Babylon Public Schools Grades K-4 Science Curriculum Alignment to the Content Standards					
Performance Indicators	**K**	**1**	**2**	**3**	**4**
The Physical Setting					
Key Idea 1. The Earth and celestial phenomena can be described by principles of relative motion and perspective.					
Performance Indicator 1.1 Describe patterns of daily, monthly, and seasonal changes in their environment					
1.1a Natural cycles and patterns include: • Earth spinning around once every 24 hours (rotation), resulting in day and night • Earth moving in a path around the Sun (revolution), resulting in one Earth year • the length of daylight and darkness varying with the seasons • weather changing from day to day and through the seasons • the appearance of the Moon changing as it moves in a path around Earth to complete a single cycle	**Seasons, Sun & Moon**	**Phases of the Moon, Weather**	**Weather**	**Space**	**Weather**
1.1b Humans organize time into units based on natural motions of Earth: • second, minute, hour • week, month		**Phases of the Moon, Weather**		**Space, Butterflies**	**Weather**
1.1c The Sun and other stars appear to move in a recognizable pattern both daily and seasonally.		**Phases of the Moon, Weather**		**Space**	**Performance Assessment Preparation**
Key Idea 2. Many of the phenomena that we observe on Earth involve interactions among components of air, water, and land.					
Performance Indicator 2.1 Describe the relationship among air, water, and land on Earth.					
2.1a Weather is the condition of the outside air at a particular moment.	**Seasons, Weather**	**Phases of the Moon, Weather**	**Weather**	**Space, Butterflies**	**Weather**
2.1b Weather can be described and measured by: • temperature • wind speed and direction • form and amount of precipitation • general sky conditions (cloudy, sunny, partly	**Weather**	**Phases of the Moon, Weather**	**Weather**		**Weather**

cloudy)					
2.1c Water is recycled by natural processes on Earth. • evaporation: changing of water (liquid) into water vapor (gas) • condensation: changing of water vapor (gas) into water (liquid) • precipitation: rain, sleet, snow, hail • runoff: water flowing on Earth's surface • groundwater: water that moves downward into the ground	**Weather**	**Phases of the Moon, Weather**	**Weather**		**Water Cycle**
2.1d Erosion and deposition result from the interaction among air, water, and land. • interaction between air and water breaks down earth materials • pieces of earth material may be moved by air, water, wind, and gravity • pieces of earth material will settle or deposit on land or in the water in different places • soil is composed of broken down pieces of living and nonliving earth material		**Phases of the Moon, Weather**	**Weather**		**Water Cycle**
2.1e Extreme natural events (floods, fires, earthquakes, volcanic eruptions, hurricanes, tornadoes, and other severe storms) may have positive or negative impacts on living things.		**Phases of the Moon, Weather**	**Weather**		**Weather**
Key Idea 3. Matter is made up of particles whose properties determine the observable characteristics of matter and its reactivity.					
Performance Indicator 3.1 Observe and describe properties of materials, using appropriate tools.					
3.1a Matter takes up space and has mass. Two objects cannot occupy the same place at the same time.	**Introduction to Matter**	**Matter**		**Buoyancy, Magnets**	**States of Matter**
3.1b Matter has properties (color, hardness, odor, sound, taste, etc.) that can be observed through the senses.	**Five Senses**	**Matter**		**Buoyancy, Magnets, Butterflies**	**States of Matter**
3.1c Objects have properties that can be observed, described, and/or measured: length, width, volume, size, shape, mass or weight, temperature, texture, ***flexibility, reflectiveness of light.***	**Five Senses**	**Matter**		**Buoyancy, Magnets, Butterflies**	**Performance Assessment Preparation**

3.1d Measurements can be made with standard metric units and nonstandard units. *(Note: Exceptions to the metric system usage are found in meteorology.)*	**Plants**	**Matter**		**Buoyancy, Magnets, Butterflies**	**Performance Assessment Preparation**
3.1e The material(s) an object is made up of determine some specific properties of the object (sink/float, conductivity, magnetism). Properties can be observed or measured with tools such as hand lenses, metric rulers, thermometers, balances, magnets, circuit testers, and graduated cylinders.		**Matter**		**Buoyancy, Magnets**	**Performance Assessment Preparation**
3.1f Objects and/or materials can be sorted or classified according to their properties.	**Five Senses**	**Matter**		**Buoyancy, Magnets**	**States of Matter**
3.1g Some properties of an object are dependent on the conditions of the present surroundings in which the object exists. For example: • temperature - hot or cold • lighting - shadows, color • moisture - wet or dry		**Matter**			**States of Matter**
Performance Indicator 3.2 Describe chemical and physical changes, including changes in states of matter.					
3.2a Matter exists in three states: solid, liquid, gas. • solids have a definite shape and volume • liquids do not have a definite shape but have a definite volume • gases do not hold their shape or volume		**Matter**		**Buoyancy**	**States of Matter**
3.2b Temperature can affect the state of matter of a substance.		**Matter**			**States of Matter**
3.2c Changes in the properties or materials of objects can be observed and described		**Matter**		**Magnets**	**States of Matter**
Key Idea 4. Energy exists in many forms, and when these forms change energy is conserved.					
Performance Indicator 4.1 Describe a variety of forms of energy (e.g., heat, chemical, light) and the changes that occur in objects when they interact with those forms of energy.					
4.1a Energy exists in various forms: heat, electric, sound, chemical, mechanical, light.				**Magnets**	**Energy**
4.1b Energy can be transferred from one place to another.				**Magnets**	**Energy**

4.1c Some materials transfer energy better than others (heat and electricity).				**Magnets**	**Energy**
4.1d Energy and matter interact: water is evaporated by the Sun's heat; a bulb is lighted by means of electrical current; a musical instrument is played to produce sound; ***dark colors may absorb light, light colors may reflect light.***					**Energy**
4.1e Electricity travels in a closed circuit.					**Energy**
4.1f Heat can be released in many ways, for example, by burning, rubbing (friction), or combining one substance with another.					**Energy**
4.1g Interactions with forms of energy can be either helpful or harmful.					**Energy**
Performance Indicator 4.2 Observe the way one form of energy can be transferred into another form of energy present in common situations (e.g., mechanical to heat energy, mechanical to electrical energy, chemical to heat energy).					
4.2a Everyday events involve one form of energy being changed to another. • animals convert food to heat and motion • the Sun's energy warms the air and water		**Plants**	**Weather**		**Energy, Weather**
4.2b Humans utilize interactions between matter and energy. • chemical to electrical, light, and heat: battery and bulb • electrical to sound (e.g., doorbell buzzer) • mechanical to sound (e.g., musical instruments, clapping) • light to electrical (e.g., solar-powered calculator)			**Forces in Motion**	**Magnets**	**Energy**
Key Idea 5. Energy and matter interact through forces that result in changes in motion.					
Performance Indicator 5.1 Describe the effects of common forces (pushes and pulls) of objects, such as those caused by gravity, magnetism, and mechanical forces.					
5.1a The position of an object can be described by locating it relative to another object or the background (e.g., on top of, next to, over, under, etc.).	**Sun & Moon**	**Phases of the Moon**	**Forces in Motion**	**Magnets, Buoyancy**	**Forces in Motion**
5.1b The position or direction of motion of an object can be changed by pushing or pulling.			**Forces in Motion**	**Magnets**	**Forces in Motion**

5.1c The force of gravity pulls objects toward the center of Earth.			**Forces in Motion**	**Space, Magnets, Buoyancy**	**Forces in Motion**
5.1d The amount of change in the motion of an object is affected by friction.			**Forces in Motion**	**Space, Magnets, Buoyancy**	**Forces in Motion**
5.1e Magnetism is a force that may attract or repel certain materials.				**Magnets**	**Performance Assessment Preparation**
5.1f Mechanical energy may cause change in motion through the application of force and through the use of simple machines such as pulleys, levers, and inclined planes			**Forces in Motion**		**Forces in Motion**
Performance Indicator 5.2 Describe how forces can operate across distances.					
5.2a The forces of gravity and magnetism can affect objects through gases, liquids, and solids.			**Forces in Motion**	**Space, Magnets**	**Performance Assessment Preparation**
5.2b The force of magnetism on objects decreases as distance increases.				**Space, Magnets**	**Performance Assessment Preparation**
The Living Environment					
Key Idea 1. Living things are both similar to and different from each other and from nonliving things.					
Performance Indicator 1.1 Describe the characteristics of and variations between living and nonliving things.					
1.1a Animals need air, water, and food in order to live and thrive.	**Ducks**	**Animals**	**Animal Habitats**	**Butterflies**	**Life Cycles**
1.1b Plants require air, water, nutrients, and light in order to live and thrive.	**Plants**	**Plants**	**Plants**		**Life Cycles**
1.1c Nonliving things do not live and thrive.		**Animals**	**Toads**		**Life Cycles**
1.1d Nonliving things can be human-created or naturally occurring.		**Animals**		**Magnets**	**Life Cycles**
Performance Indicator 1.2 Describe the life processes common to all living things.					

1.2a Living things grow, take in nutrients, breathe, reproduce, eliminate waste, and die.	**Ducks**	**Animals, Plants**	**Toads**	**Butterflies**	**Life Cycles**
Key Idea 2. Organisms inherit genetic information in a variety of ways that result in continuity of structure and function between parents and offspring.					
Performance Indicator 2.1 Recognize that traits of living things are both inherited and acquired or learned.					
2.1a Some traits of living things have been inherited (e.g., color of flowers and number of limbs of animals).				**Butterflies**	**Life Cycles**
2.1b Some characteristics result from an individual's interactions with the environment and cannot be inherited by the next generation (e.g., having scars; riding a bicycle).				**Butterflies**	**Life Cycles**
Performance Indicator 2.2 Recognize that for humans and other living things there is genetic continuity between generations.					
2.2a Plants and animals closely resemble their parents and other individuals in their species.				**Butterflies**	**Life Cycles**
2.2b Plants and animals can transfer specific traits to their offspring when they reproduce.				**Butterflies**	**Life Cycles**
Key Idea 3. Describe how the structures of plants and animals complement the environment of the plant or animal.					
Performance Indicator 3.1 Each animal has different structures that serve different functions in growth, survival, and reproduction.					
3.1a Each animal has different structures that serve different functions in growth, survival, and reproduction. • wings, legs, or fins enable some animals to seek shelter and escape predators • the mouth, including teeth, jaws, and tongue, enables some animals to eat and drink • eyes, nose, ears, tongue, and skin of some animals enable the animals to sense their surroundings • claws, shells, spines, feathers, fur, scales, and color of body covering enable some animals to protect themselves from predators and other environmental conditions, or enable them to obtain food • some animals have parts that are used to produce sounds and smells to help the animal meet its needs • the characteristics of some animals change as seasonal conditions change (e.g., fur grows and is shed to help regulate body heat; body fat is a form of stored energy and it changes as the seasons change)	**Habitats, Under the Sea, Five Senses**	**Animals**	**Animal Habitats**	**Butterflies**	**Adaptations**

3.1b Each plant has different structures that serve different functions in growth, survival, and reproduction. • roots help support the plant and take in water and nutrients • leaves help plants utilize sunlight to make food for the plant • stems, stalks, trunks, and other similar structures provide support for the plant • some plants have flowers • flowers are reproductive structures of plants that produce fruit which contains seeds • seeds contain stored food that aids in germination and the growth of young plants	**Plants**	**Plants**	**Plants**		**Plants**
3.1c In order to survive in their environment, plants and animals must be adapted to that environment. • seeds disperse by a plant's own mechanism and/or in a variety of ways that can include wind, water, and animals • leaf, flower, stem, and root adaptations may include variations in size, shape, thickness, color, smell, and texture • animal adaptations include coloration for warning or attraction, camouflage, defense mechanisms, movement, hibernation, and migration	**Plants, Birds**	**Plants**	**Plants**	**Butterflies**	**Adaptations**
Performance Indicator 3.2 Observe that differences within a species may give individuals an advantage in surviving and reproducing.					
3.2a Individuals within a species may compete with each other for food, mates, space, water, and shelter in their environment.				**Butterflies**	**Performance Assessment Preparation**
3.2b All individuals have variations, and because of these variations individuals of a species may have an advantage in surviving and reproducing.				**Butterflies**	
Key Idea 4. The continuity of life is sustained through reproduction and development.					
Performance Indicator 4.1 Describe the major stages in the life cycles of selected plants and animals.					
4.1a Plants and animals have life cycles. These may include beginning of a life, development into an adult, reproduction as an adult, and eventually death.	**Ducks, Plants**	**Animals, Plants**	**Toads, Plants**	**Butterflies**	**Life Cycles**

4.2b Each kind of plant goes through its own stages of growth and development that may include seed, young plant, and mature plant.	**Plants**	**Plants**	**Plants**		**Plants**
4.1c The length of time from beginning of development to death of the plant is called its life span.			**Plants**		**Plants**
4.1d Life cycles of some plants include changes from seed to mature plant.	**Plants**	**Plants**	**Plants**		**Plants**
4.1e Each generation of animals goes through changes in form from young to adult. This completed sequence of changes in form is called a life cycle. Some insects change from egg to larva to pupa to adult.	**Ducks**	**Animals**	**Toads**	**Butterflies**	**Plants**
4.1f Each kind of animal goes through its own stages of Life Cycles growth and development during its life span.	**Ducks**	**Animals**		**Butterflies**	**Life Cycle**
4.1g The length of time from an animal's birth to its death is called its life span. Life spans of different animals vary.		**Animals**		**Butterflies**	**Life Cycle**
Performance Indicator 4.2 Describe evidence of growth, repair, and maintenance, such as nails, hair, and bone, and the healing of cuts and bruises.					
4.2a Growth is the process by which plants and animals increase in size.	**Ducks, Plants**	**Animals**	**Toads, Plants**	**Butterflies**	**Life Cycle**
4.2b Food supplies the energy and materials necessary for growth and repair.		**Animals**	**Toads, Plants**	**Butterflies**	**Life Cycle**
Key Idea 5. Organisms maintain a dynamic equilibrium that sustains life.					
Performance Indicator 5.1 Describe basic life functions of common living specimens (e.g., guppies, mealworms, gerbils).					
5.1a All living things grow, take in nutrients, breathe, reproduce, and eliminate waste.		**Animals**	**Toads**	**Butterflies**	**Life Cycle**
5.1b An organism's external physical features can enable it to carry out life functions in its particular environment.		**Animals**	**Toads**	**Butterflies**	**Adaptations**
Performance Indicator 5.2 Describe some survival behaviors of common living specimens.					
5.2a Plants respond to changes in their environment. For example, the leaves of some green plants change position as the direction of light changes; the parts of some plants undergo seasonal changes that enable the plant to grow; seeds germinate, and leaves form	**Seasons**	**Plants**	**Plants**		**Plants**

and grow.					
5.2b Animals respond to change in their environment (e.g., perspiration, heart rate, breathing rate, eye blinking, shivering, and salivating).		**Animals**		**Butterflies**	**Performance Assessment Preparation**
5.2c Senses can provide essential information (regarding danger, food, mates, etc.) to animals about their environment.				**Butterflies**	**Performance Assessment Preparation**
5.2d Some animals, including humans, move from place to place to meet their needs.	**Birds**	**Animals**		**Butterflies**	**Adaptation**
5.2e Particular animal characteristics are influenced by changing environmental conditions including: fat storage in winter, coat thickness in winter, camouflage, shedding of fur.					**Adaptation**
5.2f Some animal behaviors are influenced by environmental conditions. These behaviors may include: nest building, Habitats hibernating, hunting, migrating, and communicating.	**Birds**	**Animals, Habitats**		**Butterflies**	**Adaptation**
5.2g The health, growth, and development of organisms are affected by environmental conditions such as the availability of food, air, water, space, shelter, heat, and sunlight.			**Toads, Plants**	**Butterflies**	**Food Chain**
Performance Indicator 5.3 Describe the factors that help promote good health and growth in humans.					
5.3a Humans need a variety of healthy foods, exercise, and rest in order to grow and maintain good health.	**HEALTH SMART**				
5.3b Good health habits include hand washing and personal cleanliness; avoiding harmful substances (including alcohol, tobacco, illicit drugs); eating a balanced diet; engaging in regular exercise.	**HEALTH SMART**				
Key Idea 6. Plants and animals depend on each other and their physical environment.					
Performance Indicator 6.1 Describe how plants and animals, including humans, depend upon each other and the nonliving environment.					
6.1a Green plants are producers because they provide the basic food supply for themselves and animals.				**Butterflies**	**Food Chain**
6.1b All animals depend on plants. Some animals (predators) eat other animals (prey).				**Butterflies**	**Food Chain**

6.1c Animals that eat plants for food may in turn become food for other animals. This sequence is called a food chain.				**Butterflies**	**Food Chain**
6.1d Decomposers are living things that play a vital role in recycling nutrients.					**Food Chain**
6.1e An organism's pattern of behavior is related to the nature of that organism's environment, including the kinds and numbers of other organisms present, the availability of food and other resources, and the physical characteristics of the environment.				**Butterflies**	**Performance Assessment Preparation**
6.1f When the environment changes, some plants and animals survive and reproduce, and others die or move to new locations.				**Butterflies**	**Adaptation**
Performance Indicator 6.2 Describe the relationship of the Sun as an energy source for living and nonliving cycles.					
6.2a Plants manufacture food by utilizing air, water, and energy from the sun.		**Plants**	**Plants**		**Plants, Food Chain**
6.2b The Sun's energy is transferred on Earth from plants to animals through the food chain.					**Food Chain**
6.2c Heat energy from the Sun powers the water cycle (see Physical Science Key Idea 2).			**Weather**		**Water Cycle**
Key Idea 7. Human decisions and activities have had a profound impact on the physical and living environments.					
Performance Indicator 7.1 Identify ways in which humans have changed their environment and the effects of those changes.					
7.1a Humans depend on their natural and constructed environments.					**Performance Assessment Preparation**
7.1b Over time humans have changed their environment by cultivating crops and raising animals, creating shelter, using energy, manufacturing goods, developing means of transportation, changing populations, and carrying out other activities.	**Rainforest/ Conservation**				**Performance Assessment Preparation**
7.1c Humans, as individuals or communities, change environments in ways that can be either helpful or harmful for themselves and other organisms.	**Rainforest/ Conservation**				**Performance Assessment Preparation**

Babylon Public Schools

Science Modules Aligned to the New York Content Standards and Performance Indicators K-4

Mary Jo Graffagnino, Kindergarten teacher
Stacey Aprea, Grade 1 teacher
Kim Gentile, Grade 2 teacher
Lisa Lang, Grade 3 teacher
Cheryl Murphy, Grade 4 teacher

Kristen Dixon, Science Chairperson
Dana Basile, Principal, Babylon Elementary School
Randee Bonagura, Principal, Babylon Grade School
Daniel D'Amico, Assistant Superintendent for Curriculum and Instruction

AUGUST 2012