Course: 4th Grade **Course Code: 5020010** **Quarter: 2**

Topic of Study: Heredity and Reproduction

Standards: Life Science

Big Ideas: 16. Heredity and Reproduction

Essential Questions: How Do Plants Reproduce? How Do Animals Reproduce? What are Heredity, Instincts, and Learned Behavior?

Optional Teacher Background: *ScienceSaurus*- Life Science Section

Resources ***Science Center***

Vocabulary: Germination, Maturity, Fertilization, Pollination, Complete metamorphosis, Incomplete metamorphosis, nymph, Heredity, Learned behavior, instincts

Common Inquiry Labs:

- *Science Fusion* Inquiry Flipchart "Finding Out About Flowers" & "What's Cooking" p.35
- *Science Fusion* Inquiry Flipchart "What Factors Affect Germination Rate?" p.36
- *Science Fusion* Inquiry Flipchart "Breading Brine Shrimp" & "Can Waxworms Stand the Heat?" p.37
- *Science Fusion* Inquiry Flipchart "Puzzled?" & "Track on the Trail" p.38

	Technology Links:	
Lab Assistance: Daily Inquiries Logs and Mini Lessons Health Activities	**Science Links:** www.Thinkcentral.com Fusion Teacher Resources Graphic Organizers	**Online Guides:** Above Level On Level Below Level

NGSSS	Content	Targets
SC.4.L.16.1 Identify processes of sexual reproduction in flowering plants, including pollination, fertilization (seed production), seed dispersal, and germination. Cognitive Complexity: **Moderate** SC.4.L.16.2 Explain that although characteristics of plants and animals are inherited, some characteristics can be affected by the environment. Cognitive Complexity: **High** SC.4.L.16.3 Recognize that animal behaviors may be shaped by heredity and learning. Cognitive Complexity: **High** SC.4.L.16.4 Compare and contrast the major stages in the life cycles of Florida plants and animals, such as those that undergo incomplete and complete metamorphosis, and flowering and non-flowering seed-bearing plants. Cognitive Complexity: **Moderate**	How Do Plants Reproduce? ▪ Plant Life Cycles ▪ Germination ▪ Maturity ▪ Flowers and Cones ▪ Fertilization ▪ Pollen and Pollination ▪ Seeds How Do Animals Reproduce? ▪ Animal Life Cycles ▪ Complete metamorphosis ▪ Incomplete metamorphosis ▪ Nymph What are Heredity, Instincts, and Learned Behavior? ▪ Heredity ▪ Genes ▪ Learned behavior ▪ Instincts	▪ Understand that all seed-plant life cycles include germination, maturity, reproduction, and death. ▪ Know the stage of the lifecycle of a flowering plant. ▪ Know the stages in the life cycle of a nonflowering, seed bearing plant (such as a conifer). ▪ Understand the role of pollination in the sexual reproduction of seed plants. ▪ Understand ways that seeds are pollinated. ▪ Understand ways in which seeds are dispersed. ▪ Understand that some animals are born live, whereas other animals hatch from eggs. ▪ Understand that some animals go through metamorphosis as part of their life cycle. ▪ Compare and contrast complete metamorphosis and incomplete metamorphosis, and provide examples of animals that undergo each type. ▪ Understand that heredity is the study of how inherited traits are passed from parent to offspring. ▪ Understand that some behaviors are inherited (instincts) and that organisms are genetically programed to perform these behaviors. ▪ Understand that some behaviors are learned as an organism grows and develops. Many behaviors are a combination of learning and instinct. ▪ Understand that some traits are influenced by environmental conditions: Provide examples of physical traits that are influenced by the environment.

Course: 4th Grade **Course Code: 5020010** **Quarter: 2**

Topic of Study: Interdependence Among Organisms

Standards: Life Science

Big Ideas: 17. Interdependence

Essential Questions: How Do Organisms Change with the Seasons? How do Organisms Obtain and Use Food? What are Food Chains? How Do Organisms Affect Their Environment? How Do People Affect Their Environment?

Optional Teacher Background: *ScienceSaurus*- Natural Resources and the Environment Section

Vocabulary: dormancy, hibernation, migration, nutrients, energy, producers, photosynthesis, consumers, decomposers, food chain, herbivore, carnivore, food web, pollution, conservation

Common Inquiry Labs:

- *Science Fusion* Inquiry Flipchart "How Does Light Affect Pill Bugs?" & "On the Move" p.39
- *Science Fusion* Inquiry Flipchart "Can You See Photosynthesis?" & "Bananas Gone Bad" p.40
- *Science Fusion* Inquiry Flipchart "Model a Food Web" & "What Does it Eat?" p.41
- *Science Fusion* Inquiry Flipchart "How Does Water Pollution Affect Plants?" & "All About Recycling" p.42
- *Science Fusion* Inquiry Flipchart "How Do People Affect the Environment?" p.43

NGSSS	Content	Targets
SC.4.L.17.1 Compare the seasonal changes in Florida plants and animals to those in other regions of the country. Cognitive Complexity: **Moderate** SC.4.L.17.2 Explain that animals, including humans, cannot make their own food and that when animals eat plants or other animals, the energy stored in the food source is passed to them. Cognitive Complexity: **Moderate** SC.4.L.17.3 Trace the flow of energy from the sun as it is transferred along the food chain through the producers to the consumers. Cognitive Complexity: **Moderate** SC.4.L.17.4 Recognize ways plants and animals, including humans, can impact the environment. Cognitive Complexity: **High**	How Do Organisms Change with the Seasons? ▪ Changing with the Seasons ▪ Plants and Seasons ▪ Dormancy ▪ Animals and Seasons ▪ Hibernation ▪ Migration How do Organisms Obtain and Use Food? ▪ Nutrients ▪ Energy from Food ▪ Producers and Photosynthesis ▪ Consumers ▪ Decomposers What are Food Chains? ▪ Food Chains ▪ Herbivores ▪ Carnivores ▪ Omnivores ▪ Predators ▪ Prey ▪ Food Webs How Do Organisms Affect Their Environment?	▪ Recognize that plants change as seasons change. ▪ Describe how animals change with the seasons. ▪ Understand that living things in places with mild winters may not change or may change in different ways than living things in places with harsh winters. ▪ Recognize that food is a source of energy, which living things use to grow and perform life functions. ▪ Explain that producers make their own food through photosynthesis, which requires water, carbon dioxide, and sunlight. ▪ Describe how consumers obtain food by eating other organisms. ▪ Understand that both producers and consumers break down food to obtain energy. ▪ Demonstrate that a food chain shows how energy moves from producers to consumers. ▪ Recognize that energy for most food chains begins with energy

	▪ Role of Plants ▪ Role of Animals ▪ People Can Be Harmful ▪ Pollution ▪ People can be Helpful ▪ Conservation **TEACHER TRANSITION INTO NEXT TOPIC OF STUDY** Now that we know about the patterns of interdependence among organisms and how matter circulates through food chains let's learn about some physical properties of matter.	from the sun. ▪ Distinguish between herbivores, carnivores, and omnivores. ▪ Recognize that organisms higher in the food chain are affected by changes in the number of organisms lower in the food chain. ▪ Explain why all animals depend on producers such as plants. ▪ Describe how living things can change their environments. ▪ Recognize that environmental changes may be beneficial to some organisms while being harmful to other organisms. ▪ Identify pollution as one way that humans have adversely affected the environment.