HIGHLANDS SCHOOL DISTRICT
9 WEEK PACING GUIDE
GRADE 3 SCIENCE

COURSE **Science 3**	**UNIT 1: How Can We Predict Patterns of Motion?** Number of Weeks __9__	**Big Idea(s):** The motion of an object depends on the strength and direction of the forces acting on the object. Interactions between any two objects can cause changes in one or both. Natural and designed objects exhibit repeating patterns of motion. Magnets attract objects with similar properties, and the strength of the force depends on the distance to the object.	**Essential Question(s):** How do forces applied by touch affect an object's motion? How can we observe and measure repeating patterns of motion? What kinds of forces can act at a distance? How can magnets be used to solve problems?	**Materials/Resources /Activities**: Smithsonian Science for the Classroom Lessons 1-15 (follow teacher's manual for pacing of each lesson) Materials list p. 32 of Teacher Manual
Quarter 1	**Science and Engineering Practices**	**Disciplinary Core Idea**	**Cross Cutting Concepts**	
	Asking questions Defining problems Developing and using models Planning and carrying out investigations Analyzing and interpreting data Obtaining, evaluating, and communication information	**PS2.A** Each force acts on one particular object and has both strength and a direction. An object at rest typically has multiple forces acting on it, but they add to give zero net force on the object. Forces that do not sum to zero can cause changes in the object's speed or direction of motion. The patterns of an object's motion in various situations can be observed and measured; when that past motion exhibits a regular patter, future motion can be predicted from it. **PS.2B** Objects in contact exert forces on each other. Electric and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other.	Patterns Cause and Effect Systems and system models	

		ETS1.A Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for soltuon can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account. **ETS1.B** Research on a problem should be carried out before beginning to design a solution. Testing a solution involves investigating how well it performs under a range of likely conditions. Communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs. Tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved.	

COURSE **Science 3**	**UNIT 2: How Do Weather and Climate Affect Our Lives?** Number of Weeks __9__	**Big Idea(s):** Different tools can be used to measure different weather conditions. Scientists use weather measurements to predict the weather. There are five main types of climate in the world. Hazardous weather can cause problems.	**Essential Question(s):** Why measure weather? What does weather in the past tell us about weather in the future? How does climate affect the way buildings are designed?	**Materials/Resources/Activities**: Smithsonian Science for the Classroom Lessons 1-15 (follow teacher's manual for pacing of each lesson) Materials list p. 32 of Teacher Manual
Quarter 2	**Science and Engineering Practices**	**Disciplinary Core Idea**	**Cross Cutting Concepts**	
	Defining problems Using mathematics and computational thinking	**ESS2.D** Scientists record patterns of the weather across different times and areas so that they can make predictions about what kind of weather might happen next. Climate describes a range of an area's typical weather conditions and the extent to which those conditions vary over years.	Patterns Scale, proportion, and quantity Structure and function	

	Analyzing and interpreting data Obtaining, evaluating, and communication information	**ESS3.B** A variety of natural hazards result from natural processes. Humans cannot eliminate natural hazards but can take steps to reduce their impacts. **ETS1.A** Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account. **ETS1.B** Research on a problem should be carried out before beginning to design a solution. Testing a solution involves investigating how well it performs under a range of likely conditions. At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs. **ETS1.C** Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints.	Cause and Effect

COURSE **Science 3**	**UNIT 3: What Explains Similarities and Differences Between Organisms?** Number of Weeks __9__	**Big Idea(s):** Individuals of the same species can have different traits. Traits can be inherited within families. Differences in environmental factors such as light and water can cause otherwise similar plants to develop different traits. Animals have diverse life cycles, but all share a common pattern of birth, growth, reproduction, and death. A variation in a trait can give an organism an advantage in one context but not in another	**Essential Question(s):** What can an organism get from its parents? What can an organism get from its environment? How do organisms change throughout their lives? How could being different be an advantage?	**Materials/Resources/Activities**: Smithsonian Science for the Classroom Lessons 1-15 (follow teacher's manual for pacing of each lesson) Materials list p. 32 of Teacher Manual

	Science and Engineering Practices	Disciplinary Core Idea	Cross Cutting Concepts
Quarter 3	Constructing explanations Using mathematics and computational thinking Analyzing and interpreting data Obtaining, evaluating, and communication information	**LS1.B:** Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles. **LS3.A**: Many characteristics of organisms are inherited from their parents. Other characteristics result from individuals' interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment. **LS3.B**: Different organisms vary in how they look and function because they have different inherited information. The environment also affects the traits that an organism develops. **LS4.B**: Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing. **ESS2.D**: Climate describes a range of an area's typical weather conditions and the extent to which those conditions vary over years.	Patterns Cause and Effect

COURSE **Science 3**	**UNIT 4: How Can We Protect Animals When Their Habitat Changes?** Number of Weeks __9__	**Big Idea(s):** A habitat needs to provide a source of food, water, and shelter. Some habitats meet the needs of particular animals better than other habitats. Some types of organisms that once lived are now extinct. When their environment changes, some organisms thrive, some must move, and others die.	**Essential Question(s):** What do animals need to survive? Why do animals live in different habitats? What can fossils tell us about animals and habitats? What happens to animals when their habitat changes?	**Materials/Resources /Activities**: Smithsonian Science for the Classroom Lessons 1-15 (follow teacher's manual for pacing of each lesson) Materials list p. 32 of Teacher Manual

	Science and Engineering Practices	Disciplinary Core Idea	Cross Cutting Concepts
Quarter 4	Constructing explanations Analyzing and interpreting data Obtaining, evaluating, and communication information	**ETS1.A:** Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of the solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account. **ETS1.B:** Research on a problem should be carried out before beginning to design a solution. At whatever stage, communicating with peers about proposed solutions is an important part of the design process and can lead to improved designs. Tests are often designed to identify failure points or difficulties, which suggest the elements of a design that need to be improved. **ETS1.C:** Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and constraints. **LS2.D:** Being part of a group helps animals obtain food, defend themselves, and cope with changes. Groups may serve different functions and vary dramatically in size. **LS4.A:** Some kinds of plants and animals that once lived on Earth are no longer found anywhere. Fossils provide evidence about the types of organisms that lived long ago and also about the nature of their environments. **LS4.C:** For any particular environment, some kinds of organisms survive well, some survive less well, and some can't survive at all. **LS2.C:** When the environment changes in ways that affect a place's physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, some move to new locations, yet others move into the transformed environment, and some die. **LS4.D:** Populations live in a variety of habitats and change in those habitats affects the organisms living there.	Patterns Cause and Effect Stability and Change