

**Inquiry Investigations™**  
**Genetics and Inheritance MODULE - 1282831**  
**Grades: 7-10**

Frey Scientific  
 80 Northwest Boulevard  
 Nashua, NH 03063-4067  
 1-800-225-3739  
 www.freyscientific.com  
 www.freyscientific.com/inquiryinvestigations

**Maryland Content Standards**  
**Science**  
**Grade 7**

| STRAND / TOPIC / STANDARD     | MD.1.0.  | Skills and Processes: Students will demonstrate the thinking and acting inherent in the practice of science.  |
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| TOPIC / INDICATOR             | 1.A.1.   | Constructing Knowledge: Design, analyze, or carry out simple investigations and formulate appropriate conclusions based on data obtained or provided.   |
| INDICATOR / PROFICIENCY LEVEL | 1.A.1.a. | <p>Explain that scientists differ greatly in what phenomena they study and how they go about their work.</p> <ul style="list-style-type: none"> <li>• Teacher Resource CD: Genetics and Heredity</li> <li>• Teacher Resource CD: The DNA Connection</li> </ul>  |
| INDICATOR / PROFICIENCY LEVEL | 1.A.1.b. | <p>Develop the ability to clarify questions and direct them toward objects and phenomena that can be described, explained, or predicted by scientific investigations.</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>• Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining</li> </ul> |

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|                                      |                 | <p>Human Variation in Blood</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul>  |
| <p>INDICATOR / PROFICIENCY LEVEL</p> | <p>1.A.1.c.</p> | <p>Explain and provide examples that all hypotheses are valuable, even if they turn out not to be true, if they lead to fruitful investigations.</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>• Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>• Teacher Resource CD: Genetics and Heredity</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul> |

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| INDICATOR / PROFICIENCY LEVEL | 1.A.1.h. | <p>Use mathematics to interpret and communicate data.</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>Teacher Resource CD: Genetics and Inheritance</li> <li>Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul>  |
| STRAND / TOPIC / STANDARD     | MD.1.0.  | Skills and Processes: Students will demonstrate the thinking and acting inherent in the practice of science.   |
| TOPIC / INDICATOR             | 1.B.1.   | Applying Evidence and Reasoning: Review data from a simple experiment, summarize the data, and construct a logical argument about the cause-and-effect relationships in the experiment.  |
| INDICATOR / PROFICIENCY LEVEL | 1.B.1.a. | <p>Verify the idea that there is no fixed set of steps all scientists follow, scientific investigations usually involve the collection of relevant evidence, the use of logical reasoning, and the application of imagination in devising hypotheses and explanations to make sense of the collected evidence.</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> </ul> |

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|                                      |                 | <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul>  |
| <p>INDICATOR / PROFICIENCY LEVEL</p> | <p>1.B.1.b.</p> | <p>Explain that what people expect to observe often affects what they actually do observe and that scientists know about this danger to objectivity and take steps to try to avoid it when designing investigations and examining data.</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>• Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic</li> </ul> |

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|                                      |                 | <p>Origins through DNA Sequencing</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul>   |
| <p>INDICATOR / PROFICIENCY LEVEL</p> | <p>1.B.1.d.</p> | <p>Describe the reasoning that lead to the interpretation of data and conclusions drawn.</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>• Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> </ul> |

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|                                      |                 | <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul>   |
| <b>STRAND / TOPIC / STANDARD</b>     | <b>MD.1.0.</b>  | <b>Skills and Processes: Students will demonstrate the thinking and acting inherent in the practice of science.</b>   |
| <b>TOPIC / INDICATOR</b>             | <b>1.C.1.</b>   | <b>Communicating Scientific Information: Develop explanations that explicitly link data from investigations conducted, selected readings and, when appropriate, contributions from historical discoveries.</b>  |
| <b>INDICATOR / PROFICIENCY LEVEL</b> | <b>1.C.1.e.</b> | <p>Explain how different models can be used to represent the same thing. What kind of a model to use and how complex it should be depend on its purpose. Choosing a useful model is one of the instances in which intuition and creativity come into play in science, mathematics, and engineering</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul> |
| <b>INDICATOR / PROFICIENCY LEVEL</b> | <b>1.C.1.f.</b> | <p>Participate in group discussions on scientific topics by restating or summarizing accurately what others have said, asking for clarification or elaboration, and expressing alternative positions.</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating</li> </ul>   |

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|                               |          | <p>Meiosis and Fertilization</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul> |
| INDICATOR / PROFICIENCY LEVEL | 1.C.1.g. | <p>Recognize that important contributions to the advancement of science, mathematics, and technology have been made by different kinds of people, in different cultures, at different times.</p> <ul style="list-style-type: none"> <li>• Teacher Resource CD: Genetics and Heredity</li> <li>• Teacher Resource CD: The DNA Connection</li> </ul>  |
| STRAND / TOPIC / STANDARD     | MD.1.0.  | Skills and Processes: Students will demonstrate the thinking and acting inherent in the practice of science.  |
| TOPIC / INDICATOR             | 1.D.1.   | Technology: Explain that complex systems require control mechanisms.  |
| INDICATOR / PROFICIENCY LEVEL | 1.D.1.a. | <p>Explain that the choice of materials for a job depends on their properties and on how they interact with other materials.</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> </ul>  |

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|                                      |          | <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul> |
| <b>STRAND / TOPIC / STANDARD</b>     | MD.1.0.  | Skills and Processes: Students will demonstrate the thinking and acting inherent in the practice of science.   |
| <b>TOPIC / INDICATOR</b>             | 1.D.3.   | Technology: Analyze the value and the limitations of different types of models in explaining real things and processes.  |
| <b>INDICATOR / PROFICIENCY LEVEL</b> | 1.D.3.a. | <p>Explain that the kind of model to use and how complex it should be depends on its purpose and that it is possible to have different models used to represent the same thing.</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>Virtual Laboratory: Mendelian Genetics Law of Dominance</li> </ul>   |



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|                               |          | <ul style="list-style-type: none"> <li>Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul>  |
| INDICATOR / PROFICIENCY LEVEL | 1.D.3.b. | <p>Explain, using examples that models are often used to think about processes that happen too slowly, too quickly, or on too small a scale to observe directly, or that are too vast to be changed deliberately, or that are potentially dangerous.</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul> |
| INDICATOR / PROFICIENCY LEVEL | 1.D.3.c. | <p>Explain that models may sometimes mislead by suggesting characteristics that are not really shared with what is being modeled.</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul>  |
| STRAND / TOPIC / STANDARD     | MD.3.0.  | Life Science: The students will use scientific skills and processes to explain the dynamic nature of living things, their interactions, and the results from the interactions that occur over time.   |
| TOPIC / INDICATOR             | 3.A.1.   | Diversity of Life: Compile evidence to verify the claim of biologists that the features of organisms connect or differentiate them-these include external and internal structures (features) and processes.   |
| INDICATOR / PROFICIENCY LEVEL | 3.A.1.a. | Provide examples and explain that organisms sorted into groups share similarities in external structures as well as similarities in internal anatomical structures and processes which can be used to infer the degree of relatedness among organisms: Vascular - non vascular plants; Closed - open circulatory systems; Asexual - sexual reproduction;  |

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|                               |          | <p>Respiration (lungs-gills-skin); Digestion.</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>Teacher Resource CD: The DNA Connection</li> </ul>  |
| INDICATOR / PROFICIENCY LEVEL | 3.A.1.c. | <p>Use analogies, models, or drawings to represent that animals and plants have a great variety of body plans and internal structures that define the way they live, grow, survive, and reproduce.</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>Teacher Resource CD: The DNA Connection</li> </ul> |
| STRAND / TOPIC / STANDARD     | MD.3.0.  | Life Science: The students will use scientific skills and processes to explain the dynamic nature of living things, their interactions, and the results from the interactions that occur over time.  |
| TOPIC / INDICATOR             | 3.B.1.   | Cells: Gather and organize data to defend or argue the proposition that all living things are cellular (composed of cells) and that cells carry out the basic life functions.  |
| INDICATOR / PROFICIENCY LEVEL | 3.B.1.c. | <p>Based on research and examples from video technology explain that the repeated division of cells enables organisms to grow and make repairs.</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> </ul>  |
| INDICATOR / PROFICIENCY LEVEL | 3.B.1.d. | <p>Collect data from investigations using single celled organisms, such as yeast or algae to explain that a single cell carries out all the basic life functions of a multicellular organism: Reproducing; Extracting energy from food; Getting rid of wastes.</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating</li> </ul>   |

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|                               |          | Meiosis and Fertilization  |
| INDICATOR / PROFICIENCY LEVEL | 3.B.1.e. | Based on data compiled from a number of lessons completed, take and defend a position on the statement 'The way in which cells function is the same in all organisms.'<br><br><ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> </ul>  |
| STRAND / TOPIC / STANDARD     | MD.3.0.  | Life Science: The students will use scientific skills and processes to explain the dynamic nature of living things, their interactions, and the results from the interactions that occur over time.  |
| TOPIC / INDICATOR             | 3.C.1.   | Genetics: Explain the ways that genetic information is passed from parent to offspring in different organisms.   |
| INDICATOR / PROFICIENCY LEVEL | 3.C.1.e. | Identify evidence to support the idea that there is greater variation among offspring of organisms that reproduce sexually than among those that reproduce asexually.<br><br><ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>Teacher Resource CD: Genetics and Inheritance</li> </ul> |
| STRAND / TOPIC / STANDARD     | MD.6.0.  | Environmental Science: Students will use scientific skills and processes to explain the interactions of environmental factors (living and non-living) and analyze their impact from a local to a global perspective.   |
| TOPIC / INDICATOR             | 6.B.1.   | Environmental Issues: Recognize and describe that environmental changes can have local, regional, and global consequences.   |
| INDICATOR / PROFICIENCY LEVEL | 6.B.1.a. | Identify and describe a local, regional, or global environmental issue.<br><br><ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> </ul>   |
| INDICATOR / PROFICIENCY LEVEL | 6.B.1.b. | Identify and describe that different individuals or groups are affected by an issue in different ways.<br><br><ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> </ul>  |

### Maryland Content Standards

#### Science

#### Grade 8

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| STRAND / TOPIC / STANDARD     | MD.1.0.  | Skills and Processes: Students will demonstrate the thinking and acting inherent in the practice of science.   |
| TOPIC / INDICATOR             | 1.A.1.   | Constructing Knowledge: Design, analyze, or carry out simple investigations and formulate appropriate conclusions based on data obtained or provided.  |
| INDICATOR / PROFICIENCY LEVEL | 1.A.1.a. | Explain that scientists differ greatly in what phenomena they study and how they go about their work.<br><br><ul style="list-style-type: none"> <li>Teacher Resource CD: Genetics and Heredity</li> <li>Teacher Resource CD: The DNA Connection</li> </ul> |
| INDICATOR /                   | 1.A.1.b. | Develop the ability to clarify questions and direct them toward objects and phenomena  |

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| <p>PROFICIENCY LEVEL</p>             |                 | <p>that can be described, explained, or predicted by scientific investigations.</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>• Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul> |
| <p>INDICATOR / PROFICIENCY LEVEL</p> | <p>1.A.1.c.</p> | <p>Explain and provide examples that all hypotheses are valuable, even if they turn out not to be true, if they lead to fruitful investigations.</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a</li> </ul>   |

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|                                      |                 | <p>Dihybrid Cross to Demonstrate the Law of Independent Assortment</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>• Teacher Resource CD: Genetics and Heredity</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul> |
| <p>INDICATOR / PROFICIENCY LEVEL</p> | <p>1.A.1.h.</p> | <p>Use mathematics to interpret and communicate data.</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>• Teacher Resource CD: Genetics and Inheritance</li> </ul>   |

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|                                      |                 | <ul style="list-style-type: none"> <li>Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul>  |
| <b>STRAND / TOPIC / STANDARD</b>     | <b>MD.1.0.</b>  | <b>Skills and Processes: Students will demonstrate the thinking and acting inherent in the practice of science.</b>  |
| <b>TOPIC / INDICATOR</b>             | <b>1.B.1.</b>   | <b>Applying Evidence and Reasoning: Review data from a simple experiment, summarize the data, and construct a logical argument about the cause-and-effect relationships in the experiment.</b>   |
| <b>INDICATOR / PROFICIENCY LEVEL</b> | <b>1.B.1.a.</b> | <p>Verify the idea that there is no fixed set of steps all scientists follow, scientific investigations usually involve the collection of relevant evidence, the use of logical reasoning, and the application of imagination in devising hypotheses and explanations to make sense of the collected evidence.</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>Virtual Laboratory: Mendelian Genetics Law of Dominance</li> </ul> |

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|                               |          | <ul style="list-style-type: none"> <li>Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul>  |
| INDICATOR / PROFICIENCY LEVEL | 1.B.1.b. | <p>Explain that what people expect to observe often affects what they actually do observe and that scientists know about this danger to objectivity and take steps to try to avoid it when designing investigations and examining data.</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul> |
| INDICATOR / PROFICIENCY LEVEL | 1.B.1.d. | <p>Describe the reasoning that lead to the interpretation of data and conclusions drawn.</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About</li> </ul>  |

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|                                      |                 | <p>Base Pairs</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul> |
| <b>STRAND / TOPIC / STANDARD</b>     | <b>MD.1.0.</b>  | <b>Skills and Processes: Students will demonstrate the thinking and acting inherent in the practice of science.</b>   |
| <b>TOPIC / INDICATOR</b>             | <b>1.C.1.</b>   | <b>Communicating Scientific Information: Develop explanations that explicitly link data from investigations conducted, selected readings and, when appropriate, contributions from historical discoveries.</b>  |
| <b>INDICATOR / PROFICIENCY LEVEL</b> | <b>1.C.1.e.</b> | <p>Explain how different models can be used to represent the same thing. What kind of a model to use and how complex it should be depend on its purpose. Choosing a useful model is one of the instances in which intuition and creativity come into play in science, mathematics, and engineering</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> </ul>   |



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|                                      |                 | <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>• Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul>  |
| <p>INDICATOR / PROFICIENCY LEVEL</p> | <p>1.C.1.f.</p> | <p>Participate in group discussions on scientific topics by restating or summarizing accurately what others have said, asking for clarification or elaboration, and expressing alternative positions.</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>• Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> </ul> |

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|                               |          | <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul>   |
| INDICATOR / PROFICIENCY LEVEL | 1.C.1.g. | <p>Recognize that important contributions to the advancement of science, mathematics, and technology have been made by different kinds of people, in different cultures, at different times.</p> <ul style="list-style-type: none"> <li>Teacher Resource CD: Genetics and Heredity</li> <li>Teacher Resource CD: The DNA Connection</li> </ul>   |
| STRAND / TOPIC / STANDARD     | MD.1.0.  | Skills and Processes: Students will demonstrate the thinking and acting inherent in the practice of science.   |
| TOPIC / INDICATOR             | 1.D.1.   | Technology: Explain that complex systems require control mechanisms.   |
| INDICATOR / PROFICIENCY LEVEL | 1.D.1.a. | <p>Explain that the choice of materials for a job depends on their properties and on how they interact with other materials.</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> </ul> |

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|                                      |                 | <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul>   |
| <b>STRAND / TOPIC / STANDARD</b>     | <b>MD.1.0.</b>  | <b>Skills and Processes: Students will demonstrate the thinking and acting inherent in the practice of science.</b>  |
| <b>TOPIC / INDICATOR</b>             | <b>1.D.3.</b>   | <b>Technology: Analyze the value and the limitations of different types of models in explaining real things and processes.</b>   |
| <b>INDICATOR / PROFICIENCY LEVEL</b> | <b>1.D.3.a.</b> | <p>Explain that the kind of model to use and how complex it should be depends on its purpose and that it is possible to have different models used to represent the same thing.</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul> |
| <b>INDICATOR / PROFICIENCY LEVEL</b> | <b>1.D.3.b.</b> | <p>Explain, using examples that models are often used to think about processes that happen too slowly, too quickly, or on too small a scale to observe directly, or that are too vast to be changed deliberately, or that are potentially dangerous.</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze</li> </ul>  |

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|                               |          | <p>Genetic Origins through DNA Sequencing</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul>   |
| INDICATOR / PROFICIENCY LEVEL | 1.D.3.c. | <p>Explain that models may sometimes mislead by suggesting characteristics that are not really shared with what is being modeled.</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul>  |
| STRAND / TOPIC / STANDARD     | MD.3.0.  | Life Science: The students will use scientific skills and processes to explain the dynamic nature of living things, their interactions, and the results from the interactions that occur over time.   |
| TOPIC / INDICATOR             | 3.D.1.   | Evolution: Recognize and describe that evolutionary change in species over time occurs as a result of natural variation in organisms and environmental changes.   |
| INDICATOR / PROFICIENCY LEVEL | 3.D.1.b. | <p>Recognize that adaptations may include variations in structures, behaviors, or physiology, such as spiny leaves on a cactus, birdcalls, and antibiotic resistant bacteria.</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze</li> </ul> |

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|  |  | <p>Genetic Origins through DNA Fingerprinting</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> </ul> |
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**Maryland Content Standards  
Science  
Grade 9**

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| <b>STRAND / TOPIC / STANDARD</b>     | <b>MD.1.</b>  | <b>Skills And Processes: The student will demonstrate ways of thinking and acting inherent in the practice of science. The student will use the language and instruments of science to collect, organize, interpret, calculate, and communicate information.</b>  |
| <b>TOPIC / INDICATOR</b>             | <b>1.1.</b>   | <b>The student will explain why curiosity, honesty, openness, and skepticism are highly regarded in science.</b>  |
| <b>INDICATOR / PROFICIENCY LEVEL</b> | <b>1.1.1.</b> | <p>The student will recognize that real problems have more than one solution and decisions to accept one solution over another are made on the basis of many issues.</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing</li> </ul> |

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|                               |        | <p>Genetic Disease</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul>   |
| STRAND / TOPIC / STANDARD     | MD.1.  | Skills And Processes: The student will demonstrate ways of thinking and acting inherent in the practice of science. The student will use the language and instruments of science to collect, organize, interpret, calculate, and communicate information.  |
| TOPIC / INDICATOR             | 1.2.   | The student will pose scientific questions and suggest investigative approaches to provide answers to questions.   |
| INDICATOR / PROFICIENCY LEVEL | 1.2.1. | <p>The student will identify meaningful, answerable scientific questions.</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>Virtual Laboratory: Mendelian Genetics Law of Independent</li> </ul> |

|                               |        | Assortment  |
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| INDICATOR / PROFICIENCY LEVEL | 1.2.2. | <p>The student will pose meaningful, answerable scientific questions. (NTB)</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>• Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul> |
| INDICATOR / PROFICIENCY LEVEL | 1.2.4. | <p>The student will test a working hypothesis. (NTB)</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> </ul>  |

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|                               |        | <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>• Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul> |
| INDICATOR / PROFICIENCY LEVEL | 1.2.5. | <p>The student will select appropriate instruments and materials to conduct an investigation.</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>• Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a</li> </ul>   |



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|                                      |               | <p>Family Pedigree</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul>   |
| <p>INDICATOR / PROFICIENCY LEVEL</p> | <p>1.2.7.</p> | <p>The student will use relationships discovered in the lab to explain phenomena observed outside the laboratory.</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>• Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the</li> </ul> |

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|                               |        | <p>Human Genome</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul>  |
| STRAND / TOPIC / STANDARD     | MD.1.  | Skills And Processes: The student will demonstrate ways of thinking and acting inherent in the practice of science. The student will use the language and instruments of science to collect, organize, interpret, calculate, and communicate information.   |
| TOPIC / INDICATOR             | 1.3.   | The student will carry out scientific investigations effectively and employ the instruments, systems of measurement, and materials of science appropriately.  |
| INDICATOR / PROFICIENCY LEVEL | 1.3.1. | <p>The student will develop and demonstrate skills in using lab and field equipment to perform investigative techniques. (NTB)</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing</li> </ul> |

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|                                      |               | <p>Genetic Disease</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul>   |
| <p>INDICATOR / PROFICIENCY LEVEL</p> | <p>1.3.2.</p> | <p>The student will recognize safe laboratory procedures.</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>• Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> </ul> |

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|                               |        | <ul style="list-style-type: none"> <li>• Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul>  |
| INDICATOR / PROFICIENCY LEVEL | 1.3.3. | <p>The student will demonstrate safe handling of the chemicals and materials of science. (NTB)</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>• Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul> |
| INDICATOR / PROFICIENCY LEVEL | 1.3.4. | <p>The student will learn the use of new instruments and equipment by following instructions in a manual or from oral direction. (NTB)</p>   |

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|                               |        | <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul> |
| STRAND / TOPIC / STANDARD     | MD.1.  | Skills And Processes: The student will demonstrate ways of thinking and acting inherent in the practice of science. The student will use the language and instruments of science to collect, organize, interpret, calculate, and communicate information.   |
| TOPIC / INDICATOR             | 1.4.   | The student will demonstrate that data analysis is a vital aspect of the process of scientific inquiry and communication.   |
| INDICATOR / PROFICIENCY LEVEL | 1.4.2. | <p>The student will analyze data to make predictions, decisions, or draw conclusions.</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA</li> </ul>   |

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|                               |        | <p>Replication</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>Teacher Resource CD: Genetics and Heredity</li> <li>Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul> |
| INDICATOR / PROFICIENCY LEVEL | 1.4.4. | <p>The student will determine the relationships between quantities and develop the mathematical model that describes these relationships.</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> </ul>   |

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|                               |        | <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>• Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul> |
| INDICATOR / PROFICIENCY LEVEL | 1.4.5. | <p>The student will check graphs to determine that they do not misrepresent results.</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>• Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and</li> </ul>  |

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|                                      |               | <p>the Hardy-Weinberg Principle</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul>   |
| <p>INDICATOR / PROFICIENCY LEVEL</p> | <p>1.4.6.</p> | <p>The student will describe trends revealed by data.</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>• Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> </ul> |



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|                               |        | <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul>  |
| INDICATOR / PROFICIENCY LEVEL | 1.4.8. | <p>The student will use models and computer simulations to extend his/her understanding of scientific concepts. (NTB)</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul> |
| STRAND / TOPIC / STANDARD     | MD.1.  | Skills And Processes: The student will demonstrate ways of thinking and acting inherent in the practice of science. The student will use the language and instruments of science to collect, organize, interpret, calculate, and communicate information.  |
| TOPIC / INDICATOR             | 1.5.   | The student will use appropriate methods for communicating in writing and orally the processes and results of scientific investigation.  |
| INDICATOR / PROFICIENCY LEVEL | 1.5.1. | <p>The student will demonstrate the ability to summarize data (measurements/observations).</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> </ul>   |

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|   |                      | <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul> |
| <p><b>INDICATOR / PROFICIENCY LEVEL</b></p> | <p><b>1.5.8.</b></p> | <p>The student will describe similarities and differences when explaining concepts and/or principles.</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> </ul>   |

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|                                      |               | <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> </ul>  |
| <p>INDICATOR / PROFICIENCY LEVEL</p> | <p>1.5.9.</p> | <p>The student will communicate conclusions derived through a synthesis of ideas.</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>• Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> </ul> |

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|                               |        | <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul> |
| STRAND / TOPIC / STANDARD     | MD.1.  | Skills And Processes: The student will demonstrate ways of thinking and acting inherent in the practice of science. The student will use the language and instruments of science to collect, organize, interpret, calculate, and communicate information.  |
| TOPIC / INDICATOR             | 1.7.   | The student will show that connections exist both within the various fields of science and among science and other disciplines including mathematics, social studies, language arts, fine arts, and technology.  |
| INDICATOR / PROFICIENCY LEVEL | 1.7.1. | The student will apply the skills, processes, and concepts of biology, chemistry, physics, or earth science to societal issues. <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> </ul>  |
| INDICATOR / PROFICIENCY LEVEL | 1.7.2. | The student will identify and evaluate the impact of scientific ideas and/or advancements in technology on society. <ul style="list-style-type: none"> <li>Teacher Resource CD: Genetics and Heredity</li> <li>Teacher Resource CD: The DNA Connection</li> </ul>  |
| INDICATOR / PROFICIENCY LEVEL | 1.7.6. | The student will explain how development of scientific knowledge leads to the creation of new technology and how technological advances allow for additional scientific accomplishments. <ul style="list-style-type: none"> <li>Teacher Resource CD: Genetics and Heredity</li> <li>Teacher Resource CD: The DNA Connection</li> </ul>   |
| STRAND / TOPIC / STANDARD     | MD.3.  | Concepts Of Biology: The student will demonstrate the ability to use scientific skills and processes (Core Learning Goal 1) and major biological concepts to explain the uniqueness and interdependence of living organisms, their interactions with the environment, and the continuation of life on earth.   |
| TOPIC / INDICATOR             | 3.1.   | The student will be able to explain the correlation between the structure and function of biologically important molecules and their relationship to cell processes.   |
| INDICATOR / PROFICIENCY LEVEL | 3.1.1. | The student will be able to describe the unique characteristics of chemical substances and macromolecules utilized by living systems. <ul style="list-style-type: none"> <li>Teacher Resource CD: The DNA Connection</li> </ul>  |
| INDICATOR / PROFICIENCY LEVEL | 3.1.3. | The student will be able to compare the transfer and use of matter and energy in photosynthetic and non-photosynthetic organisms. <ul style="list-style-type: none"> <li>Virtual Laboratory: Mendelian Genetics Law of Dominance</li> </ul>  |

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|                               |        | <ul style="list-style-type: none"> <li>Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul>   |
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| TOPIC / INDICATOR             | 3.2.   | The student will demonstrate an understanding that all organisms are composed of cells which can function independently or as part of multicellular organisms.   |
| INDICATOR / PROFICIENCY LEVEL | 3.2.2. | <p>The student will conclude that cells exist within a narrow range of environmental conditions and changes to that environment, either naturally occurring or induced, may cause changes in the metabolic activity of the cell or organism.</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> </ul>   |
| STRAND / TOPIC / STANDARD     | MD.3.  | Concepts Of Biology: The student will demonstrate the ability to use scientific skills and processes (Core Learning Goal 1) and major biological concepts to explain the uniqueness and interdependence of living organisms, their interactions with the environment, and the continuation of life on earth.   |
| TOPIC / INDICATOR             | 3.3.   | The student will analyze how traits are inherited and passed on from one generation to another.  |
| INDICATOR / PROFICIENCY LEVEL | 3.3.1. | <p>The student will demonstrate that the sorting and recombination of genes during sexual reproduction has an effect on variation in offspring.</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>Teacher Resource CD: Genetics and Heredity</li> </ul> |

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|                               |        | <ul style="list-style-type: none"> <li>• Teacher Resource CD: Genetics and Inheritance</li> <li>• Teacher Resource CD: The DNA Connection</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul>   |
| INDICATOR / PROFICIENCY LEVEL | 3.3.2. | <p>The student will illustrate and explain how expressed traits are passed from parent to offspring.</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>• Teacher Resource CD: Genetics and Heredity</li> <li>• Teacher Resource CD: Genetics and Inheritance</li> <li>• Teacher Resource CD: The DNA Connection</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul> |
| INDICATOR / PROFICIENCY LEVEL | 3.3.3. | <p>The student will explain how a genetic trait is determined by the code in a DNA molecule.</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> </ul>   |

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|                               |        | <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>Teacher Resource CD: Genetics and Heredity</li> <li>Teacher Resource CD: Genetics and Inheritance</li> <li>Teacher Resource CD: The DNA Connection</li> <li>Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul> |
| INDICATOR / PROFICIENCY LEVEL | 3.3.4. | <p>The student will interpret how the effects of DNA alteration can be beneficial or harmful to the individual, society, and/or the environment.</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>Teacher Resource CD: Genetics and Inheritance</li> </ul>   |
| STRAND / TOPIC / STANDARD     | MD.3.  | <p>Concepts Of Biology: The student will demonstrate the ability to use scientific skills and processes (Core Learning Goal 1) and major biological concepts to explain the uniqueness and interdependence of living organisms, their interactions with the environment, and the continuation of life on earth.</p>   |
| TOPIC /                       | 3.6.   | <p>The student will investigate a biological issue and develop an action plan.</p>  |

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| INDICATOR / PROFICIENCY LEVEL | 3.6.2. | The student will investigate a biological issue and be able to defend their position on topics such as animal rights, drug and alcohol abuse, viral diseases (e.g., AIDS), genetic engineering, bioethics, biodiversity, population growth, global sustainability, or origin of life. (NTB) <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> </ul>  |
| STRAND / TOPIC / STANDARD     | MD.6.  | Environmental Science: The student will demonstrate the ability to use the scientific skills and processes (Core Learning Goal 1) and major environmental science concepts to understand interrelationships of the natural world and to analyze environmental issues and their solutions.  |
| TOPIC / INDICATOR             | 6.3.   | The student will analyze the relationships between humans and the earth's resources.   |
| INDICATOR / PROFICIENCY LEVEL | 6.3.4. | The student will evaluate the interrelationship between humans and biological resources (At least - food production/agriculture; forest and wildlife resources; species diversity/genetic resources; integrated pest management; human health). <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>Teacher Resource CD: Genetics and Inheritance</li> </ul>  |
| STRAND / TOPIC / STANDARD     | MD.6.  | Environmental Science: The student will demonstrate the ability to use the scientific skills and processes (Core Learning Goal 1) and major environmental science concepts to understand interrelationships of the natural world and to analyze environmental issues and their solutions.  |
| TOPIC / INDICATOR             | 6.4.   | The student will develop and apply knowledge and skills gained from an environmental issue investigation to an action project which protects and sustains the environment.   |
| INDICATOR / PROFICIENCY LEVEL | 6.4.1. | Identify an environmental issue and formulate related research questions (Methods of gathering information may include: writing letters; performing a literature search; using the internet; interviewing experts). <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and</li> </ul> |



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|                                      |               | <p>the Hardy-Weinberg Principle</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul>   |
| <p>INDICATOR / PROFICIENCY LEVEL</p> | <p>6.4.2.</p> | <p>Design and conduct the research (Methods of data collection may include: field or laboratory; questionnaire/opinionnaire).</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>• Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing</li> </ul> |

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|                                      |               | <p>Genetic Disease</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul>   |
| <p>INDICATOR / PROFICIENCY LEVEL</p> | <p>6.4.3.</p> | <p>Interpret the findings to draw conclusions and make recommendations to help resolve the issue.</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>• Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the</li> </ul> |

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|                               |        | <p>Frequency of Human Traits in a Population</p> <ul style="list-style-type: none"> <li>Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul>   |
| INDICATOR / PROFICIENCY LEVEL | 6.4.4. | <p>Apply the conclusions to develop and implement an action project (Methods of implementation may include: physical action; persuasion; consumer action; political action).</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> </ul> |

**Maryland Content Standards  
Science  
Grade 10**

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| STRAND / TOPIC / STANDARD     | MD.1.  | Skills And Processes: The student will demonstrate ways of thinking and acting inherent in the practice of science. The student will use the language and instruments of science to collect, organize, interpret, calculate, and communicate information.   |
| TOPIC / INDICATOR             | 1.1.   | The student will explain why curiosity, honesty, openness, and skepticism are highly regarded in science.   |
| INDICATOR / PROFICIENCY LEVEL | 1.1.1. | <p>The student will recognize that real problems have more than one solution and decisions to accept one solution over another are made on the basis of many issues.</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing</li> </ul> |

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|                               |        | <p>Genetic Disease</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul>  |
| STRAND / TOPIC / STANDARD     | MD.1.  | Skills And Processes: The student will demonstrate ways of thinking and acting inherent in the practice of science. The student will use the language and instruments of science to collect, organize, interpret, calculate, and communicate information.   |
| TOPIC / INDICATOR             | 1.2.   | The student will pose scientific questions and suggest investigative approaches to provide answers to questions.  |
| INDICATOR / PROFICIENCY LEVEL | 1.2.1. | <p>The student will identify meaningful, answerable scientific questions.</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul> |

|                               |        | Assortment  |
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| INDICATOR / PROFICIENCY LEVEL | 1.2.2. | <p>The student will pose meaningful, answerable scientific questions. (NTB)</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>• Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul> |
| INDICATOR / PROFICIENCY LEVEL | 1.2.4. | <p>The student will test a working hypothesis. (NTB)</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> </ul>  |

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|                                      |               | <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>• Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul> |
| <p>INDICATOR / PROFICIENCY LEVEL</p> | <p>1.2.5.</p> | <p>The student will select appropriate instruments and materials to conduct an investigation.</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>• Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a</li> </ul>   |

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|                                      |               | <p>Family Pedigree</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul>   |
| <p>INDICATOR / PROFICIENCY LEVEL</p> | <p>1.2.7.</p> | <p>The student will use relationships discovered in the lab to explain phenomena observed outside the laboratory.</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>• Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the</li> </ul> |

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|                               |        | <p>Human Genome</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul>  |
| STRAND / TOPIC / STANDARD     | MD.1.  | Skills And Processes: The student will demonstrate ways of thinking and acting inherent in the practice of science. The student will use the language and instruments of science to collect, organize, interpret, calculate, and communicate information.   |
| TOPIC / INDICATOR             | 1.3.   | The student will carry out scientific investigations effectively and employ the instruments, systems of measurement, and materials of science appropriately.  |
| INDICATOR / PROFICIENCY LEVEL | 1.3.1. | <p>The student will develop and demonstrate skills in using lab and field equipment to perform investigative techniques. (NTB)</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>• Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing</li> </ul> |



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|                                      |               | <p>Genetic Disease</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul>   |
| <p>INDICATOR / PROFICIENCY LEVEL</p> | <p>1.3.2.</p> | <p>The student will recognize safe laboratory procedures.</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>• Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> </ul> |

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|                               |        | <ul style="list-style-type: none"> <li>• Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul>  |
| INDICATOR / PROFICIENCY LEVEL | 1.3.3. | <p>The student will demonstrate safe handling of the chemicals and materials of science. (NTB)</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>• Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul> |
| INDICATOR / PROFICIENCY LEVEL | 1.3.4. | <p>The student will learn the use of new instruments and equipment by following instructions in a manual or from oral direction. (NTB)</p>   |

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|                               |        | <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul> |
| STRAND / TOPIC / STANDARD     | MD.1.  | Skills And Processes: The student will demonstrate ways of thinking and acting inherent in the practice of science. The student will use the language and instruments of science to collect, organize, interpret, calculate, and communicate information.   |
| TOPIC / INDICATOR             | 1.4.   | The student will demonstrate that data analysis is a vital aspect of the process of scientific inquiry and communication.   |
| INDICATOR / PROFICIENCY LEVEL | 1.4.2. | <p>The student will analyze data to make predictions, decisions, or draw conclusions.</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA</li> </ul>   |

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|   |                      | <p>Replication</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>• Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>• Teacher Resource CD: Genetics and Heredity</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul> |
| <p><b>INDICATOR / PROFICIENCY LEVEL</b></p> | <p><b>1.4.4.</b></p> | <p>The student will determine the relationships between quantities and develop the mathematical model that describes these relationships.</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> </ul>   |

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|                                      |               | <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>• Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul> |
| <p>INDICATOR / PROFICIENCY LEVEL</p> | <p>1.4.5.</p> | <p>The student will check graphs to determine that they do not misrepresent results.</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>• Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and</li> </ul>  |

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|                                      |               | <p>the Hardy-Weinberg Principle</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul>   |
| <p>INDICATOR / PROFICIENCY LEVEL</p> | <p>1.4.6.</p> | <p>The student will describe trends revealed by data.</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>• Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> </ul> |

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|                               |        | <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul>  |
| INDICATOR / PROFICIENCY LEVEL | 1.4.8. | <p>The student will use models and computer simulations to extend his/her understanding of scientific concepts. (NTB)</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul> |
| STRAND / TOPIC / STANDARD     | MD.1.  | <p>Skills And Processes: The student will demonstrate ways of thinking and acting inherent in the practice of science. The student will use the language and instruments of science to collect, organize, interpret, calculate, and communicate information.</p>   |
| TOPIC / INDICATOR             | 1.5.   | <p>The student will use appropriate methods for communicating in writing and orally the processes and results of scientific investigation.</p>   |
| INDICATOR / PROFICIENCY LEVEL | 1.5.1. | <p>The student will demonstrate the ability to summarize data (measurements/observations).</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> </ul>   |

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|   |                      | <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>• Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul> |
| <p><b>INDICATOR / PROFICIENCY LEVEL</b></p> | <p><b>1.5.8.</b></p> | <p>The student will describe similarities and differences when explaining concepts and/or principles.</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>• Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> </ul>   |



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|                               |        | <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> </ul>  |
| INDICATOR / PROFICIENCY LEVEL | 1.5.9. | <p>The student will communicate conclusions derived through a synthesis of ideas.</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>• Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> </ul> |

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|                               |        | <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul> |
| STRAND / TOPIC / STANDARD     | MD.1.  | Skills And Processes: The student will demonstrate ways of thinking and acting inherent in the practice of science. The student will use the language and instruments of science to collect, organize, interpret, calculate, and communicate information.  |
| TOPIC / INDICATOR             | 1.7.   | The student will show that connections exist both within the various fields of science and among science and other disciplines including mathematics, social studies, language arts, fine arts, and technology.  |
| INDICATOR / PROFICIENCY LEVEL | 1.7.1. | The student will apply the skills, processes, and concepts of biology, chemistry, physics, or earth science to societal issues. <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> </ul>  |
| INDICATOR / PROFICIENCY LEVEL | 1.7.2. | The student will identify and evaluate the impact of scientific ideas and/or advancements in technology on society. <ul style="list-style-type: none"> <li>Teacher Resource CD: Genetics and Heredity</li> <li>Teacher Resource CD: The DNA Connection</li> </ul>  |
| INDICATOR / PROFICIENCY LEVEL | 1.7.6. | The student will explain how development of scientific knowledge leads to the creation of new technology and how technological advances allow for additional scientific accomplishments. <ul style="list-style-type: none"> <li>Teacher Resource CD: Genetics and Heredity</li> <li>Teacher Resource CD: The DNA Connection</li> </ul>   |
| STRAND / TOPIC / STANDARD     | MD.3.  | Concepts Of Biology: The student will demonstrate the ability to use scientific skills and processes (Core Learning Goal 1) and major biological concepts to explain the uniqueness and interdependence of living organisms, their interactions with the environment, and the continuation of life on earth.   |
| TOPIC / INDICATOR             | 3.1.   | The student will be able to explain the correlation between the structure and function of biologically important molecules and their relationship to cell processes.   |
| INDICATOR / PROFICIENCY LEVEL | 3.1.1. | The student will be able to describe the unique characteristics of chemical substances and macromolecules utilized by living systems. <ul style="list-style-type: none"> <li>Teacher Resource CD: The DNA Connection</li> </ul>  |
| INDICATOR / PROFICIENCY LEVEL | 3.1.3. | The student will be able to compare the transfer and use of matter and energy in photosynthetic and non-photosynthetic organisms. <ul style="list-style-type: none"> <li>Virtual Laboratory: Mendelian Genetics Law of Dominance</li> </ul>  |

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|                               |        | <ul style="list-style-type: none"> <li>Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul>   |
| STRAND / TOPIC / STANDARD     | MD.3.  | Concepts Of Biology: The student will demonstrate the ability to use scientific skills and processes (Core Learning Goal 1) and major biological concepts to explain the uniqueness and interdependence of living organisms, their interactions with the environment, and the continuation of life on earth.   |
| TOPIC / INDICATOR             | 3.2.   | The student will demonstrate an understanding that all organisms are composed of cells which can function independently or as part of multicellular organisms.   |
| INDICATOR / PROFICIENCY LEVEL | 3.2.2. | <p>The student will conclude that cells exist within a narrow range of environmental conditions and changes to that environment, either naturally occurring or induced, may cause changes in the metabolic activity of the cell or organism.</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> </ul>   |
| STRAND / TOPIC / STANDARD     | MD.3.  | Concepts Of Biology: The student will demonstrate the ability to use scientific skills and processes (Core Learning Goal 1) and major biological concepts to explain the uniqueness and interdependence of living organisms, their interactions with the environment, and the continuation of life on earth.   |
| TOPIC / INDICATOR             | 3.3.   | The student will analyze how traits are inherited and passed on from one generation to another.  |
| INDICATOR / PROFICIENCY LEVEL | 3.3.1. | <p>The student will demonstrate that the sorting and recombination of genes during sexual reproduction has an effect on variation in offspring.</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>Teacher Resource CD: Genetics and Heredity</li> </ul> |

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|                               |        | <ul style="list-style-type: none"> <li>• Teacher Resource CD: Genetics and Inheritance</li> <li>• Teacher Resource CD: The DNA Connection</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul>   |
| INDICATOR / PROFICIENCY LEVEL | 3.3.2. | <p>The student will illustrate and explain how expressed traits are passed from parent to offspring.</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>• Teacher Resource CD: Genetics and Heredity</li> <li>• Teacher Resource CD: Genetics and Inheritance</li> <li>• Teacher Resource CD: The DNA Connection</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul> |
| INDICATOR / PROFICIENCY LEVEL | 3.3.3. | <p>The student will explain how a genetic trait is determined by the code in a DNA molecule.</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> </ul>   |

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|                               |        | <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>• Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>• Teacher Resource CD: Genetics and Heredity</li> <li>• Teacher Resource CD: Genetics and Inheritance</li> <li>• Teacher Resource CD: The DNA Connection</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul> |
| INDICATOR / PROFICIENCY LEVEL | 3.3.4. | <p>The student will interpret how the effects of DNA alteration can be beneficial or harmful to the individual, society, and/or the environment.</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>• Teacher Resource CD: Genetics and Inheritance</li> </ul>   |
| STRAND / TOPIC / STANDARD     | MD.3.  | <p>Concepts Of Biology: The student will demonstrate the ability to use scientific skills and processes (Core Learning Goal 1) and major biological concepts to explain the uniqueness and interdependence of living organisms, their interactions with the environment, and the continuation of life on earth.</p>   |
| TOPIC /                       | 3.6.   | <p>The student will investigate a biological issue and develop an action plan.</p>  |

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| INDICATOR / PROFICIENCY LEVEL | 3.6.2. | <p>The student will investigate a biological issue and be able to defend their position on topics such as animal rights, drug and alcohol abuse, viral diseases (e.g., AIDS), genetic engineering, bioethics, biodiversity, population growth, global sustainability, or origin of life. (NTB)</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> </ul>   |
| STRAND / TOPIC / STANDARD     | MD.6.  | Environmental Science: The student will demonstrate the ability to use the scientific skills and processes (Core Learning Goal 1) and major environmental science concepts to understand interrelationships of the natural world and to analyze environmental issues and their solutions.  |
| TOPIC / INDICATOR             | 6.2.   | The student will investigate the interdependence of organisms within their biotic environment.   |
| INDICATOR / PROFICIENCY LEVEL | 6.2.4. | <p>The student will provide examples and evidence showing that natural selection leads to organisms that are well suited for survival in particular environments (At least - coevolutionary relationships, e.g. symbiotic relationships; variation within a species increases survival potential; natural selection provides a mechanism for evolution; adaptations of organisms within biomes).</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>Teacher Resource CD: Genetics and Inheritance</li> </ul>   |
| STRAND / TOPIC / STANDARD     | MD.6.  | Environmental Science: The student will demonstrate the ability to use the scientific skills and processes (Core Learning Goal 1) and major environmental science concepts to understand interrelationships of the natural world and to analyze environmental issues and their solutions.  |
| TOPIC / INDICATOR             | 6.4.   | The student will develop and apply knowledge and skills gained from an environmental issue investigation to an action project which protects and sustains the environment.   |
| INDICATOR / PROFICIENCY LEVEL | 6.4.1. | <p>Identify an environmental issue and formulate related research questions (Methods of gathering information may include: writing letters; performing a literature search; using the internet; interviewing experts).</p> <ul style="list-style-type: none"> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the</li> </ul> |

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|                                      |               | <p>Frequency of Common Human Traits in a Population</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul>  |
| <p>INDICATOR / PROFICIENCY LEVEL</p> | <p>6.4.2.</p> | <p>Design and conduct the research (Methods of data collection may include: field or laboratory; questionnaire/opinionnaire).</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>• Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the</li> </ul> |

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|                                      |               | <p>Human Genome</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul>   |
| <p>INDICATOR / PROFICIENCY LEVEL</p> | <p>6.4.3.</p> | <p>Interpret the findings to draw conclusions and make recommendations to help resolve the issue.</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication</li> <li>• Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance</li> <li>• Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment</li> <li>• Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree</li> <li>• Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> <li>• Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood</li> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal</li> </ul> |



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|                               |        | <p>Mystery</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Dominance</li> <li>• Virtual Laboratory: Mendelian Genetics Law of Independent Assortment</li> </ul> |
| INDICATOR / PROFICIENCY LEVEL | 6.4.4. | <p>Apply the conclusions to develop and implement an action project (Methods of implementation may include: physical action; persuasion; consumer action; political action).</p> <ul style="list-style-type: none"> <li>• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease</li> </ul>                 |

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