

8th Grade Science Curriculum Bundle #6

Title	Suggested Dates
Riding the Wave: Earth, Sun and Moon Interactions	12/7-12/18 (10 days)

Big Idea/Enduring Understanding	Guiding Questions
The relative position and movements of the earth, moon and sun account for lunar and solar eclipses, the observed moon phases, tides and seasons. Light exhibits properties of both waves and particles.	What are the components and structure of the Earth system? What patterns of movements are found in the sky and how does it affect my life on Earth? How do waves affect our society?

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>8.7 The student knows that there is a relationship between force and motion.</p> <p>8.7B Recognize that waves are generated and can travel through different media.</p>	<p>Including:</p> <p>--- Properties of Waves</p> <ul style="list-style-type: none"> • Amplitude • Frequency • Wavelength • Speed <p>Transverse and Longitudinal</p> <p>--- Mechanical Waves</p> <ul style="list-style-type: none"> • Needs a medium to travel through • Waves can travel through all states of matter—solid, liquid or gas. • Sound waves (travel through gas) • Contrast the speed of sound through different media and relate to particle spacing. <p>--- Electromagnetic</p> <ul style="list-style-type: none"> • Does not require a medium • Travel at the speed of light • The different bands of the electromagnetic spectrum are differentiated by the frequency of the waves and the energy they carry. <p><u>Teacher Note:</u></p> <p>It is not necessary for students to memorize the order of “bands” in the EM spectrum.</p>	<p>VOCABULARY: wave, amplitude, frequency, wavelength, crest, trough, wave height, transverse wave, longitudinal wave, mechanical waves, electromagnetic waves, sound waves, medium, lunar cycle, tides, eclipses, and catastrophism.</p> <p>AVID Activity- Writing in Science pages 22-23 “Pre-write and Quickwrite”</p> <p>CORE ACTIVITY: Slinky Science and Slinky Wave Power point</p> <p>Doppler Effect Demo</p> <p>Lagging Sound</p> <p>Waves Power point</p> <p>Online Wave and Frequency Demo Hyperlink</p> <p>PREAP: LTF # 36: Standing Waves Chem/Physics p.666</p> <p>Spectroscope Lab w/spectral tubes</p> <p>Uncovering Student Ideas in Science, Keeley. Vol. 1 #2, Apple in the Dark</p>

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		Use of prism and/or diffraction grating for Light Spectrum Demo or use “Color and Light Spectrum Demo” from Flinn Scientific
<p>8.12 The student knows that cycles exist in Earth systems.</p> <p>8.12A Analyze and predict the sequence of events in the <u>lunar</u> and rock <u>cycles</u>.</p>	<p>Including: --- Moon</p> <ul style="list-style-type: none"> • Lunar cycle (prediction of phases) • Tides • Eclipses <p><u>Teacher Note:</u> Discuss predictions of the lunar cycle and tides. 6th grade discusses the moon and 7th grade discusses the phases of the moon. Review TEKS 7.14A/B-Seasons</p>	<p>CORE ACTIVITY: Moon Phases and Tides CORE ACTIVITY: Timing the Tides @ http://science-class.net</p> <p>PREAP: Birthday Moons @ http://science-class.net</p> <p>Eclipses Graphic Organizer</p> <p>Tides Graphic Organizer</p> <p>Review Seasons w/ Review Cycles of the Sun Power point</p> <p>Uncovering Student Ideas in Science, Keeley. Vol. 3 #23, Summer Talk</p> <p>Review Phases w/ What Moon Phase Power point</p>
<p>8.1 The student conducts field and laboratory investigations using safe, environmentally appropriate and ethical practices.</p> <p>8.1A Demonstrate safe practices during field and laboratory investigations.</p>	<p>Including: --- Lab Cleanup Procedures --- Equipment cleaning and storage --- Safety contract</p> <p>In accordance with the Texas Safety Standards: : Pflugerville ISD :: Online Curriculum :: Science</p> <p><u>Teacher Note:</u> Safety skills and process TEKS should be embedded and reinforced throughout the year.</p>	<p>Texas Safety Standards</p>
<p>8.1 The student conducts field and laboratory investigations using safe, environmentally appropriate and ethical practices.</p> <p>8.1B Make wise choices in the use and conservation of resources and the disposal and recycling of materials.</p>	<p>Including: --- Solar Energy</p>	
<p>8.2 The student uses scientific inquiry methods during fields and laboratory investigations.</p> <p>8.2A Plan and implement investigative procedures including asking questions, formulating testable hypotheses, and selecting and using equipment and technology.</p>	<p>Such as:</p> <ul style="list-style-type: none"> --- Design their own experiments --- 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>

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	<p><u>Teacher Note:</u> It is recommended that students create and design at least 2 labs/experiments.</p>	
<p>8.2 The student uses scientific inquiry methods during fields and laboratory investigations.</p> <p>8.2B Collect information by observing and measuring</p>	<p>Such as:</p> <ul style="list-style-type: none"> ---Differentiating between mass and weight and gravity’s affect on mass. <ul style="list-style-type: none"> • Weight as a measure of the force of attraction between the earth and an object • On Earth, the weight of an object is = mass x g (where g = 9.8 m/s²) --- Measuring temperature such as seasonal variance --- Measuring length using metric ruler --- Using dimensional analysis to convert from English to metric units --- (Pre-AP: Emphasis on using probeware in a variety of situations) <p><u>Teacher Note:</u> Measurement exercises should progress across the middle school grade levels and begin by developing conceptual understanding. In 8th grade, students can begin to convert from one unit to another.</p>	<p>AVID Activity- Writing in Science pages 26-28 “ Observation Narrative”</p>
<p>8.2 The student uses scientific inquiry methods during fields and laboratory investigations.</p> <p>8.2C Organize, analyze, evaluate, make inferences, and predict trends from direct and indirect evidence.</p>	<p>Including:</p> <ul style="list-style-type: none"> --- graph interpretation and extrapolation --- predicting outcomes based on data tables 	<p>AVID Activity- Writing in Science pages 29-30 “Comparative Analysis”</p>
<p>8.2 The student uses scientific inquiry methods during fields and laboratory investigations.</p> <p>8.2D Communicate valid conclusions.</p>	<p>Including:</p> <ul style="list-style-type: none"> --- Experimental conclusions --- Supporting conclusions with data --- Analyze error sources and fix experiment to reduce outside variables --- Graph/Chart/Table extrapolation for conclusion --- Analysis of graphs 	<p>AVID Activity- Reading in Science pages 111-132 “ Additional Active Reading Graphic Organizers”</p>
<p>8.2 The student uses scientific inquiry methods during fields and laboratory investigations.</p> <p>8.2E Construct graphs, tables, maps, and charts using tools including computers to organize, examine and evaluate data.</p>	<p>Such as</p> <ul style="list-style-type: none"> --- Bar graphs, line graphs, pie charts, data tables, <u>topographic maps of the moon</u> and determine which is best for each set of data. 	<p>Illustrate lunar surface features and use shadows to determine if relief or depressions are present.</p> <p>Topographic Maps Power point</p>
<p>8.3 The student uses critical thinking and scientific problem solving to make informed decisions.</p>		

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<p>8.3A Analyze, review, and critique scientific explanations, including hypotheses and theories, as to their strengths and weaknesses using scientific evidence and information.</p>	<p>Such as: --- Catastrophism such as meteor impact --- Critique a conclusion of a modeled experiment.</p> <p><u>Teacher Note:</u> Current event analysis that critiques a scientific explanation. Relate to labs throughout the year. Should emphasize the nature of scientific explanations: testability, repeatability, evidence, predictive nature</p>	
<p>8.3 The student uses critical thinking and scientific problem solving to make informed decisions.</p> <p>8.3C Represent the natural world using models and identify their limitations.</p>	<p>Including: --- Distinguish between limitations and advantages of models</p> <p>Such as --- Lunar models, topographic models, seasonal models, earth-moon-sun model</p> <p><i>Use models to represent aspects of the natural world such as an atom, a molecule, space, or a geologic feature.</i></p> <p><i>Identify advantages and limitations of models such as size, scale, properties, and materials.</i></p>	
<p>8.3 The student uses critical thinking and scientific problem solving to make informed decisions.</p> <p>8.3D Evaluate the impact of research on scientific thought, society, and the environment.</p>	<p><u>Teacher Note:</u> Do a current event impact analysis that looks at how scientific research has impacted thought, society and the environment. Such as how the movement of the Sun and the moon affect the tides.</p>	<p><u>AVID Activity:</u> Writing in Science page 24 “Brief Autobiography”.</p>
<p>8.4 The student knows how to use a variety of tools and methods to conduct science inquiry.</p> <p>8.4A Collect, record, and analyze information using tools including beakers, petri dishes, meter sticks, graduated cylinders, weather instruments, hot plates, dissecting equipment, test tubes, safety goggles, spring scales, balances, microscopes, telescopes, thermometers, calculators, field equipment, computers, computer probes, water test kits, and timing devices</p>	<p>Such as: --- spectrosopes and diffraction grating ---slinky and/or rope</p>	
<p>8.4 The student knows how to use a variety of tools and methods to conduct science inquiry.</p> <p>8.4B Extrapolate from collected information to make predictions.</p>	<p>Such as: --- extrapolating using graph and data tables to predict expected results</p>	

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