

Seventh Grade Science Curriculum Bundle #9

Title	Suggested Dates
Genetics & Adaptations	Feb22 – March 12 (14 days)



Big Idea/Enduring Understanding	Guiding Questions
Traits are passed down from generation to generation and help organisms survive.	<p>How are traits passed from generation to generation?</p> <p>Why are some traits expressed more often than others?</p> <p>Which types of reproduction lead to uniform or diverse populations?</p>

The resources included here provide teaching examples and/or meaningful learning experiences to address the District Curriculum. In order to address the TEKS to the proper depth and complexity, teachers are encouraged to use resources to the degree that they are congruent with the TEKS and research-based best practices. Teaching using only the suggested resources does not guarantee student mastery of all standards. Teachers must use professional judgment to select among these and/or other resources to teach the district curriculum.

Knowledge & Skills with Student Expectations	Specificity & Examples	Suggested Resources (Read the note above)
<p>7.10 The student knows that species can change through generations and that the instructions for traits are contained in the genetic material of the organisms.</p> <p>7.10A Identify that sexual reproduction results in more diverse offspring and asexual reproduction results in more uniform offspring.</p>	<p>Including</p> <ul style="list-style-type: none"> --- Organisms vary because they have differences in inherited traits. --- examples from both plants and animals --- compare the results of uniform or diverse offspring from sexual reproduction or asexual reproduction 	<p><u>Vocabulary:</u> Traits, Sexual Reproduction, Asexual Reproduction, Natural Selection, Selective Breeding, Genes, Offspring, Dominant and Recessive Traits.</p> <p>What Is Genetics? PPT Adaptation PPT Mendelian Genetics PPT</p> <p>Technology- Create a Rubric http://rubistar.4teachers.org/index.php Students will create their own rubric, checklist or evaluation tool for any assignment.</p> <p>AVID Activity- Writing in Science pages 22-23 “Pre-write and Quickwrite”</p>
<p>7.10 The student knows that species can change through generations and that the instructions for traits are contained in the genetic material of the organisms.</p> <p>7.10B Compare traits of organisms of different species that enhance their survival and reproduction.</p>	<p>Including</p> <ul style="list-style-type: none"> --- Adaptations and variations of plants & animals <p>*Teacher Note – refer to TEK 7.12C</p> <p><i>identify some changes in genetic traits that have occurred over several generations through natural selection and selective breeding such as the Galapagos Medium Ground Finch (Geospiza fortis) or domestic animals</i></p>	<p><u>Uncovering Student Ideas in Science,</u> Keeley, Vol. 2, #19, “Habitat Change”</p> <p>Heredity and The Environment PPT</p> <p>Adaptation 2008 PPT & Notes On Adaptations</p> <p>Adaptation - Pictures of Animals Activities With Specimens-Adaptations Arthropod Comparison Anatomy LAB Symmetry PPT Vertebrate Characteristics</p>

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		<p>Why do Animals Move the Way They Do? Stimulus-and-Response PPT Evolution PPT</p>
<p>7.10 The student knows that species can change through generations and that the instructions for traits are contained in the genetic material of the organisms.</p> <p>7.10C Distinguish between dominant and recessive traits and recognize that inherited traits of an individual are contained in genetic material.</p>	<p>Including</p> <ul style="list-style-type: none"> --- Inherited traits of organisms are passed from parents to the offspring through genes. --- define heredity as the passage of genetic instructions from one generation to the next generation --- recognize that inherited traits of individuals are governed in the genetic material found in the genes within chromosomes --- compare students' dominant and recessive traits with family and peers --- Terms such as <ul style="list-style-type: none"> • allele • DNA • Dominant • Recessive --- conceptual understanding of phenotype <p><u>Teacher note:</u> Emphasis here should be on the idea that some traits are dominant and others are recessive and that observable traits (phenotypes) are governed by genetic material. <u>Do not teach Punnett squares.</u></p>	<p>Dominant vs Recessive PDF</p>
<p>7.1 Conducts field and laboratory investigations following home and school safety procedures and environmentally appropriate and ethical practices.</p> <p>7.1A Demonstrate safe practices during field and laboratory investigations.</p>	<p>Including</p> <ul style="list-style-type: none"> --- Indoor/Outdoor safety --- Recognize problems and how to prevent accidents --- Recognize safety symbols and what appropriate action to take --- Safety contract <p>In accordance with the Texas Safety Standards</p> <p>Teacher Note: Safety skills and process TEKS should be embedded and reinforced throughout the year</p>	<p>Texas Safety Standards</p>
<p>7.1 Conducts field and laboratory investigations following home and school safety procedures and environmentally appropriate and ethical practices.</p> <p>7.1B Make wise choices in the use and conservation of resources and the disposal and recycling of materials.</p>	<p>Including</p> <ul style="list-style-type: none"> --- Knowledge of items appropriate for recycling, reuse, disposal 	

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<p>7.2 Uses scientific methods during fields and laboratory investigations.</p> <p>7.2A Plan and implement descriptive and simple experimental investigations including asking well-defined questions, formulating testable hypotheses, and selecting and using equipment and technology.</p>	<p>Including</p> <ul style="list-style-type: none"> --- probeware for data collection --- using a standard lab report format --- manipulated and responding variables --- Emphasis should be on scientific methods and should build understanding of the variety of methods and their suitability for various tasks 	<p>AVID Activity- Writing in Science pages 55-94 ““Experimental Design Lab Report Activities”</p>
<p>7.2 Uses scientific methods during fields and laboratory investigations.</p> <p>7.2 B Collect information by observing and measuring.</p>	<p>--- --- (Pre-AP: May emphasize using probeware in a variety of situations)</p> <ul style="list-style-type: none"> --- Measurement using a variety of metric units --- conversion from one metric unit to another --- Using data tables to graph data --- Using graphs to create data tables <p><u>Teacher Note:</u> Measurement exercises should progress across the middle school grade levels and begin by developing conceptual understanding. In 7th grade additional units can be learned, as well as the metric prefix system.</p>	<p>AVID Activity- Writing in Science pages 26-28 “ Observation Narrative”</p>
<p>7.2 Uses scientific methods during fields and laboratory investigations.</p> <p>7.2 C Analyze and interpret information to construct reasonable explanations from direct and indirect evidence.</p>	<p>Including</p> <ul style="list-style-type: none"> --- Identify the relationship between independent variable and dependent variable as observed from data collection/data tables. 	<p>AVID Activity- Writing in Science pages 29-30 “Comparative Analysis”</p>
<p>7.2 Uses scientific methods during fields and laboratory investigations.</p> <p>7.2 D Communicate valid conclusions.</p>	<p>Including</p> <ul style="list-style-type: none"> --- writing in complete sentences --- paragraphs that utilize a restatement of the hypothesis --- communicating effectively in writing --- identify sources of error and estimate their effect 	<p>AVID Activity- Reading in Science pages 111-132 “ Additional Active Reading Graphic Organizers”</p>
<p>7.2 Uses scientific methods during fields and laboratory investigations.</p> <p>7.2 E Construct simple graphs, tables, maps, and charts using tools including computers to organize, examine and evaluate data.</p>	<p>Including</p> <ul style="list-style-type: none"> --- Spreadsheets and Graphs --- Graphing calculators or computer software with probeware 	
<p>7.3 Uses critical thinking and scientific problem solving to make informed decisions.</p> <p>7.3A Analyze, review, and critique scientific explanations, including hypotheses and theories as to their strengths and weaknesses using scientific evidence and information.</p>	<p><u>Teacher Note:</u> Correlate to strengths and limitations of models.</p> <p><u>Teacher Note:</u> Relate to labs throughout the year. Should emphasize the nature of scientific explanations: testability, repeatability, evidence, and predictive nature.</p>	

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<p>7.3 Uses critical thinking and scientific problem solving to make informed decisions.</p> <p>7.3B Draw inferences based on data related to promotional materials for products and services</p>	<p>Promotional Material related to genetics, selective breeding or cloning.</p>	
<p>7.3 Uses critical thinking and scientific problem solving to make informed decisions.</p> <p>7.3 C Represent the natural world using models and identifies their limitations.</p>	<p>Such as --- Compare and contrast models used with the real world item or concept under investigation --- DNA --- Traits</p> <p><i>use models to represent aspects of the natural world such as human body systems and plant and animal cells; identify advantages and limitations of models such as size, scale, properties, and materials;</i></p>	
<p>7.3 Uses critical thinking and scientific problem solving to make informed decisions.</p> <p>7.3 D Evaluate the impact of research on scientific thought, society, and the environment.</p>	<p>--- Current events- related to cloning or selective breeding.</p>	
<p>7.3 Uses critical thinking and scientific problem solving to make informed decisions.</p> <p>7.3 E Connect Grade 7 science concepts with the history of science and contributions of scientists.</p>	<p>Including: Gregor Mendel</p>	<p><u>AVID Activity</u>: Writing in Science page 24 “Brief Autobiography”.</p>
<p>7.4 Knows how to use a variety of tools and methods to conduct science inquiry.</p> <p>7.4A Collect, analyze, and record information using tools including beakers, petri dishes, meter sticks, graduated cylinders, weather instruments, timing devices, hot plates, test tubes, safety goggles, spring scales, magnets, balances, microscopes, telescopes, thermometers, calculators, field equipment, compasses, computers, and computer probes.</p>	<p>Including: triple beam balance, hand lens, compound microscope; stereoscope; temperature probes, pH probe, timers; stopwatches</p> <p><i>use appropriate tools to collect, record, and analyze information, including life science models, hand lens, stereoscopes, microscopes, beakers, Petri dishes, microscope slides, graduated cylinders, test tubes, meter sticks, metric rulers, metric tape measures, timing devices, hot plates, balances, thermometers, calculators, water test kits, computers, temperature and pH probes, collecting nets, insect traps, globes, digital cameras, journals/notebooks, and other equipment as needed to teach the curriculum</i></p>	

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<p>7.4 Knows how to use a variety of tools and methods to conduct science inquiry.</p> <p>7.4B collect and analyze information to recognize patterns such as rates of change</p>	<p>--- Calculate range --- Calculate average --- Use decimals system rather than fractions</p> <ul style="list-style-type: none"> • Mean • Median • mode • mode <p>Teacher Note: Be prepared to teach some math skills throughout the year.</p>	
<p>7.5 Knows that equilibrium of a system may change.</p> <p>7.5 A Describe how systems may reach equilibrium such as when a volcano erupts.</p>	<p>Such as: ---Animals changing as a result of adaptation.</p>	