to five objects by touching each object as it is counted and saying the correct number (one-to-one correspondence) (FR, SM, H2O, HB, PALC, MSCR, RS, FK)
- c) Count the items in a collection of one to five items and know the last counting word tells “how many” (SM, MA, RS, HB, PALC, MSCR, H2O, FK)
- d) Compare two groups (sets/collections) of matched objects (less than five) and describe the groups using the terms more, fewer, or same (SM, RS, HB, MSCR, FK)

Computation – Block 2

The child will recognize change in groups (sets/collections).

- a) Describe changes in groups (sets/collections) by using more when groups of objects (sets) are combined (added together) (SM, H2O, FK)
- b) Describe changes in groups (sets/collections) by using fewer when groups of objects (sets) are separated (taken away) (SM, H2O, FK)

Measurement – Block 3

The child will identify and compare the attributes of length, capacity, weight, time, and temperature.

- a) Recognize attributes of length by using the terms longer or shorter when comparing two objects (SM, LT, FR, FK)
- b) Know the correct names for the standard tools used for telling time and temperature; and measuring length, capacity, and weight (clocks, calendars, thermometers, rulers, measuring cups, and scales) (SM, MSCR, H2O, LT, FR, FK)
- c) Use the appropriate vocabulary when comparing temperatures, e.g., hot, cold
- d) Use appropriate vocabulary when describing duration of time, e.g., hour, day, week, month, morning, afternoon, night, day (LT, WE, FK)

Geometry – Block 4

The child will describe simple geometric shapes (circle, triangle, rectangle, and square) and indicate their position in relation to him/herself and to other objects.

- a) Match and sort shapes (circle, triangle, rectangle, and square) (SM, FR, FK)
- b) Describe how shapes are similar and different (SM, FR, FK)
- c) Recognize shapes (circle, triangle, rectangle, and square) by pointing to the appropriate figure when the teacher names the shape (SM, FR, FK)
- d) Describe the position of objects in relation to other objects and themselves using the terms next to, beside, above, below, under, over, top, and bottom (SM, LT, MSCR, FR, FK)

Data Collection and Statistics – Block 5

The child will participate in the data gathering process in order to answer questions of interest.

- a) Collect information to answer questions of interest to children (All)
- b) Use descriptive language to compare data in objects and picture graphs by identifying which is more, fewer, or the same (All)

Patterns and Relationships – Block 6

The child will identify simple patterns of concrete objects, and use them to recognize relationships.

- a) Sort and classify objects according to one or two attributes (color, size, shape, and texture) (SM, FR, RS, MSCR, FK)

Kindergarten

Science

Scientific Investigation, Reasoning, and Logic

- K.1 The student will conduct investigations in which
 - a) Basic properties of objects are identified by direct observation (All)
 - b) Observations are made from multiple positions to achieve different perspectives (All)

- c) Objects are described both pictorially and verbally (All)
 - d) A set of objects is sequenced according to size (SM, MSCR, FK)
 - e) A set of objects is separated into two groups based on a single physical attribute (SM, RS, HB, PALC, LT, FR, H2O, MSCR, FK)
 - f) Nonstandard units are used to measure common objects (SM, FK)
 - g) A question is developed from one or more observations (All)
 - h) Picture graphs are constructed using 10 or fewer units (SM, WE, MA, RS, HB, PALC, LT, FR, FK)
 - j) Unusual or unexpected results in an activity are recognized (All)
- K.2 Students will investigate and understand that humans have senses that allow one to seek, find, take in, and react or respond to information in order to learn about one's surroundings. Key concepts include
- a) Five senses and corresponding sensing organs (taste – tongue, touch – skin, smell – nose, hearing – ears, and sight – eyes) (FK)
 - b) Sensory descriptors (sweet, sour, bitter, salty, rough/smooth, hard/soft, cold, warm, hot, loud/soft, high/low, bright/dull) (FK)

Force, Motion, and Energy

- K.3 The student will investigate and understand that magnets have an effect on some materials, make some things move without touching them, and have useful applications. Key concepts include
- a) Attraction/non-attraction, push/pull, attract/repel, and metal/nonmetal (FK)
 - b) Useful applications (refrigerator magnet, can opener, magnetized screwdriver, and magnetic games) (FK)

Matter

- K.4 The student will investigate and understand that the position, motion, and physical properties of an object can be described. Key concepts include
- a) Colors (red, orange, yellow, green, blue, purple), white, and black (All)
 - b) Shapes (circle, triangle, square, and rectangle) and forms (flexible/stiff, straight/curved) (SM, FR, H2O, FK)
 - c) Textures (rough/smooth) and feel (hard/soft) (SM, FR, H2O, FK)
 - d) Relative size and weight (big/little, large/small, heavy/light, wide/thin, long/short) (SM, H2O, HB, LT, FR, MSCR, FK)
 - e) Position (over/under, in/out, above/below, left/right) and speed (fast/slow. (SM, FR, LT, MSCR, FK)
- K.5 The student will investigate and understand that water flows and has properties that can be observed and tested. Key concepts include
- a) Water occurs in different states (solid, liquid, gas) (MA, H2O, FK)
 - b) The natural flow of water is downhill (FK)
 - c) Some materials float in water, while others sink (H2O, FK)

Life Processes

- K.6 The student will investigate and understand basic needs and life processes of plants and animals. Key concepts include
- a) Living things change as they grow, and they need food, water, and air to survive (PALC, HB, FK)

- b) Plants and animals live and die (go through a life cycle) (PALC, FK)
- c) Offspring of plants and animals are similar but not identical to their parents and to one another. (PALC, FK)

Interrelationships in Earth/Space Systems

- K.7 The student will investigate and understand that shadows occur when light is blocked by an object. Key concepts include
- a) Shadows occur in nature when sunlight is blocked by an object (LT, FK)
 - b) Shadows can be produced by blocking artificial light sources (LT, FK)

Earth Patterns, Cycles, and Change

- K.8 The student will investigate and understand simple patterns in his/her daily life. Key concepts include
- a) Weather observations (WE, FK)
 - b) The shapes and forms of many common natural objects including seeds, cones, and leaves (PALC, FK)
 - c) Animal and plant growth (PALC, FK)
 - d) Home and school routines (FK)
- K.9 The student will investigate and understand that change occurs over time and rates may be fast or slow. Key concepts include
- a) Natural and human-made things may change over time (FK)
 - b) Changes can be noted and measured. (FK)

Resources

- K.10 The student will investigate and understand that materials can be reused, recycled, and conserved. Key concepts include
- a) Materials and objects can be used over and over again (FK)
 - b) Everyday materials can be recycled (FK)
 - c) Water and energy conservation at home and in school helps preserve resources for future use. (FK)

English

Oral Language

- K.1 The student will demonstrate growth in the use of oral language.
- i) Listen to a variety of literary forms, including stories and poems. (All)
 - j) Participate in choral speaking and recite short poems, rhymes, songs, and stories with repeated patterns. (All)
 - k) Participate in creative dramatics. (All)
- K.2 The student will use listening and speaking vocabularies.
- a) Use number words. (All)
 - b) Use words to describe/name people, places, and things. (All)
 - c) Use words to describe location, size, color, and shape. (All)
 - d) Use words to describe actions. (All)

- e) Ask about words not understood. (All)
 - f) Follow one-step and two-step directions. (All)
 - g) Begin to ask how and why questions. (All)
- K.3 The student will build oral communication skills.
- a) Begin to follow implicit rules for conversation, including taking turns and staying on topic. (All)
 - b) Express ideas and needs in complete sentences. (All)
 - c) Begin to use voice level, phrasing, and intonation appropriate for language situation. (All)
 - d) Listen and speak in informal conversations with peers and adults. (All)
 - e) Begin to initiate conversations. (All)
 - f) Participate in discussions about books and specific topics. (All)

Reading

- K.5 The student will understand how print is organized and read.
- a) Hold print materials in the correct position. (All)
 - b) Identify the front cover, back cover, and title page of a book. (All)
 - c) Follow words from left to right and from top to bottom on a printed page. (All)
- K.6 The student will demonstrate an understanding that print makes sense.
- a) Explain that printed materials provide information. (All)
 - d) Read and explain own writing and drawings. (All)
- K.8 The student will demonstrate comprehension of fiction and nonfiction.
- a) Use pictures to make predictions about content. (All)
 - b) Retell familiar stories, using beginning, middle, and end. (All)
 - c) Discuss characters, setting, and events. (All)
 - d) Use story language in discussions and retellings. (All)
 - e) Identify what an author does and what an illustrator does. (All)
 - f) Identify the topics of nonfiction selections. (All)

Writing

- K.11 The student will write to communicate ideas.
- a) Draw pictures and/or use letters and phonetically spelled words to write about experiences, stories, people, objects, or events. (All)
 - b) Write left to right and top to bottom. (All)
- K.12 The student will explore the uses of available technology for reading and writing. (All)

Mathematical Thinking

Number and Number Sense

- K.1 The student, given two sets containing 10 or fewer concrete items, will identify and describe one set as having more, fewer, or the same number of members as the other set, using the concept of one-to-one correspondence. (RS, HB, MSCR, SM, FK)
- K.2 The student, given a set containing 10 or fewer concrete items, will (RS, HB, FK)
- a) tell how many are in the set by counting the number of items orally;

- K.3 The student, given an ordered set of three objects and/or pictures, will indicate the ordinal position of each item, first through third, and the ordered position of each item from left-to-right, right-to-left, top-to-bottom, and/or bottom-to-top. (PALC, FR, MSCR, SM, FK)

Measurement

- K.8 The student will identify the instruments used to measure length (ruler), weight (scale), time (clock: digital and analog; calendar: day, month, and season), and temperature (thermometer). (SM, FR, H2O, MA, WE, LT, FK)
- K.10 The student will compare two objects or events, using direct comparisons or nonstandard units of measure, according to one or more of the following attributes: length (shorter, longer), height (taller, shorter), weight (heavier, lighter), temperature (hotter, colder). Examples of nonstandard units include foot length, hand span, new pencil, paper clip, block. (SM, H2O, WE, MA, HB, LT, FR, MSCR, FK)

Geometry

- K.11 The student will identify, describe, and draw two-dimensional (plane) geometric figures (circle, triangle, square, and rectangle). (SM, FR, FK)
- K.12 The student will describe the location of one object relative to another (above, below, next to) and identify representations of plane geometric figures (circle, triangle, square, and rectangle) regardless of their position and orientation in space. (SM, FK)
- K.13 The student will compare the size (larger, smaller) and shape of plane geometric figures (circle, triangle, square, and rectangle). (SM, FK)

Probability and Statistics

- K.14 The student will gather data relating to familiar experiences by counting and tallying. (All)
- K.15 The student will display objects and information, using objects graphs, pictorial graphs, and tables. (All)

Patterns, Functions, and Algebra

- K.17 The student will sort and classify objects according to similar attributes (size, shape, and color). (SM, RS, HB, PALC, LT, FR, MSCR, H2O, FK)
- K.18 The student will identify, describe, and extend a repeating relationship (pattern) found in common objects, sounds, and movements. (FR, FK)

Grade One

Science

Scientific Investigation, Reasoning, and Logic

- 1.1 The student will conduct investigations in which
- Differences in physical properties are observed using the senses (All)
 - Simple tools are used to enhance observations (All)
 - Objects or events are classified and arranged according to attributes or properties (SM, H2O, MSCR, FR, HB, RS, FK)
 - Observations and data are communicated orally and with simple graphs, pictures, Written statements, and numbers (All)
 - Length, mass, and volume are measured using standard and nonstandard units (SM, H2O, MSCR, LT, FR, HB, RS, FK)
 - Predictions are based on patterns of observation rather than random guesses (All)
 - Simple experiments are conducted to answer questions (All)
 - Inferences are made and conclusions are drawn about familiar objects and events (All)

Force, Motion, and Energy

- 1.2 The student will investigate and understand that moving objects exhibit different kinds of motion. Key concepts include
- Objects may have straight, circular, and back-and-forth motions (SM, FR)
 - Objects may vibrate and produce sound (FK)
 - Pushes or pulls can change the movement of an object (FR, SM, FK)
 - The motion of objects may be observed in toys and in playground activities (SM, FR)

Matter

- 1.3 The student will investigate and understand how different common materials interact with water. Key concepts include
- Some liquids will separate when mixed with water, but others will not (MSCR, FK)
 - Some common solids will dissolve in water, but others will not (MSCR, FK)
 - Some substances will dissolve more readily in hot water than in cold water. (MSCR, FK)

Life Processes

- 1.4 The student will investigate and understand that plants have life needs and functional parts and can be classified according to certain characteristics. Key concepts include
- Needs (food, air, water, light, and a place to grow) (PALC, HB, FK)
 - Parts (seeds, roots, stems, leaves, blossoms, fruits) (PALC, FK)
 - Characteristics (edible/nonedible, flowering/nonflowering, evergreen/deciduous) (FK)

- 1.5 The student will investigate and understand that animals, including people, have life needs and specific physical characteristics and can be classified according to certain characteristics. Key concepts include
- Life needs (air, food, water, and a suitable place to live) (PALC, HB, FK)
 - Physical characteristics (body coverings, body shape, appendages, and methods of movement) (PALC, HB, RS, FK)
 - Other characteristics (wild/tame, water homes/land homes) (FK)

Interrelationships in Earth/Space Systems

- 1.6 The student will investigate and understand the basic relationships between the sun and the Earth. Key concepts include
- The sun is the source of heat and light that warms the land, air, and water (WE, LT, FK)
 - Night and day are caused by the rotation of the Earth.(LT, FK)

Earth Patterns, Cycles, and Change

- 1.7 The student will investigate and understand the relationship of seasonal change and weather to the activities and life processes of plants and animals. Key concepts include how temperature, light, and precipitation bring about changes in
- Plants (growth, budding, falling leaves, and wilting) (FK)
 - Animals (behaviors, hibernation, migration, body covering, and habitat); and (HB, FK)
 - People (dress, recreation, and work) (FK)

Resources

- 1.8 The student will investigate and understand that natural resources are limited. Key concepts include
- Identification of natural resources (plants and animals, water, air, land, minerals, forests, and soil) (FK)
 - Factors that affect air and water quality (FK)
 - Recycling, reusing, and reducing consumption of natural resources (FK)

Language and Literacy

Oral Language

- 1.1 The student will continue to demonstrate growth in the use of oral language.
- Listen and respond to a variety of media, including books, audiotapes, videos, and other age-appropriate materials. (All)
 - Tell and retell stories and events in logical order. (All)
 - Participate in a variety of oral language activities, including choral speaking and reciting short poems, rhymes, songs, and stories with repeated patterns. (All)
 - Express ideas orally in complete sentences. (All)
- 1.2 The student will continue to expand and use listening and speaking vocabularies.
- Increase oral descriptive vocabulary. (All)
 - Begin to ask for clarification and explanation of words and ideas. (All)
 - Follow simple two-step oral directions. (All)

- d) Give simple two-step oral directions. (All)
- 1.3 The student will adapt or change oral language to fit the situation.
- a) Initiate conversation with peers and adults. (All)
 - b) Follow rules for conversation. (All)
 - c) Use appropriate voice level in small-group settings. (All)
 - d) Ask and respond to questions in small-group settings. (All)

Reading

- 1.5 The student will apply knowledge of how print is organized and read.
- a) Read from left to right and from top to bottom. (All)
 - b) Match spoken words with print. (All)
 - c) Identify letters, words, and sentences. (All)
- 1.8 The student will read familiar stories, poems, and passages with fluency and expression. (All)
- 1.9 The student will read and demonstrate comprehension of a variety of fiction and nonfiction.
- a) Preview the selection. (All)
 - b) Set a purpose for reading. (All)
 - c) Relate previous experiences to what is read. (All)
 - d) Make predictions about content. (All)
 - e) Ask and answer who, what, when, where, why, and how questions about what is read. (All)
 - f) Identify characters, setting, and important events. (All)
 - g) Retell stories and events, using beginning, middle, and end. (All)
 - h) Identify the topic or main idea. (All)

Writing

- 1.11 The student will print legibly.
- a) Form letters. (All)
 - b) Space words and sentences. (All)
- 1.12 The student will write to communicate ideas.
- a) Generate ideas. (All)
 - b) Focus on one topic. (All)
 - c) Use descriptive words when writing about people, places, things, and events. (All)
 - g) Share writing with others. (All)
 - h) Use available technology. (All)

Mathematical Thinking

Measurement

- 1.12 The student will use nonstandard units to measure length and weight. (SM, LT, FR, HB, RS, H2O, FK)

- 1.13 The student will compare the volumes of two given containers by using concrete materials (e.g., jelly beans, sand, water, rice). (H2O, MSCR, FK)
- 1.14 The student will compare the weights of two objects, using a balance scale. (SM, FK)

Geometry

- 1.15 The student will describe the proximity of objects in space (*near, far, close by, below, above, up, down, beside, and next to*). (SM, FK)
- 1.16 The student will draw, describe, and sort plane geometric figures (triangle, square, rectangle, and circle) according to number of sides, corners, and square corners. (SM, FR, FK)
- 1.17 The student will identify and describe objects in his/her environment that depict plane geometric figures (triangle, rectangle, square, and circle). (SM, LT, FK)

Probability and Statistics

- 1.18 The student will investigate, identify, and describe various forms of data collection in his/her world (e.g., recording daily temperature, lunch count, attendance, and favorite ice cream), using tables, picture graphs, and object graphs. (All)
- 1.19 The student will interpret information displayed in a picture or object graph, using the vocabulary *more, less, fewer, greater than, less than, and equal to*. (SM, H2O, FK)

Patterns, Functions, and Algebra

- 1.20 The student will sort and classify concrete objects according to one or more attributes, including color, size, shape, and thickness. (SM, H2O, FR, HB, RS, FK)
- 1.21 The student will recognize, describe, extend, and create a wide variety of patterns, including rhythmic, color, shape, and numerical. Patterns will include both growing and repeating patterns. Concrete materials and calculators will be used by students. (LT, FR, FK)

Grade Two

Science

Scientific Investigation, Reasoning, and Logic

- 2.1 The student will conduct investigations in which
- Observation is differentiated from personal interpretation, and conclusions are drawn based on observations (All)
 - Observations are repeated to ensure accuracy (All)
 - Two or more attributes are used to classify items (SM, H2O, FR, HB, RS, FK)
 - Conditions that influence a change are defined (MSCR, MA, RS, WE, FK)
 - Length, volume, mass, and temperature measurements are made in metric units (centimeters, meters, liters, degrees Celsius, grams, kilograms) and standard English units (inches, feet, yards, cups, pints, quarts, gallons, degrees Fahrenheit, ounces, pounds) (All)

- f) Pictures and bar graphs are constructed using numbered axes (SM, LT, WE, MA, PALC, HB, RS, FK)
- g) Unexpected or unusual quantitative data are recognized (All)
- h) Simple physical models are constructed. (FK)

Force, Motion, and Energy

- 2.2 The student will investigate and understand that natural and artificial magnets have certain characteristics and attract specific types of metals. Key concepts include
- a) Magnetism, iron, magnetic/nonmagnetic, poles, attract/repel (MSCR, FK)
 - b) Important applications of magnetism including the magnetic compass. (FK)

Matter

- 2.3 The student will investigate and understand basic properties of solids, liquids, and gases. Key concepts include
- a) Mass and volume (MA, FK)
 - b) Processes involved with changes in matter from one state to another (condensation, evaporation, melting, and freezing). (MA, FK)

Life Processes

- 2.4 The student will investigate and understand that plants and animals undergo a series of orderly changes in their life cycles. Key concepts include
- a) Some animals (frogs and butterflies) undergo distinct stages during their lives, while others generally resemble their parents (PALC, FK)
 - b) Flowering plants undergo many changes, from the formation of the flower to the development of the fruit. (FK)

Living Systems

- 2.5 The student will investigate and understand that living things are part of a system. Key concepts include
- a) Living organisms are interdependent with their living and nonliving surroundings (HB, PALC, FK)
 - b) Habitats change over time due to many influences. (HB, FK)

Interrelationships in Earth/Space Systems

- 2.6 The student will investigate and understand basic types, changes, and patterns of weather. Key concepts include
- a) Temperature, wind, precipitation, drought, flood, and storms (WE, FK)
 - b) The uses and importance of measuring and recording weather data. (WE, FK)

Earth Patterns, Cycles, and Change

- 2.7 The student will investigate and understand that weather and seasonal changes affect plants, animals, and their surroundings. Key concepts include
- a) Effects on growth and behavior of living things (migration, hibernation, camouflage, adaptation, dormancy) (FK)
 - b) Weathering and erosion of the land surface. (FK)

Resources

- 2.8 The student will investigate and understand that plants produce oxygen and food, are a source of useful products, and provide benefits in nature. Key concepts include
- Important plant products (fiber, cotton, oil, spices, lumber, rubber, medicines, and paper) (HB, FK)
 - The availability of plant products affects the development of a geographic area (FK)
 - Plants provide homes and food for many animals and prevent soil from washing away. (HB, FK)

Language and Literacy

Oral Language

- 2.1 The student will demonstrate an understanding of oral language structure.
- Create oral stories to share with others. (All)
 - Create and participate in oral dramatic activities. (All)
- 2.2 The student will continue to expand listening and speaking vocabularies.
- Use words that reflect a growing range of interests and knowledge. (All)
 - Clarify and explain words and ideas orally. (All)
 - Follow oral directions with three or four steps. (All)
 - Give three-step and four-step directions. (All)
- 2.3 The student will use oral communication skills.
- Use oral language for different purposes: to inform, to persuade, and to entertain. (All)
 - Share stories or information orally with an audience. (All)
 - Participate as a contributor and leader in a group. (All)
 - Summarize information shared orally by others. (All)

Reading

- 2.7 The student will read fiction and nonfiction, using a variety of strategies independently.
- Preview the selection by using pictures, diagrams, titles, and headings. (All)
 - Set purpose for reading. (All)
 - Read stories, poems, and passages with fluency and expression. (All)
- 2.8 The student will read and demonstrate comprehension of fiction and nonfiction.
- Make predictions about content. (All)
 - Read to confirm predictions. (All)
 - Relate previous experiences to the topic. (All)
 - Ask and answer questions about what is read. (All)
 - Locate information to answer questions. (All)
 - Describe characters, setting, and important events in fiction and poetry. (All)
 - Identify the problem, solution, and main idea. (All)
- 2.9 The student will demonstrate comprehension of information in reference materials.
- Use a table of contents. (All)
 - Use pictures and charts. (All)
 - Use dictionaries and indices. (All)

Writing

- 2.11 The student will write stories, letters, and simple explanations.
- a) Generate ideas before writing. (All)
 - b) Organize writing to include a beginning, middle, and end. (All)
 - d) Use available technology. (All)

Mathematical Thinking

Measurement

- 2.12 The student will estimate and then use a ruler to make linear measurements to the nearest centimeter and inch, including measuring the distance around a polygon in order to determine perimeter. (SM, LT, FR, HB, RS, FK)
- 2.15 The student will estimate and then determine weight/mass of familiar objects in pounds and/or kilograms, using a scale. (SM, H2O, FK)
- 2.17 The student will use actual measuring devices to compare metric and U.S. Customary units (cups, pints, quarts, gallons, and liters) for measuring liquid volume, using the concepts of *more*, *less*, and *equivalent*. (H2O, MSCR, RS, FK)
- 2.19 The student will read the temperature on a Celsius and/or Fahrenheit thermometer to the nearest 10 degrees. (WE, H2O, MA, FK)

Geometry

- 2.20 The student will identify, describe, and sort three-dimensional (solid) concrete figures, including a cube, rectangular solid (prism), square pyramid, sphere, cylinder, and cone, according to the number and shape of the solid's faces, edges, and corners. (SM, FR, FK)
- 2.22 The student will compare and contrast plane and solid geometric shapes (circle/sphere, square/cube, and rectangle/rectangular solid). (SM, FR, FK)

Probability and Statistics

- 2.23 The student will read, construct, and interpret a simple picture and bar graph. (SM, LT, WE, MA, PALC, HB, RS, FK)

Patterns, Functions, and Algebra

- 2.25 The student will identify, create, and extend a wide variety of patterns, using numbers concrete objects and pictures. (LT, FR, FK)

Grade Three

Science

Scientific Investigation, Reasoning, and Logic

- 3.1 The student will plan and conduct investigations in which
- Predictions and observations are made (All)
 - Objects with similar characteristics are classified into at least two sets and two subsets (FR, HB, RS, MSCR, H2O, SM, FK)
 - Questions are developed to formulate hypotheses (All)
 - Volume is measured to the nearest milliliter and liter (FK)
 - Length is measured to the nearest centimeter (SM, FR, LT, HB, RS, FK)
 - Mass is measured to the nearest gram; (SM, H2O, FK)
 - Data are gathered, charted, and graphed (line plot, picture graph, and bar graph) (All)
 - Temperature is measured to the nearest degree Celsius (MA, WE, H2O, FK)
 - Time is measured to the nearest minute (FK)
 - Inferences are made and conclusions are drawn (All)
 - Natural events are sequenced chronologically. (All)

Force, Motion, and Energy

- 3.2 The student will investigate and understand simple machines and their uses. Key concepts include
- Types of simple machines (lever, screw, pulley, wheel and axle, inclined plane, and wedge) (SM, FK)
 - How simple machines function (SM, FK)
 - Compound machines (scissors, wheelbarrow, and bicycle) (SM, FK)
 - Examples of simple and compound machines found in the school, home, and work environment. (SM, FK)

Matter

- 3.3 The student will investigate and understand that objects are made of materials that can be described by their physical properties. Key concepts include
- Objects are made of one or more materials (MSCR, FK)
 - Materials are composed of parts that are too small to be seen without magnification (H2O, MSCR, PALC, FK)
 - Physical properties remain the same as the material is reduced in size (FK)

Life Processes

- 3.4 The student will investigate and understand that behavioral and physical adaptations allow animals to respond to life needs. Key concepts include
- methods of gathering and storing food, finding shelter, defending themselves, and rearing young (FK)
 - hibernation, migration, camouflage, mimicry, instinct, and learned behavior. (FK)

Living Systems

- 3.5 The student will investigate and understand relationships among organisms in aquatic and terrestrial food chains. Key concepts include
- Producer, consumer, decomposer (RS, FK)
 - Herbivore, carnivore, omnivore (FK)
 - Predator and prey. (FK)
- 3.6 The student will investigate and understand that environments support a diversity of plants and animals that share limited resources. Key concepts include
- Water-related environments (pond, marshland, swamp, stream, river, and ocean environments) (HB, PALC, FK)
 - Dry-land environments (desert, grassland, rain forest, and forest environments) (HB, FK)
 - Population and community. (FK)

Interrelationships in Earth/Space Systems

- 3.7 The student will investigate and understand the major components of soil, its origin, and importance to plants and animals including humans. Key concepts include
- Soil provides the support and nutrients necessary for plant growth (RS, HB, FK)
 - Topsoil is a natural product of subsoil and bedrock (RS, FK)
 - Rock, clay, silt, sand, and humus are components of soils (RS, FK)
 - Soil is a natural resource and should be conserved. (RS, FK)

Earth Patterns, Cycles, and Change

- 3.8 The student will investigate and understand basic patterns and cycles occurring in nature. Key concepts include
- Patterns of natural events (day and night, seasonal changes, phases of the moon, and tides) (FK)
 - Animal and plant life cycles. (PALC, FK)
- 3.9 The student will investigate and understand the water cycle and its relationship to life on Earth. Key concepts include
- The energy from the sun drives the water cycle (FK)
 - Processes involved in the water cycle (evaporation, condensation, precipitation) (FK)
 - Water is essential for living things (H₂O, PALC, HB, FK)
 - Water supply and water conservation (FK)

Resources

- 3.10 The student will investigate and understand that natural events and human influences can affect the survival of species. Key concepts include
- The interdependency of plants and animals (PALC, HB, FK)
 - The effects of human activity on the quality of air, water, and habitat (HB, FK)
 - The effects of fire, flood, disease, and erosion on organisms (FK)
 - Conservation and resource renewal. (FK)
- 3.11 The student will investigate and understand different sources of energy. Key concepts include
- The sun's ability to produce light and heat energy (WE, LT, FK)

- b) Sources of energy (sunlight, water, wind) (FK)
- c) Fossil fuels (coal, oil, natural gas) and wood (FK)
- d) Renewable and nonrenewable energy resources (FK)

Language and Literacy

Oral Language

- 3.1 The student will use effective communication skills in group activities.
 - a) Listen attentively by making eye contact, facing the speaker, asking questions, and summarizing what is said. (All)
 - b) Ask and respond to questions from teachers and other group members. (All)
 - c) Explain what has been learned. (All)
- 3.2 The student will present brief oral reports.
 - d) Organize ideas sequentially or around major points of information. (All)
 - e) Use grammatically correct language and specific vocabulary to communicate ideas. (All)

Reading

- 3.4 The student will use strategies to read a variety of fiction and nonfiction materials.
 - a) Preview and use text formats. (All)
 - b) Set a purpose for reading. (All)
 - c) Apply meaning clues, language structure, and phonetic strategies. (All)
 - d) Use context to clarify meaning of unfamiliar words. (All)
- 3.5 The student will read and demonstrate comprehension of fiction.
 - a) Set a purpose for reading. (All)
 - b) Make connections between previous experiences and reading selections. (All)
 - c) Make, confirm, or revise predictions. (All)
 - d) Compare and contrast settings, characters, and events. (All)
 - e) Identify the author's purpose. (All)
 - f) Ask and answer questions. (All)
 - g) Draw conclusions about character and plot. (All)
 - h) Organize information and events logically. (All)
 - i) Summarize major points found in fiction materials. (All)
- 3.6 The student will continue to read and demonstrate comprehension of nonfiction.
 - a) Identify the author's purpose. (All)
 - b) Make connections between previous experiences and reading selections. (All)
 - c) Ask and answer questions about what is read. (All)
 - d) Draw conclusions. (All)
 - e) Organize information and events logically. (All)
 - f) Summarize major points found in nonfiction materials. (All)
- 3.7 The student will demonstrate comprehension of information from a variety of print resources.
 - a) Use dictionary, glossary, thesaurus, encyclopedia, and other reference books, including online reference materials. (All)
 - b) Use available technology. (All)

Writing

- 3.9 The student will write descriptive paragraphs.
- a) Develop a plan for writing. (All)
 - b) Focus on a central idea. (All)
 - c) Group related ideas. (All)
 - d) Include descriptive details that elaborate the central idea. (All)
 - e) Revise writing for clarity. (All)
- 3.10 The student will write stories, letters, simple explanations, and short reports across all content areas.
- a) Use a variety of planning strategies. (All)
 - b) Organize information according to the type of writing. (All)
 - c) Identify the intended audience. (All)
 - d) Revise writing for specific vocabulary and information. (All)
 - e) Use available technology. (All)

Mathematical Thinking

Measurement

- 3.14 The student will estimate and then use actual measuring devices with metric and U.S. Customary units to measure (H2O, SM, MSCR, FR, FK)
- a) length — inches, feet, yards, centimeters, and meters (SM, LT, FR, HB, RS, FK)
 - b) liquid volume — cups, pints, quarts, gallons, and liters (H2O, MSCR, RS, FK)
 - c) weight/mass — ounces, pounds, grams, and kilograms (SM, H2O, FK)
- 3.16 The student will identify equivalent periods of time, including relationships among days, months, and years, as well as minutes and hours. (FK)
- 3.17 The student will read temperature to the nearest degree from a Celsius thermometer and a Fahrenheit thermometer. Real thermometers and physical models of thermometers will be used. (WE, MA, H2O, FK)

Geometry

- 3.18 The student will analyze two-dimensional (plane) and three-dimensional (solid) geometric figures (circle, square, rectangle, triangle, cube, rectangular solid [prism], square pyramid, sphere, cone, and cylinder) and identify relevant properties, including the number of corners, square corners, edges, and the number and shape of faces, using concrete models. (SM, FR, FK)

Probability and Statistics

- 3.21 The student, given grid paper, will
- a) Collect and organize data on a given topic of his/her choice, using observations, measurements, surveys, or experiments (All)
 - b) Construct a line plot, a picture graph, or a bar graph to represent the results. Each graph will include an appropriate title and key. (SM, LT, WE, MA, PALC, HB, RS, FK)

- 3.22 The student will read and interpret data represented in line plots, bar graphs, and picture graphs and write a sentence analyzing the data. (SM, LT, WE, MA, PALC, HB, FK)

Patterns, Functions, and Algebra

- 3.24 The student will recognize and describe a variety of patterns formed using concrete objects, numbers, tables, and pictures, and extend the pattern, using the same or different forms (concrete objects, numbers, tables, and pictures). (LT, FR, FK)