

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

Delaware Standards and Curricula
Science
Grade 7

CONTENT STANDARD	DE.1.	Nature and Application of Science and Technology
PERFORMANCE INDICATOR / GLE	1.1.	Enduring Understanding: Scientific inquiry involves asking scientifically-oriented questions, collecting evidence, forming explanations, connecting explanations to scientific knowledge and theory, and communicating and justifying the explanation.
GRADE LEVEL EXPECTATION	1.1.1.	<p>Frame and refine questions that can be investigated scientifically, and generate testable hypotheses.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease

		<ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
GRADE LEVEL EXPECTATION	1.1.2.	<p>Design and conduct investigations with controlled variables to test hypotheses.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population
GRADE LEVEL EXPECTATION	1.1.3.	<p>Accurately collect data through the selection and use of tools and techniques appropriate to the investigation. Construct tables, diagrams and graphs, showing relationships between two variables, to display and facilitate analysis of data. Compare</p>

		<p>and question results with and from other students.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
<p>GRADE LEVEL EXPECTATION</p>	<p>1.1.4.</p>	<p>Form explanations based on accurate and logical analysis of evidence. Revise the explanation using alternative descriptions, predictions, models and knowledge from other sources as well as results of further investigation.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's

		<p>Structure - the Double Helix</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
<p>GRADE LEVEL EXPECTATION</p>	<p>1.1.5.</p>	<p>Communicate scientific procedures, data, and explanations to enable the replication of results. Use computer technology to assist in communicating these results. Critical review is important in the analysis of these results.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance

		<ul style="list-style-type: none"> • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
<p>GRADE LEVEL EXPECTATION</p>	<p>1.1.6.</p>	<p>Use mathematics, reading, writing, and technology in conducting scientific inquiries.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a

		<p>Family Pedigree</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Teacher Resource CD: Genetics and Inheritance Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
GRADE LEVEL EXPECTATION	1.1.32.	<p>Observe and sketch cells using microscopes and other appropriate tools. Compare and contrast plant, animal, protist, and bacterial cells by noting the presence or absence of major organelles (i.e., cell membrane, cell wall, nucleus, chloroplasts, mitochondria and vacuoles) using the sketches and other resources. Research external conditions needed by a variety of organisms for survival such as temperature, turbidity, pH, salinity, and amount of dissolved oxygen, phosphates, and nitrates. Predict how organisms may respond to changes in these external conditions based on research findings.</p> <ul style="list-style-type: none"> Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	1.1.33.	<p>Recognize that reproduction is a process that occurs in all living systems and is essential to the continuation of the species. Use models or diagrams to identify the structures of a flowering plant that produce eggs and sperm and explain that plants as well as animals can reproduce sexually.</p> <ul style="list-style-type: none"> Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
GRADE LEVEL EXPECTATION	1.1.36.	<p>Make a simple labeled drawing of human reproductive cells. Indicate that the sex cells (sperm and egg) each have half of the chromosomal number (23) as a fertilized egg (46). The fertilized egg has the same number of chromosomes as each of the body cells of the new organism. Recognize that different organisms may have different numbers of chromosomes and that the number of chromosomes does not relate to the complexity of the organism.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing

		<ul style="list-style-type: none"> • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance • Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	1.1.37.	<p>Make a simple labeled drawing of asexual reproduction as it occurs in sexually produced organisms at the cellular level. Indicate that resulting cells contain an identical copy of genetic information from the parent cell.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
GRADE LEVEL EXPECTATION	1.1.38.	<p>Describe the relationship between genes, chromosomes, and DNA in terms of location and relative size.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance • Teacher Resource CD: The DNA Connection

GRADE LEVEL EXPECTATION	1.1.39.	<p>Use single trait Punnett squares to examine the genotypes of individuals and indicate which individuals will express dominant or recessive traits. Justify the indication by relating that dominant alleles appearing heterozygously or homozygously are expressed or that two recessive alleles (homozygous) are required for an offspring to express a recessive trait phenotypically.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance • Teacher Resource CD: The DNA Connection • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
GRADE LEVEL EXPECTATION	1.1.40.	<p>Use pedigrees to illustrate the heritability of dominant and recessive alleles over several generations.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Teacher Resource CD: Genetics and Inheritance
GRADE LEVEL EXPECTATION	1.1.41.	<p>Research and report on the contributions of Gregor Mendel and other genetic researchers and how their contributions altered the body of scientific knowledge.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance

		<ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment Teacher Resource CD: Genetics and Heredity Teacher Resource CD: The DNA Connection Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
CONTENT STANDARD	DE.1.	Nature and Application of Science and Technology
PERFORMANCE INDICATOR / GLE	1.2.	Enduring Understanding: The development of technology and advancement in science influence and drive each other forward.
GRADE LEVEL EXPECTATION	1.2.8.	<p>Recognize that the health profession uses pedigree charts to trace genetic disorders in past generations make predictions for future generations. Research and report on a chromosomal disorder. Complete a simulated pedigree for a fictional family based on your research.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Teacher Resource CD: Genetics and Heredity Teacher Resource CD: Genetics and Inheritance
CONTENT STANDARD	DE.1.	Nature and Application of Science and Technology
PERFORMANCE INDICATOR / GLE	1.3.	Enduring Understanding: Understanding past processes and contributions is essential in building scientific knowledge.
GRADE LEVEL EXPECTATION	1.3.1.	<p>Research the sequence of events that led to the formation of the cell theory and correlate these events with technological advancements (e.g., hand lens, microscopes, and staining techniques).</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
CONTENT STANDARD	DE.6.	Life Processes
PERFORMANCE INDICATOR / GLE	6.1.	Enduring Understanding: Living systems, from the organismic to the cellular level, demonstrate the complementary nature of structure and function.
GRADE LEVEL EXPECTATION	6.1.3.	<p>Explain that individual cells are able to carry out basic life functions that are similar in organisms; however, explain that in multi-cellular organisms, cells become specialized, interdependent upon one another, and unable to survive independently.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
GRADE LEVEL EXPECTATION	6.1.5.	<p>Observe and sketch cells using microscopes and other appropriate tools. Compare and contrast plant, animal, protist, and bacterial cells by noting the presence or absence of major organelles (i.e., cell membrane, cell wall, nucleus, chloroplasts, mitochondria and vacuoles) using the sketches and other resources.</p>

		<ul style="list-style-type: none"> Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	6.1.6.	<p>Research the sequence of events that led to the formation of the cell theory and correlate these events with technological advancements (e.g., hand lens, microscopes, and staining techniques).</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
CONTENT STANDARD	DE.6.	Life Processes
PERFORMANCE INDICATOR / GLE	6.2.	Enduring Understanding: All organisms transfer matter and convert energy from one form to another. Both matter and energy are necessary to build and maintain structures within the organism.
GRADE LEVEL EXPECTATION	6.2.1.	<p>Recognize that the process of photosynthesis occurs in the chloroplasts of producers. Summarize the basic process in which energy from sunlight is used to make sugars from carbon dioxide and water (photosynthesis). Indicate that this food can be used immediately, stored for later use, or used by other organisms.</p> <ul style="list-style-type: none"> Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
CONTENT STANDARD	DE.6.	Life Processes
PERFORMANCE INDICATOR / GLE	6.3.	Enduring Understanding: Organisms respond to internal and external cues, which allow them to survive.
GRADE LEVEL EXPECTATION	6.3.1.	<p>Research external conditions needed by a variety of organisms for survival such as temperature, turbidity, pH, salinity, and amount of dissolved oxygen, phosphates, and nitrates. Predict how organisms may respond to changes in these external conditions based on research findings.</p> <ul style="list-style-type: none"> Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
CONTENT STANDARD	DE.7.	Diversity and Continuity of Living Things
PERFORMANCE INDICATOR / GLE	7.1.	Enduring Understanding: Organisms reproduce, develop, have predictable life cycles, and pass on heritable traits to their offspring.
GRADE LEVEL EXPECTATION	7.1.1.	<p>Recognize that reproduction is a process that occurs in all living systems and is essential to the continuation of the species. Use models or diagrams to identify the structures of a flowering plant that produce eggs and sperm and explain that plants, as well as, animals can reproduce sexually.</p> <ul style="list-style-type: none"> Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
GRADE LEVEL EXPECTATION	7.1.4.	<p>Make a simple labeled drawing of human reproductive cells. Indicate that the sex cells (sperm and egg) each have half of the chromosomal number (23) as a fertilized egg (46). The fertilized egg has the same number of chromosomes as each of the body cells of the new organism. Recognize that different organisms may have different numbers of chromosomes and that the number of chromosomes does not relate to the complexity of the organism.</p>

		<ul style="list-style-type: none"> • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance • Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	7.1.5.	<p>Make a simple labeled drawing of asexual reproduction as it occurs in sexually produced organisms at the cellular level. Indicate that resulting cells contain an identical copy of genetic information from the parent cell.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
GRADE LEVEL EXPECTATION	7.1.6.	<p>Describe the relationship between genes, chromosomes, and DNA in terms of location and relative size.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease

		<ul style="list-style-type: none"> Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery Teacher Resource CD: Genetics and Heredity Teacher Resource CD: Genetics and Inheritance Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	7.1.7.	<p>Explain how the sex chromosomes inherited from each parent determines the gender of the offspring.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Teacher Resource CD: Genetics and Heredity Teacher Resource CD: Genetics and Inheritance Teacher Resource CD: The DNA Connection Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
GRADE LEVEL EXPECTATION	7.1.8.	<p>Model a random process (e.g., coin toss) that illustrates which alleles can be passed from parent to offspring.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a

		<p>Dihybrid Cross to Demonstrate the Law of Independent Assortment</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
<p>GRADE LEVEL EXPECTATION</p>	<p>7.1.9.</p>	<p>Use single trait Punnett squares to examine the genotypes of individuals and indicate which individuals will express dominant or recessive traits. Justify the indication by relating that dominant alleles appearing heterozygously or homozygously are expressed or that two recessive alleles (homozygous) are required for an offspring to express a recessive trait phenotypically.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance • Teacher Resource CD: The DNA Connection • Virtual Laboratory: Mendelian Genetics Law of Dominance

		<ul style="list-style-type: none"> Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
GRADE LEVEL EXPECTATION	7.1.10.	<p>Use pedigrees to illustrate the heritability of dominant and recessive alleles over several generations.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Teacher Resource CD: Genetics and Inheritance
GRADE LEVEL EXPECTATION	7.1.11.	<p>Research and report on the contributions of Gregor Mendel and other genetic researchers and how their contributions altered the body of scientific knowledge.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment Teacher Resource CD: Genetics and Heredity Teacher Resource CD: The DNA Connection Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
CONTENT STANDARD	DE.7.	Diversity and Continuity of Living Things
PERFORMANCE INDICATOR / GLE	7.3.	Enduring Understanding: The development of technology has allowed us to apply our knowledge of genetics, reproduction, development and evolution to meet human wants and needs.
GRADE LEVEL EXPECTATION	7.3.1.	<p>Research and report on selective breeding. Select an organism (e.g., race horses, pedigree dogs, drought resistant plants) and trace its history of development and the traits of the plant or animal that were enhanced by selective breeding. Recognize that the health profession uses pedigree charts to trace genetic disorders in past generations make predictions for future generations.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Teacher Resource CD: Genetics and Inheritance
GRADE LEVEL EXPECTATION	7.3.2.	<p>Research and report on a chromosomal disorder. Complete a simulated pedigree for a fictional family based on your research.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Teacher Resource CD: Genetics and Heredity Teacher Resource CD: Genetics and Inheritance

Delaware Standards and Curricula
Science
Grade 8

CONTENT STANDARD	DE.1.	Nature and Application of Science and Technology
PERFORMANCE INDICATOR / GLE	1.1.	Enduring Understanding: Scientific inquiry involves asking scientifically-oriented questions, collecting evidence, forming explanations, connecting explanations to scientific knowledge and theory, and communicating and justifying the explanation.
GRADE LEVEL EXPECTATION	1.1.1.	<p>Frame and refine open questions that can be investigated scientifically, and generate testable hypotheses.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent

		Assortment
GRADE LEVEL EXPECTATION	1.1.2.	<p>Design and conduct investigations with controlled variables to test hypotheses.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population
GRADE LEVEL EXPECTATION	1.1.3.	<p>Accurately collect data through the selection and use of tools and techniques appropriate to the investigation. Construct tables, diagrams and graphs, showing relationships between two variables, to display and facilitate analysis of data. Compare and question results with and from other students.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix

		<ul style="list-style-type: none"> • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
<p>GRADE LEVEL EXPECTATION</p>	<p>1.1.4.</p>	<p>Form explanations based on accurate and logical analysis of evidence. Revise the explanation using alternative descriptions, predictions, models and knowledge from other sources as well as results of further investigation.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance

		<ul style="list-style-type: none"> • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
<p>GRADE LEVEL EXPECTATION</p>	<p>1.1.5.</p>	<p>Communicate scientific procedures, data, and explanations to enable the replication of results. Use computer technology to assist in communicating these results. Critical review is important in the analysis of these results.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the

		<p>Frequency of Common Human Traits in a Population</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
<p>GRADE LEVEL EXPECTATION</p>	<p>1.1.6.</p>	<p>Use mathematics, reading, writing, and technology in conducting scientific inquiries.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze

		<p>Genetic Origins through DNA Fingerprinting</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Teacher Resource CD: Genetics and Inheritance • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
<p>GRADE LEVEL EXPECTATION</p>	<p>1.1.51.</p>	<p>Research and report on reproductive strategies of different organisms (i.e., broadcast spawning versus nurturing parenting) that allow them to be successful.</p> <ul style="list-style-type: none"> • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
<p>GRADE LEVEL EXPECTATION</p>	<p>1.1.53.</p>	<p>Conduct a natural selection simulation to demonstrate how physical adaptations (i.e., protective camouflage, long neck for food gathering, muscular legs for running, heavy beak for nut cracking, etc...) have selective advantages for an organism. Research and report on beneficial physical adaptations of a variety of organisms.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome

		<ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood
GRADE LEVEL EXPECTATION	1.1.55.	<p>Conduct simulations to investigate how organisms fulfill basic needs (i.e., food, shelter, air, space light/dark, and water) in a competitive environment. Relate how competition for resources can determine survival.</p> <ul style="list-style-type: none"> Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
CONTENT STANDARD	DE.7.	Diversity and Continuity of Living Things
PERFORMANCE INDICATOR / GLE	7.1.	Enduring Understanding: Organisms reproduce, develop, have predictable life cycles, and pass on heritable traits to their offspring.
GRADE LEVEL EXPECTATION	7.1.1.	<p>Relate the advantages and disadvantages of different reproductive strategies in terms of energy expenditure per offspring and survival rates of that offspring.</p> <ul style="list-style-type: none"> Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
GRADE LEVEL EXPECTATION	7.1.2.	<p>Research and report on reproductive strategies of different organisms (i.e., broadcast spawning versus nurturing parenting) that allow them to be successful.</p> <ul style="list-style-type: none"> Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
CONTENT STANDARD	DE.7.	Diversity and Continuity of Living Things
PERFORMANCE INDICATOR / GLE	7.2.	Enduring Understanding: The diversity and changing of life forms over many generations is the result of natural selection, in which organisms with adaptive traits survive, reproduce, and pass those traits to offspring.
GRADE LEVEL EXPECTATION	7.2.1.	<p>Recognize that species acquire many of their unique characteristics through biological adaptations, which involve the selection of naturally occurring variations in populations.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle

		<ul style="list-style-type: none"> • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood
<p>GRADE LEVEL EXPECTATION</p>	<p>7.2.4.</p>	<p>Conduct a natural selection simulation to demonstrate how physical adaptations (i.e., protective camouflage, long neck for food gathering, muscular legs for running, heavy beak for nut cracking, etc.) have selective advantages for an organism. Research and report on beneficial physical adaptations of a variety of organisms.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood
<p>GRADE LEVEL EXPECTATION</p>	<p>7.2.6.</p>	<p>Conduct simulations to investigate how organisms fulfill basic needs (i.e., food, shelter, air, space light/dark, and water) in a competitive environment. Relate how</p>

		<p>competition for resources can determine survival.</p> <ul style="list-style-type: none"> • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
--	--	--

**Delaware Standards and Curricula
Science
Grade 9**

CONTENT STANDARD	DE.1.	Nature and Application of Science and Technology
PERFORMANCE INDICATOR / GLE	1.1.	Enduring Understanding: Scientific inquiry involves asking scientifically-oriented questions, collecting evidence, forming explanations, connecting explanations to scientific knowledge and theory, and communicating and justifying the explanation.
GRADE LEVEL EXPECTATION	1.1.1.	<p>Identify and form questions that generate a specific testable hypothesis that guide the design and breadth of the scientific investigation.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood

		<ul style="list-style-type: none"> Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
GRADE LEVEL EXPECTATION	1.1.2.	<p>Design and conduct valid scientific investigations to control all but the testable variable in order to test a specific hypothesis.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population
GRADE LEVEL EXPECTATION	1.1.3.	<p>Collect accurate and precise data through the selection and use of tools and technologies appropriate to the investigations. Display and organize data through the use of tables, diagrams, graphs, and other organizers that allow analysis and</p>

		<p>comparison with known information and allow for replication of results.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
<p>GRADE LEVEL EXPECTATION</p>	<p>1.1.4.</p>	<p>Construct logical scientific explanations and present arguments which defend proposed explanations through the use of closely examined evidence.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's

		<p>Structure - the Double Helix</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
<p>GRADE LEVEL EXPECTATION</p>	<p>1.1.6.</p>	<p>Use mathematics, reading, writing and technology when conducting scientific inquiries.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a

		<p>Dihybrid Cross to Demonstrate the Law of Independent Assortment</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Teacher Resource CD: Genetics and Inheritance Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
GRADE LEVEL EXPECTATION	1.1.14.	<p>Use models or drawings to illustrate how molecules are formed when two or more atoms are held together in covalent bonds by 'sharing' electrons. Use models or drawings to illustrate how ionic compounds are formed when two or more atoms 'transfer' electrons and are held together in ionic bonds.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix
CONTENT STANDARD	DE.2.	Materials and Their Properties
PERFORMANCE INDICATOR / GLE	2.1.	Enduring Understanding: The structures of materials determine their properties.
GRADE LEVEL EXPECTATION	2.1.1.	<p>Explain that matter is composed of tiny particles called atoms that are unique to each element, and that atoms are composed of subatomic particles called protons, neutrons, and electrons.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs

		<ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix
GRADE LEVEL EXPECTATION	2.1.11.	<p>Use models or drawings to illustrate how molecules are formed when two or more atoms are held together in covalent bonds by 'sharing' electrons. Use models or drawings to illustrate how ionic compounds are formed when two or more atoms 'transfer' electrons and are held together in ionic bonds.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix

Delaware Standards and Curricula
Science
Grade 10

CONTENT STANDARD	DE.1.	Nature and Application of Science and Technology
PERFORMANCE INDICATOR / GLE	1.1.	Enduring Understanding: Scientific inquiry involves asking scientifically-oriented questions, collecting evidence, forming explanations, connecting explanations to scientific knowledge and theory, and communicating and justifying the explanation.
GRADE LEVEL EXPECTATION	1.1.1.	<p>Identify and form questions that generate a specific testable hypothesis that guide the design and breadth of the scientific investigation.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze

		<p>Genetic Origins through DNA Fingerprinting</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
<p>GRADE LEVEL EXPECTATION</p>	<p>1.1.2.</p>	<p>Design and conduct valid scientific investigations to control all but the testable variable in order to test a specific hypothesis.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease

		<ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population
GRADE LEVEL EXPECTATION	1.1.3.	<p>Collect accurate and precise data through the selection and use of tools and technologies appropriate to the investigations. Display and organize data through the use of tables, diagrams, graphs, and other organizers that allow analysis and comparison with known information and allow for replication of results.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent

		Assortment
GRADE LEVEL EXPECTATION	1.1.4.	<p>Construct logical scientific explanations and present arguments which defend proposed explanations through the use of closely examined evidence.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
GRADE LEVEL EXPECTATION	1.1.6.	<p>Use mathematics, reading, writing and technology when conducting scientific inquiries.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs

		<ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Teacher Resource CD: Genetics and Inheritance • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
GRADE LEVEL EXPECTATION	1.1.13.	<p>Observe formulas and diagrams of compounds found in food (fats, proteins, carbohydrates). Identify elements that comprise these compounds.</p> <ul style="list-style-type: none"> • Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	1.1.21.	<p>Investigate the role of enzymes (e.g., protease, amylase and lipase) in the rate of chemical breakdown of a variety of foods.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting

		<ul style="list-style-type: none"> Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
GRADE LEVEL EXPECTATION	1.1.22.	<p>Investigate how various factors (temperature, pH, enzyme/substrate concentration) affect the rate of enzyme activity.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
GRADE LEVEL EXPECTATION	1.1.26.	<p>Describe the relationship between DNA, genes, chromosomes and proteins.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery Teacher Resource CD: Genetics and Heredity Teacher Resource CD: Genetics and Inheritance Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	1.1.27.	<p>Trace how a DNA sequence, through transcription and translation, results in a sequence of amino acids.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's

		<p>Structure - the Double Helix</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	1.1.28.	<p>Demonstrate that when DNA replicates, the complementary strands separate and the old strands serve as a template for the new complementary strands.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery Teacher Resource CD: Genetics and Heredity Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	1.1.29.	<p>Recognize that this results in two identical strands of DNA that are exact copies of the original.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery Teacher Resource CD: Genetics and Heredity Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	1.1.30.	<p>Illustrate how a sequence of DNA nucleotides codes for a specific sequence of amino acids.</p> <ul style="list-style-type: none"> Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	1.1.31.	<p>Use Punnett squares, including dihybrid crosses, and pedigree charts to determine probabilities and patterns of inheritance (i.e., dominant/recessive, co-dominance, sex-</p>

		<p>linkage, multi-allele inheritance).</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Teacher Resource CD: Genetics and Heredity Teacher Resource CD: Genetics and Inheritance Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
GRADE LEVEL EXPECTATION	1.1.32.	<p>Analyze a karyotype to determine chromosome numbers and pairs. Compare and contrast normal and abnormal karyotypes.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Teacher Resource CD: Genetics and Inheritance
GRADE LEVEL EXPECTATION	1.1.33.	<p>Describe how exposure to radiation, chemicals and pathogens can increase mutations. Predict the possible consequences of a somatic cell mutation.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Teacher Resource CD: Genetics and Inheritance
GRADE LEVEL EXPECTATION	1.1.34.	<p>Describe the cell cycle as an orderly process that results in new somatic cells that contain an exact copy of the DNA that make up the genes and chromosomes found in</p>

		<p>the parent somatic cells.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
GRADE LEVEL EXPECTATION	1.1.35.	<p>Compare and contrast the processes of growth (cell division) and development (differentiation).</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
CONTENT STANDARD	DE.1.	Nature and Application of Science and Technology
PERFORMANCE INDICATOR / GLE	1.2.	Enduring Understanding: The development of technology and advancement in science influence and drive each other forward.
GRADE LEVEL EXPECTATION	1.2.1.	<p>Investigate how the human ability to manipulate genetic material and reproductive processes can be applied to many areas of medicine, biology, and agriculture. Evaluate the risks and benefits of various ethical, social and legal scenarios that arise from this ability.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Teacher Resource CD: Genetics and Inheritance Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	1.2.3.	<p>Explain how developments in technology (e.g. gel electrophoresis) have been used to identify individuals based on DNA as well as to improve the ability to diagnose genetic diseases.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Teacher Resource CD: Genetics and Heredity
CONTENT STANDARD	DE.5.	Earth's Dynamic Systems
PERFORMANCE INDICATOR / GLE	5.3.	Enduring Understanding: Technology enables us to better understand Earth's systems. It also allows us to analyze the impact of human activities on Earth's systems and the impact of Earth's systems on human activity.
GRADE LEVEL EXPECTATION	6.1.1.	<p>Enduring Understanding: Living systems, from the organismic to the cellular level, demonstrate the complementary nature of structure and function.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization

		<ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Teacher Resource CD: The DNA Connection
CONTENT STANDARD	DE.6.	Life Processes
PERFORMANCE INDICATOR / GLE	5.3.	Enduring Understanding: Technology enables us to better understand Earth's systems. It also allows us to analyze the impact of human activities on Earth's systems and the impact of Earth's systems on human activity.
GRADE LEVEL EXPECTATION	6.1.3.	<p>Differentiate between prokaryotic cells and eukaryotic cells in terms of their general structures (cell membrane & genetic material) and degree of complexity. Give examples of prokaryotic organisms and organisms with eukaryotic cells.</p> <ul style="list-style-type: none"> Teacher Resource CD: The DNA Connection
CONTENT STANDARD	DE.6.	Life Processes
PERFORMANCE INDICATOR / GLE	6.2.	Enduring Understanding: All organisms transfer matter and convert energy from one form to another. Both matter and energy are necessary to build and maintain structures within the organism.
GRADE LEVEL EXPECTATION	6.2.2.	<p>Observe formulas and diagrams of compounds found in food (fats, proteins, carbohydrates). Identify elements that comprise these compounds.</p> <ul style="list-style-type: none"> Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	6.2.7.	<p>Describe the process by which water is removed from sugar molecules (dehydration synthesis) to form carbohydrates and is added to break them down (hydrolysis).</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery Teacher Resource CD: Genetics and Heredity

		<ul style="list-style-type: none"> Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	6.2.11.	<p>Recognize that during photosynthesis, plants use energy from the sun and elements from the atmosphere and the soil to make specific compounds. Recognize that these compounds are used by living things as sources of matter and energy.</p> <ul style="list-style-type: none"> Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
CONTENT STANDARD	DE.6.	Life Processes
PERFORMANCE INDICATOR / GLE	6.3.	Enduring Understanding: All organisms transfer matter and convert energy from one form to another. Both matter and energy are necessary to build and maintain structures within the organism (cont'd).
GRADE LEVEL EXPECTATION	6.3.3.	<p>Investigate the role of enzymes (e.g., protease, amylase and lipase) in the rate of chemical breakdown of a variety of foods.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
GRADE LEVEL EXPECTATION	6.3.4.	<p>Explain how enzymes permit low temperature chemical reactions to occur in cells.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
GRADE LEVEL EXPECTATION	6.3.5.	<p>Investigate how various factors (temperature, pH, enzyme/substrate concentration) affect the rate of enzyme activity.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
CONTENT STANDARD	DE.6.	Life Processes
PERFORMANCE INDICATOR / GLE	6.4.	Enduring Understanding: Organisms respond to internal and external cues, which allow them to survive.
GRADE LEVEL EXPECTATION	6.4.3.	<p>Recognize that in order to help maintain the health of an organism, the immune system works in nonspecific ways (e.g., skin, mucous, membranes) and specific ways (e.g., antibody-antigen interactions.)</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Teacher Resource CD: Genetics and Inheritance
CONTENT STANDARD	DE.6.	Life Processes
PERFORMANCE INDICATOR / GLE	6.5.	Enduring Understanding: The health of humans and other organisms is affected by their interactions with each other and their environment, and may be altered by human manipulation.

GRADE LEVEL EXPECTATION	6.5.1.	<p>Investigate how scientists use biotechnology to produce more nutritious food, more effective medicine, and new ways to mitigate pollution.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Teacher Resource CD: Genetics and Inheritance • Teacher Resource CD: The DNA Connection
CONTENT STANDARD	DE.7.	Diversity and Continuity of Living Things
PERFORMANCE INDICATOR / GLE	7.1.	Enduring Understanding: Organisms reproduce, develop, have predictable life cycles, and pass on heritable traits to their offspring.
GRADE LEVEL EXPECTATION	7.1.1.	<p>Describe the relationship between DNA, genes, chromosomes and proteins.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance • Teacher Resource CD: The DNA Connection

<p>GRADE LEVEL EXPECTATION</p>	<p>7.1.2.</p>	<p>Explain that a gene is a section of DNA that directs the synthesis of a specific protein associated with a specific trait in an organism.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance • Teacher Resource CD: The DNA Connection
<p>GRADE LEVEL EXPECTATION</p>	<p>7.1.3.</p>	<p>Trace how a DNA sequence, through transcription and translation, results in a sequence of amino acids.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Teacher Resource CD: The DNA Connection
<p>GRADE LEVEL EXPECTATION</p>	<p>7.1.4.</p>	<p>Demonstrate that when DNA replicates, the complementary strands separate and the old strands serve as a template for the new complementary strands. Recognize that this results in two identical strands of DNA that are exact copies of the original.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing

		<ul style="list-style-type: none"> Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery Teacher Resource CD: Genetics and Heredity Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	7.1.5.	<p>Illustrate how a sequence of DNA nucleotides codes for a specific sequence of amino acids.</p> <ul style="list-style-type: none"> Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	7.1.6.	<p>Use Punnett squares, including dihybrid crosses, and pedigree charts to determine probabilities and patterns of inheritance (i.e. dominant/recessive, co-dominance, sex-linkage, multi-allele inheritance).</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Teacher Resource CD: Genetics and Heredity Teacher Resource CD: Genetics and Inheritance Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
GRADE LEVEL EXPECTATION	7.1.7.	<p>Analyze a karyotype to determine chromosome numbers and pairs. Compare and contrast normal and abnormal karyotypes.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Teacher Resource CD: Genetics and Inheritance
GRADE LEVEL EXPECTATION	7.1.8.	<p>Explain how crossing over and Mendel's Laws of Segregation and Independent</p>

		<p>Assortment contribute to genetic variation in sexually reproducing organisms.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment Teacher Resource CD: Genetics and Heredity Teacher Resource CD: The DNA Connection Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
GRADE LEVEL EXPECTATION	7.1.9.	<p>Describe how exposure to radiation, chemicals and pathogens can increase mutations.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Teacher Resource CD: Genetics and Inheritance
GRADE LEVEL EXPECTATION	7.1.10.	<p>Explain that mutations in the DNA sequence of a gene may or may not affect the expression of the gene. Recognize that mutations may be harmful, beneficial, or have no impact on the survival of the organism.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Teacher Resource CD: Genetics and Inheritance
GRADE LEVEL EXPECTATION	7.1.11.	<p>Explain how the type of cell (gamete or somatic) in which a mutation occurs determines heritability of the mutation.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Teacher Resource CD: Genetics and Inheritance
GRADE LEVEL EXPECTATION	7.1.12.	<p>Predict the possible consequences of a somatic cell mutation.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease

		<ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Teacher Resource CD: Genetics and Inheritance
GRADE LEVEL EXPECTATION	7.1.13.	<p>Describe the cell cycle as an orderly process that results in new somatic cells that contain an exact copy of the DNA that make up the genes and chromosomes found in the parent somatic cells.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
GRADE LEVEL EXPECTATION	7.1.14.	<p>Explain how the cell cycle contributes to reproduction and maintenance of the cell and/or organism.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
GRADE LEVEL EXPECTATION	7.1.15.	<p>Recognize that during the formation of gametes, or sex cells (meiosis), the number of chromosomes is reduced by one half, so that when fertilization occurs the diploid number is restored.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
GRADE LEVEL EXPECTATION	7.1.16.	<p>Explain why sex-linked traits are expressed more frequently in males.</p> <ul style="list-style-type: none"> Teacher Resource CD: Genetics and Inheritance
GRADE LEVEL EXPECTATION	7.1.17.	<p>Compare and contrast the processes of growth (cell division) and development (differentiation).</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
CONTENT STANDARD	DE.7.	Diversity and Continuity of Living Things
PERFORMANCE INDICATOR / GLE	7.3.	Enduring Understanding: The development of technology has allowed us to apply our knowledge of genetics, reproduction, development and evolution to meet human needs and wants.
GRADE LEVEL EXPECTATION	7.3.2.	<p>Investigate how the human ability to manipulate genetic material and reproductive processes can be applied to many areas of medicine, biology, and agriculture. Evaluate the risks and benefits of various ethical, social and legal scenarios that arise from this ability.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Teacher Resource CD: Genetics and Inheritance

		<ul style="list-style-type: none"> • Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	7.3.5.	<p>Explain how developments in technology (e.g., gel electrophoresis) have been used to identify individuals based on DNA as well as to improve the ability to diagnose genetic diseases.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Teacher Resource CD: Genetics and Heredity

© 2008, EdGate Correlation Services, LLC. All Rights reserved.