**Chesapeake Math & IT Academy – MS North**

**Science Department**

**Grade 8**

1. **Cells & Heredity (Suggested Time frame: Quarter 1 & 2)**

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| **Curriculum** | **List of Suggested Labs and Experiments (Wet & Dry)** | **Virtual** |
| 1. Introduction to Cells
 |  |  |
|  | Comparing Cells | Available on Pearson App |
|  | Observing Cells |  |
|  | Chemical Compound in the Cells (Detecting Starch/ fats & Proteins) |  |
|  | Effects of Concentration & Diffusion |  |
| 1. Cell Processes & Energy
 |  |  |
| * Photosynthesis
 | Looking into the Pigment |  |
| * Cell Respiration
 | Observing Carbon Dioxide (directed inquiry |  |
| * Cell Division
 | Using Yeast to observe cellsObserving Mitosis through Onion or Cheek Cells |  |
| 1. The Science of Heredity
 |  |  |
| * What is Heredity
 | Observing Pistils & Stamen | Available on Pearson App |
| * Phenotypes & Genotypes
 | Coin Crosses |  |
| * Patterns of Inheritance
* Chromosomes & Inheritance
 | Inferring Parents generationThis activity will allow students to explore the inheritance of the alleles that determine kernel color in corn. | Available on Pearson App |
| 1. DNA : The code of Life
 |  |  |
| Genetic Code | Modeling genetic Code/Genetics with a smile (inquiry) |  |
| Protein Synthesis | How to make proteins |  |
| Mutations | What happens when there are too many Cells |  |
| 1. Human Genetics & Technology
 |  |  |
| * Inheritance
 | Investigation: How are genes or Chromosomes inherited (dry) |  |
| * Advances in Genetics
 | Extraction in Action (through strawberries) |  |

1. **Ecology & Environment (Suggested Time frame: Quarter 3)**

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| **Curriculum** | **List of Suggested Labs and Experiments (Wet & Dry)** | **Virtual** |
| 1. Populations & Communities
 |  |  |
| * Living Thing Environment
 | Organisms & their Habitats |  |
| * Populations
 | Growing & Sinking (directed activity) |  |
| * Interaction among living things
 | Types of Symbiosis: This activity will help studentslearn about abiotic and biotic factors throughthe construction of a terrarium. |  |
| * Changes in Community
 | Primary or Secondary | Available on Pearson App |
| 1. Ecosystems & Biomes
 |  |  |
| * Energy Flow in Ecosystem
 | Food Chain |  |
| * Cycles of Matter
 | Carbon and Oxygen Blues or Nitrogen Cycle Roles |  |
| * Biomes
 | Inferring Forrest Climates |  |
| * Aquatic ecosystem
 | Dissolve Oxygen |  |
| * Biogeography
 | Relating Continental Drift to Disposal |  |
| 1. Resources & Living Things
 |  |  |
| Introduction to Environmental Issues | Comparing Cost & Benefits/ Experimental Issues |  |
| Introduction to Natural Resources | Natural Resources/ Recycling Paper |  |
| Human Population Growth | Human Population Growth or Comparing Populations | *Pre Lab* |
| Forests and Fisheries | Shelterwood Cutting or Managing Fisheries |  |
| 1. Land, Air, and Water Resources
 |  |  |
| Conserving Land and Soil | Modeling Soil Conservation |  |
| Waste Disposal and Recycling | Waste, Away! (prelab/directed activity) |  |
| Water Pollution and Solutions |

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| Where’s the Water?/ Cleanning Up Oil Spills |

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| Ocean Resources | Seawed Candy/ Ocean Trash |  |
| 1. Energy Resources
 |  |  |
| * Fossil Fuels
 | Observing Oil Consistency |  |
| * Alternative Sources of Energy
 | Design and Build a solar Cooker |  |
| * Energy Use and Conservation
 | Which Bulb is more efficient |  |

1. **Diversity of Life (Suggested Time frame: Quarter 3)**

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| **Curriculum** | **List of Suggested Labs and Experiments (Wet & Dry)** | **Virtual** |
| 1. Introduction to Living Things
 |  |  |
| * What Is Life?
 | Comparing Broth Samples or Please Pass the Bread |  |
| * Classifying Life
 | Classifying seeds/ or Living Mysteries |  |
| * Domains and Kingdoms
 | Staining Seeds |  |
| * Evolution and Classification
 | Common Ancestors |  |
| 1. Viruses, Bacteria, Protist & Fungi
 |  |  |
| * Viruses
 | How Many Viruses Fit on a Pin? | How Viruses Spread |
| * Bacteria
 | Comparing disinfectant/ or Observing Bacteria on the premises (direct inquiry) |  |
| * Protist
 | What Lives in a Drop of Pond Water?Observing Pseudopod MovementObserving Slime Mold |  |
| * Fungi
 | Do All Molds Look Alike?Considering Fungi as Decomposers |  |
| 1. Plants
 |  |  |
| * What Is a Plant?
 | Algae and Other PlantsLocal Plant Diversity |  |
| * Classifying Plants
 | Examining a FernCommon CharacteristicsMasses of MossesWill Mosses Absorb Water? |  |
| * Plant Structures
 | Investigating StomataModeling Flowers |  |
| * Plant Reproduction
 | Watching Roots GrowSeasonal Changes |  |
| * Plants in Everyday Life
 | Everyday Plants |  |
| 1. Introduction to Animals
 |  |  |
| * What Is an Animal?
 | Classifying Animals |  |
| * Animal Body Plans
 | Organizing Animal Bodies Front-End Advantages |  |
| * Introduction to Invertebrates
 | How Do Natural and Synthetic Sponges Compare?Earthworm Responses (*Pre Lab**Directed Inquiry**Open Inquiry)* |  |
| * Introduction to Vertebrates
 | How Is an Umbrella Like a Skeleton?Characteristics of Vertebrates |  |
| * Vertebrate Diversity
 | Exploring VertebratesIt’s Plane to See |  |
| 1. Getting Around
 |  |  |
| * Animal Movement
 | Observing the aquariumObserving TerrariumObserving SnailMovement |  |
| 1. Obtaining Energy
 |  |  |
| * How Animals Obtain and Digest Food
 | Looking at an Owl’s LeftoversPlanarian Feeding Behavior |  |
| * How Animals Obtain Oxygen
 | How Do Animals Get Oxygen?Comparing Respiratory Systems |  |
| * Circulation and Excretion
 | Comparing Circulatory SystemsDouble-Loop CirculationModeling a Kidney |  |
| 1. Animal Reproduction & Behavior
 |  |  |
| * Animal Reproduction and Fertilization
 | Types of ReproductionTypes of Fertilization | Available on Pearson Apps |
| * Development and Growth
 | “Eggs-tra” ProtectionCycles of LifeTo Care or Not To Care |  |
| * What Is Behavior?
 | What Behaviors Can You Observe?Becoming a Learning Detective |  |
| * Patterns of Behavior
 | Modeling Animal CommunicationInvestigation: One for All - *Pre Lab**Directed Inquiry**Open Inquiry*Behavior Cycles |  |

1. **Human Body Systems (Suggested Time frame: Quarter 4)**

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| **Curriculum** | **List of Suggested Labs and Experiments (Wet & Dry)** | **Virtual** |
| 1. The Human Body
 |  |  |
| * Body Organization
 | Observing Cells and Tissues |  |
| * System Interactions
 | A Look Beneath the Skin *Pre Lab**Directed Inquiry**Open Inquiry* |  |
| * Homeostasis
 | Working to Maintain Balance |  |
| 1. Bones, Muscles & Skin
 |  |  |
| * The Skeletal System
 | Observing Joint |  |
| * The Muscular System
 | Modeling How Skeletal Muscles Work |  |
| * The Skin
 | Sweaty Skin or Sun Safety |  |
| 1. Digestion
 |  |  |
| * Food and Energy
 | Measuring CaloriesPredicting Starch Content |  |
| * Healthy Eating
 | Classifying FoodsCalculating Percentage of Calories From Fat |  |
| * The Digestive Process Begins
 | How Can You Speed Up Digestion?As the Stomach Churn *Pre Lab**Directed Inquiry* |  |
| * Final Digestion and Absorption
 | Break Up!The Role of the Large Intestine |  |
| 1. The Body’s Transport System
 |  |  |
| * The bodies transport system
 | Heart Beat, Health BeatDirection of Blood Flow |  |
| * A Closer Look at Blood Vessels
 | Observing DiffusionBlood PressureHow Does Pressure Affect Blood Flow? |  |
| * Composition of Blood
 | What Kinds of Cells Are in Blood?Modeling PlasmaDo You Know Your A-B-Os? |  |
| * Cardiovascular Health
 | Blocking the FlowHeart-Healthy Activities |  |
| 1. Respiration & Excretion
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| * Respiratory system
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 | Investigation: A Breath of Fresh AirWhat Do You Exhale?Modeling Respiration |  |
| * Smoking and Your Health
 | Chemicals in Tobacco SmokeModeling a Health Checkup Procedure |  |
| * The Excretory System
 | How Does Filtering a Liquid Change the Liquid?Kidney FunctionPerspiration |  |
| 1. Fighting Disease
 |  |  |
| Infectious Disease | How Do Pathogens Cause Disease?How Does a Disease Spread? |  |
| The Body’s Defenses | The Skin as a BarrierStuck Together |  |
| HIV and AIDS | How Does HIV Spread?/Attack (Directed Inquiry |  |
| Infectious Disease and Your Health | What Substances Can Kill Pathogens?Modeling Active and Passive Immunity |  |
| Noninfectious Disease | What Happens When Airflow Is Restricted?What Does Sunlight Do to the Beads? |  |
| 1. How the Nervous System Works
 |  |  |
| * How the Nervous System Works
 | Modeling a NeuronGetting the Message Across |  |
| * Divisions of the Nervous System
 | M aking Models of the BrainHow Does Your Knee React?When Things Go Wrong | Available on pearson App |
| * Sight and Hearing
 | Making Models of the Ear |  |
| * Smell, Taste, and Touch
 | Taste or SmellWhat’s in the Bag? |  |
| * Alcohol and Other Drugs
 | Demonstrating BACOver-the-Counter Medication Labels |  |
| 1. The Endocrine and Reproductive System
 |  |  |
| * The Endocrine System
 | Modeling Negative Feedback *Pre Lab Directed Inquiry/Open Inquiry* |  |
| * The Male and Female Reproductive Systems
 | Looking at Hormone Levels |  |
| * Pregnancy and Birth
 | Way to Grow! |  |
| * The Human Life Cycle
 | Dissections/ Dissections |  |