**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 cells  Observing 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 generation  This 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 students learn about abiotic and biotic factors through the 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 | |  | | --- | | Where’s the Water?/ Cleanning Up Oil Spills | |  |
| 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 Movement  Observing Slime Mold |  |
| * Fungi | Do All Molds Look Alike?  Considering Fungi as Decomposers |  |
| 1. Plants |  |  |
| * What Is a Plant? | Algae and Other Plants  Local Plant Diversity |  |
| * Classifying Plants | Examining a Fern  Common Characteristics  Masses of Mosses  Will Mosses Absorb Water? |  |
| * Plant Structures | Investigating Stomata  Modeling Flowers |  |
| * Plant Reproduction | Watching Roots Grow  Seasonal 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 Vertebrates  It’s Plane to See |  |
| 1. Getting Around |  |  |
| * Animal Movement | Observing the aquarium  Observing Terrarium  Observing SnailMovement |  |
| 1. Obtaining Energy |  |  |
| * How Animals Obtain and Digest Food | Looking at an Owl’s Leftovers  Planarian Feeding Behavior |  |
| * How Animals Obtain Oxygen | How Do Animals Get Oxygen?  Comparing Respiratory Systems |  |
| * Circulation and Excretion | Comparing Circulatory Systems  Double-Loop Circulation  Modeling a Kidney |  |
| 1. Animal Reproduction & Behavior |  |  |
| * Animal Reproduction and Fertilization | Types of Reproduction  Types of Fertilization | Available on Pearson Apps |
| * Development and Growth | “Eggs-tra” Protection  Cycles of Life  To Care or Not To Care |  |
| * What Is Behavior? | What Behaviors Can You Observe?  Becoming a Learning Detective |  |
| * Patterns of Behavior | Modeling Animal Communication  Investigation: 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 Calories  Predicting Starch Content |  |
| * Healthy Eating | Classifying Foods  Calculating 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 Beat  Direction of Blood Flow |  |
| * A Closer Look at Blood Vessels | Observing Diffusion  Blood Pressure  How Does Pressure Affect Blood Flow? |  |
| * Composition of Blood | What Kinds of Cells Are in Blood?  Modeling Plasma  Do You Know Your A-B-Os? |  |
| * Cardiovascular Health | Blocking the Flow  Heart-Healthy Activities |  |
| 1. Respiration & Excretion |  |  |
| |  |  | | --- | --- | | * Respiratory system | | |  | | Investigation: A Breath of Fresh Air  What Do You Exhale?  Modeling Respiration |  |
| * Smoking and Your Health | Chemicals in Tobacco Smoke  Modeling a Health Checkup Procedure |  |
| * The Excretory System | How Does Filtering a Liquid Change the Liquid?  Kidney Function  Perspiration |  |
| 1. Fighting Disease |  |  |
| Infectious Disease | How Do Pathogens Cause Disease?  How Does a Disease Spread? |  |
| The Body’s Defenses | The Skin as a Barrier  Stuck 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 Neuron  Getting the Message Across |  |
| * Divisions of the Nervous System | M aking Models of the Brain  How 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 Smell  What’s in the Bag? |  |
| * Alcohol and Other Drugs | Demonstrating BAC  Over-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 |  |