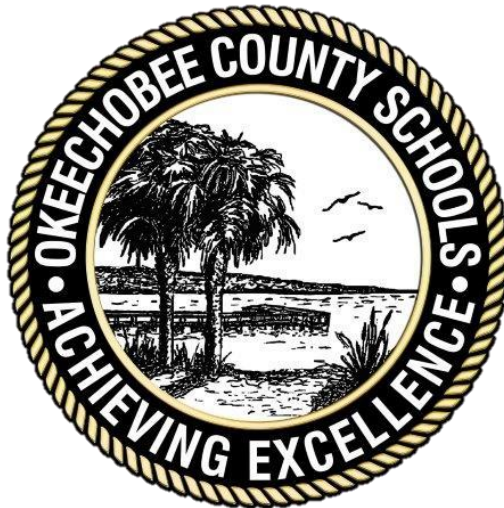


Okeechobee County Comprehensive Science 2 Curriculum Map

Prepared by Cynthia Letcher, MSP Grant Participant



2016-2017

Parts of the Curriculum Map

Units: the broadest organizational structure used to group content and concepts within the curriculum map assessed through Common Unit Assessments (CUA).

Pacing: recommended time frames created by teacher committees, using CCE and CUA data, within which the course should be taught in preparation for the CCE and SSA (formerly known as FCAT) Tests.

Topics: a grouping of standards and skills that form a subset of a unit; all topics under a unit are assessed on the Common Unit Assessments (CUA).

Learning Targets and Skills: the content knowledge, processes, and skills that will ensure successful mastery of the standards.

Standards: the Next Generation Sunshine State Standards (NGSSS) required by course descriptions posted on CPALMS by FLDOE.

Vocabulary: the content-specific vocabulary or phrases both teachers and students should use, and be familiar with, during instruction.

Resources: a listing of available, high quality and appropriate materials, including: strategies, lessons, textbooks, videos and other media sources, that are aligned with the standards.

Teacher Hints: a listing of considerations when planning instruction, including guidelines to content that is inside and outside the realm of the course descriptions on CPALMS.

Sample FOCUS Questions: Sample questions aligned to the standards and in accordance with SSA style, rigor, and complexity guidelines; they do NOT represent all the content that should be taught, but merely a sampling of it.

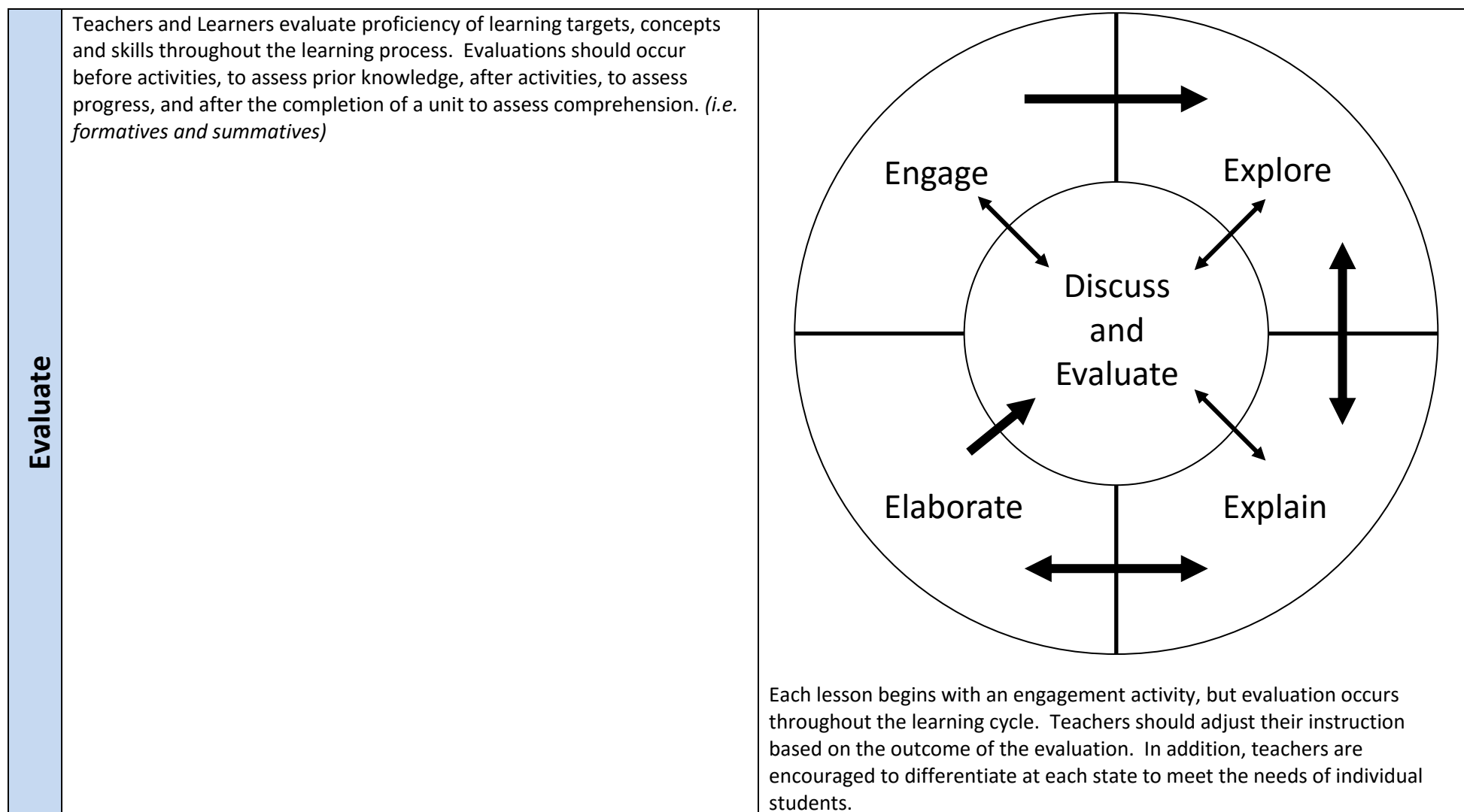
Common Labs: The NSTA recommends that all students experience and participate in at least one hands-on, inquiry-based, lab per week. At least two labs per grading period should have a written lab report with analysis and conclusion. Some of the labs were created in conjunction with the [MSP Grant](#) and are written in a 5-E format. Some are found in the **Essential Science Labs Binder** (ESLB).

CUA : Common Unit Assessments are content-specific tests developed by the district and [MSP Grant participants](#) to assist in student progress monitoring. The corollary goal is to prepare students for CCE through similar rigor, complexity, and style guidelines as state assessments.

IA : Interim Assessments (aka Performance Matters) will be utilized 3 times during the school year for progress monitoring as required by the District.

Okeechobee County Science 5E Instructional Model

	Description	Implementation
Engage	Learners engage with an activity that captures their attention, stimulates their thinking, and helps them access prior knowledge. A successful engagement activity will reveal existing misconceptions to the teacher and leave the learner wanting to know more about how the problem or issue relates to his/her own world. <i>(e.g. ISN-preview, Probe, Teacher Demonstration...)</i>	The diagram below shows how the elements of the 5E model are interrelated. Although the 5E model can be used in linear order (engage, explore, explain, elaborate and evaluate), the model is most effective when it is used as a cycle of learning.
Explore	Learners explore common, hands-on experiences that help them begin constructing concepts and developing skills related to the learning target. The learner will gather, organize, interpret, analyze and evaluate data. <i>(e.g. investigations, labs...)</i>	
Explain	Learners explain through analysis of their exploration so that their understanding is clarified and modified with reflective activities. Learners use science terminology to connect their explanations to the experiences they had in the engage and explore phases. <i>(e.g. Lecture, ISN-notes, Research, Close-reading, reading to learn, videos, websites...)</i>	
Elaborate	Learners elaborate and solidify their understanding of the concept and/or apply it to a real world situation resulting in a deeper understanding. Teachers facilitate activities that help the learner correct remaining misconceptions and generalize concepts in a broader context. <i>(e.g. labs, web-quest, presentations, debate, discussion, ISN-reflection...)</i>	



*Adapted from The BSCS 5E Instructional Model: Origins, Effectiveness, and Applications, July 2006, Bybee, et.al, pp. 33-34.

Cognitive Complexity

The benchmarks in the Next **Generation Sunshine State Standards (NGSSS)** identify knowledge and skills students are expected to acquire at each grade level, with the underlying expectation that students also demonstrate critical thinking.

The categories—**low complexity**, **moderate complexity**, **high complexity**—form an ordered description of the demands a test item may make on a student. Instruction in the classroom should match, at a minimum, the complexity level of the learning target in the curriculum map.

Low	Moderate	High
This category relies heavily on the recall and recognition of previously learned concepts and principles. Items typically specify what the student is to do, which is often to carry out some procedure that can be performed mechanically. It is not left to the student to come up with an original method or solution.	This category involves more flexible thinking and choice among alternatives than low complexity items. They require a response that goes beyond the habitual, is not specified, and ordinarily has more than a single step or thought process. The student is expected to decide what to do—using formal methods of reasoning and problem-solving strategies—and to bring together skill and knowledge from various domains.	This category makes heavy demands on student thinking. Students must engage in more abstract reasoning, planning, analysis, judgment, and creative thought. The items require that the student think in an abstract and sophisticated way often involving multiple steps.
<p>Students will:</p> <ul style="list-style-type: none"> • retrieve information from a chart, table, diagram, or graph • recognize a standard scientific representation of a simple phenomenon • complete a familiar single-step procedure or equation using a reference sheet 	<p>Students will:</p> <ul style="list-style-type: none"> • interpret data from a chart, table, or simple graph • determine the best way to organize or present data from observations, an investigation, or experiment • describe examples and non-examples of scientific processes or concepts • specify or explain relationships among different groups, facts, properties, or variables • differentiate structure and functions of different organisms or systems • predict or determine the logical next step or outcome • apply and use concepts from a standard scientific model or theory 	<p>Students will:</p> <ul style="list-style-type: none"> • analyze data from an investigation or experiment and formulate a conclusion • develop a generalization from multiple data sources • analyze and evaluate an experiment with multiple variables • analyze an investigation or experiment to identify a flaw and propose a method for correcting it • analyze a problem, situation, or system and make long-term predictions • interpret, explain, or solve a problem involving complex spatial relationships

*Adapted from Webb's Depth of Knowledge and FLDOE FCAT 2.0 Specification Documentation, Version 2.

Week	Date	Topics	Unit CSA
1-5	August 15 through September 15	Scientific Process	Interim Assessment #1 – August 15-26

(23 days)	(9/16 is ERD)	Energy	UNIT 1 - Scientific Process and Energy (CUA - September 14-15)
6-8 (15 days)	September 19 through October 7	Temperature and Heat	UNIT 2 - Temperature and Heat and The EM Spectrum (CUA - October 6-7)
		The EM Spectrum	
9 (5 days)	October 10 through October 14	1 st Quarterly Assessment Review	1st Quarterly Assessment (October 13-14)
End of 1st Nine Weeks (October 14)			
10-13 (19 days)	October 18 through November 11	Earth's Layers	UNIT 3 - Earth's Layers and Plate Tectonics (CUA - November 10-11)
		Plate Tectonics	
14-16 (14 days)	November 14 through December 9 (11/18 is ERD)	Rock Cycle	UNIT 4 - Rock Cycle and Age of Earth (CUA - December 8-9)
		Age of Earth	
17 (5 days)	December 12 through 15 (12/16 is ERD)	2 nd Quarterly Assessment Review	2nd Quarterly Assessment (December 14-15)
End of 2nd Nine Weeks (December 16)			
18-23 (26 days)	January 4 through February 10	Heredity and Reproduction	Interim Assessment #2 – January 5-6 UNIT 5 -Heredity, Reproduction, and Genetics (CUA - February 9-10)
		Genetics	
24-26 (14 days)	February 13 through March 3	Natural Selection	UNIT 6 - Natural Selection (CUA - March 2-3)
27 (5 days)	March 6 through March 10	3 rd Quarterly Assessment Review	3rd Quarterly Assessment (March 9-10)
End of 3rd Nine Weeks (March 10)			
28-29 (9 days)	March 20 through March 31	Evidence of Evolution	UNIT 7 - Evidence of Evolution (CUA - March 30-31)
30-31 (9 days)	April 3 through April 15	FSA Testing	FSA Testing – ELA and Math Interim Assessment #3 – April (FCAT)
32-35 (19 days)	April 17 through May 12 (4/21 is ERD)	Interdependence	UNIT 8 - Interdependence and Limiting Factors (CUA - May 11-12)
		Limiting Factors	
36 (5 days)	May 15 through May 19	CCE - Assessment Review	Common Course Exam (May 18-19)
End of 4th Nine Weeks (May 26)			

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The Nature of Science / Scientific Processes		WEEKS 1-36	
**The Nature of Science, <u>NOS Focus</u> , are explicitly applied in content throughout the year.			
Topics	Learning Targets and Skills	Standards	Vocabulary
The Nature of Science	Students will : <ul style="list-style-type: none">• describe science as the study of the natural world.• give examples and non-examples of science	SC.7.N.1.3	science scientific reasoning non-example pseudoscience
	Students will : <ul style="list-style-type: none">• differentiate between an experiment (control group and variables) and other types of scientific investigations• discuss examples of scientific knowledge not derived from experimentation<ul style="list-style-type: none">o examples: observations, surveys, data collections, simulation• describe methods used in pursuit of scientific knowledge in different fields of science (Biology, Chemistry, Geology, Physics)	SC.7.N.1.3 SC.7.N.1.5	control group experiment inference investigation methods observation variables
	Students will : <ul style="list-style-type: none">• define a problem from the 7th grade curriculum• plan and carry out various types of scientific investigations<ul style="list-style-type: none">o {Advanced: opportunity for students to brainstorm topic for science fair}• differentiate between predictions and hypotheses (“if..then...because I know..”)• identify test variables (independent) and outcome variables (dependent)• identify control groups for each experiment• collect and organize data• interpret data• defend conclusions• conduct research from a variety of reference sources (whenever possible)	SC.7.N.1.1 also SC.7.N.1.4	conclusion data qualitative quantitative hypothesis interpret outcome variable (dependent) prediction test variable (independent)

	<p>Students will:</p> <ul style="list-style-type: none"> • differentiate replication by others and repetition (multiple trials) and the importance of each • understand that science is durable and open to change as new evidence or interpretations are encountered • explain empirical evidence 	<p>SC.7.N.1.2</p> <p>SC.7.N.2.1</p> <p>SC.7.N.1.7</p> <p>SC.7.N.1.6</p>	<p>repetition</p> <p>replication</p> <p>evidence</p> <p>empirical evidence</p>
Unit 1 – Science Processes		WEEKS 1-2	
Topics	Learning Targets and Skills	Standards	Vocabulary
Science	<p>Students will :</p> <ul style="list-style-type: none"> • get to know YOU as a scientist and WHY you LOVE science • set up a science notebook to be used all year long • develop a class list of lab safety procedures in the lab • practice classroom and laboratory routines and procedures 		<p>lab safety</p> <p>science notebook</p> <p>scientist</p>
	<p>Students will:</p> <ul style="list-style-type: none"> • describe science as the study of the natural world • cite examples of science and pseudoscience (can it be tested?) • understand the need for a common system of measurement, metric system, among scientists • discuss the VARIOUS methods used by scientists to answer questions or solve problems (controlled experiments, observational studies, engineering by design, trial and error, simulations, modeling, etc.) • work to break the misconception that there is only 1 method used by scientists <p>NOS Focus: Data collection and organization</p>	<p>SC.7.N.1.3</p> <p>SC.7.N.1.5</p>	<p>science</p> <p>pseudoscience</p> <p>metric system</p> <p>mass</p> <p>volume</p> <p>length</p> <p>gram (g)</p> <p>liter (l)</p> <p>meter (m)</p> <p>degrees Celsius (°C)</p>

	<p>Students will:</p> <ul style="list-style-type: none"> • engage in 1 OR MORE labs where students: <ul style="list-style-type: none"> ♣ form a hypothesis ♣ follow a procedure using repeated trials ♣ collect data ♣ draw a conclusion based on evidence ♣ use phrases such as “results support” or “fail to support” their hypothesis/claim (NOT PROVE OR DISPROVE) but may lead to further investigations <p><u>NOS Focus: Hypothesis- writing, testing and analyzing.</u></p> <p>***The first Common Lab (CL 1 The Bean Lab) is a long-term lab that requires at least 5 weeks and could be started as early as week 1***</p>	<p>SC.7.N.1.1</p> <p>SC.7.N.1.2</p> <p>SC.7.N.1.4</p>	<p>Hypothesis repetition data evidence conclusion</p>
	<p>CSA – 1 : Science Processes</p>		<p>September 14-15</p>

Science Processes Resources		
Textbook and NOS Focus	Textbook pages - NOS 4 through NOS 28 NOS Focus: Data collection and organization. Hypothesis- writing, testing and analyzing.	
Safari Montage / Videos	SM - Jane Goodall: Chimps in Crisis	
Websites	Brain Pop – Science Inquiry : Critical Reasoning ; Science Projects Study Jams - Science Inquiry - Scientific Methods Identify Outcomes and Make Predictions Investigations to Collect Data	Safety Contract – http://www.nsta.org/docs/SafetyInTheScienceClassroom.pdf Lab Safety Manual
Keeley Probes	Volume 2 - #14 (Plants in the Dark) and Volume 4 - #9 (Magnets and Water)	
**** Time has been given throughout the first semester to allow and encourage students to participate in science fair.		
Teacher Hints & Instruction Focus	<ul style="list-style-type: none">• Students need to understand that scientists do not only learn from doing investigations but also from reading non-fiction reference materials, such as, journals, newspapers, reference books etc.• Students need to know that scientists gain knowledge from many different methods and uses sound scientific reasoning. <u>The DOE is asking that we no longer have students memorize an artificial</u>	<ul style="list-style-type: none">• Have students differentiate between replication and repetition and why they are important.• Teachers should continue to model limiting variables and testing a control group for comparison purposes.• Cover the importance of multiple trials and large experimental group.

	<u>number of steps called the scientific method but that students learn scientific reasoning to evaluate whether something is sound or not.</u>	<ul style="list-style-type: none"> Students need to understand the importance of researching a topic before forming a hypothesis or conducting an investigation. Students need to differentiate experiment and investigation
Science Best Practices Labs and Activities	<p>Measurement processes and lab equipment should be discussed and used during a lab, not in isolation. The first Common Lab (CL 1) contains an independent and dependent variable, constants, and controls. This lab is designed for long-term data collection and will need to be started within the first or second week of school.</p> <p><u>Research and data does not support front-loading vocabulary. The Nature of Science, referred to as the NOS Focus, are stated throughout the map to engage students in Activity Before Content (AbC) and Content Before Vocabulary (CbV).</u></p>	
Sample FOCUS Question		Labs and Activities
<p>Jay and Shanna think their classmates get more schoolwork done before lunch; they suspect that eating lunch makes people less productive. They come up with a six-week-long classroom experiment to test this, which will involve some people having to eat a smaller lunch every other day. What is the FIRST thing they need to do?</p> <p>A. Ask for permission from the parents of their classmates. B. Divide their class into a control group and a test group. C. Keep their idea a secret so no one can influence the outcome. D. Tell a few people in class to help them get the outcome they want</p>		<p>Common Lab (CL) CL 1 – The Bean Lab The Bean Lab provides a long term common lab for 1st 9 weeks. This lab provides an opportunity for students to practice measuring, identifying variables, and analyzing data.</p> <p>Labs and Activities can be found on Google Drive in the 7th Grade Science Resources – Science Processes folder:</p> <p>The following labs can be found in the ESLB. ESLB – Chemical in a Bag ESLB – Spontaneous Generation</p>
Prefix / Suffix	No/Non – not Scien- wisdom Pre- before Dici- to say	

Unit 1 - Energy and Transformations		WEEKS 3-5	
Topics	Learning Targets and Skills	Standards	Vocabulary
Energy and	<p>Students will:</p> <ul style="list-style-type: none"> differentiate between potential and kinetic energy identify and describe the transformation of energy from one form to another, such as: <ul style="list-style-type: none"> o mechanical energy (the sum of potential and kinetic energy) o sound, thermal, electrical, chemical, thermal, electrical, light cite examples of multiple energy transformations investigate transformations, such as: <ul style="list-style-type: none"> o potential to kinetic, electrical to sound, light to thermal, etc. 	<p>SC.7.P.11.2</p> <p>SC.7.N.1.1</p>	<p>chemical energy electrical energy energy transformation kinetic energy potential energy Law of Conservation of Energy light energy (EM) chemical energy</p>

	<ul style="list-style-type: none">• apply the Law of Conservation of Energy to determine where energy transformations occur on a diagram, such as:<ul style="list-style-type: none">o the swing of a pendulum or movement on a roller-coaster• investigate the Law of Conservation of Energy to show how energy is not lost but transformed as heat as a result of friction <p><u>NOS Focus: Collecting data, drawing and defending conclusions.</u></p>	SC.7.P.11.3	electrical energy mechanical energy sound energy thermal energy
	Students will: <ul style="list-style-type: none">• describe scientific knowledge as the result of a great deal of debate and confirmation in the science community• discuss how a scientific law is different from a societal law o Scientific laws are predictions (what will happen) in nature o Societal laws are written by government	SC.7.N.1.7 SC.6.N.3.2	scientific law
	Advanced: <ul style="list-style-type: none">1. differentiate among the various forms of energy and energy transformation2. identify examples of transformation of energy, such as:<ul style="list-style-type: none">o Heat to light in incandescent electric light bulbso Light to heat in laser drills	Advanced SC.912.P.10.1	
	CSA – 1 : Energy		September 14-15
Energy and Transformations Resources			
Textbook and NOS Focus	Textbook Pages - 298 through 314 <u>NOS Focus : Collecting data, drawing and defending conclusions.</u>		
Safari Montage / Videos	SM – Bill Nye Energy		
Websites	Transformation game Study Jams – Energy and Matter The Happy Scientist (must subscribe to access this) Brain Pop – Energy : Energy Sources ; Potential Energy ; Kinetic Energy ; Sound ; Energy Pyramid		
Keeley Probes	Life Science Volume 2 - #14 - Plants in the Dark Physical Science - Volume 4 - #9 - Magnets and Water		

Teacher Hints & Instruction Focus	<ul style="list-style-type: none">• Students will need to be able to describe and identify examples of The Law of Conservation of Energy.• Items will not require calculations.• Students should be able to identify up to five energy transformations in one particular model or diagram.• Students can design an investigation to identify one or more energy transformations				<ul style="list-style-type: none">• Students need to understand the difference between a scientific theory and a scientific law.		
Sample FOCUS Question					Labs and Activities		
<p>When an object moves, its energy changes form. When a ball bounces, it has changing amounts of potential energy and kinetic energy. Eventually, however, the ball will stop bouncing. Why does the ball stop bouncing?</p> <p>A. The ball's energy gets used up each time it bounces.</p> <p>B. The mass of the ball is too small to allow it to continue its own motion.</p> <p>C. The ball's energy gets transferred to other energy types like heat and sound that don't help it bounce.</p> <p>D. The pull of gravity is stronger than the energy in the ball, which makes the ball slow down to a stop.</p>					<p>Labs and Activities can be found on Google Drive in the 7th Grade Science Resources – Energy folder:</p> <p>MSP Activity – Introducing the Types of Energy</p> <p>The following labs can be found in the ESLB.</p> <p>ESLB - Shaking Sand (Observing the Transfer of Energy)</p> <p>ESLB - Analyzing Energy Transformations</p>		
Prefix / Suffix	Trans- through Radi- shine out	Kine- moving Luc- to shine/light	Potens- ability Ultra- beyond	Thermo- heat Infra- below	Electro- amber	Sono- sound	Mech- machine
Unit 2 - Temperature and Heat						WEEKS 6-7	
Topics	Learning Targets and Skills				Standards	Vocabulary	
Temperature	<p>Students will:</p> <ul style="list-style-type: none">• predict and investigate the possible change in temperature (°C) when heat is added or removed from a system• predict and investigate the possible change in state of matter when heat is added or removed from a system				SC.7.P.11.1 SC.7.N.1.1	Celsius (°C) Fahrenheit (°F) states of matter temperature	

October 6-7

Temperature and Heat Resources

Keeley Probes	Physical Science - Volume 1 - #15 - Objects and Temperature Physical Science - Volume 2 #10 - Ice cold Lemonade		
Teacher Hints & Instruction Focus	<ul style="list-style-type: none">• This is the first and last time this concept is taught in middle school.• Items will not assess chemical change.• Items will not require calculations.• Advanced class may discuss plasma but plasma will not be assessed on state nor district exams.• Students will need to know the phase changes in matter and how they relate to molecular motion.	<ul style="list-style-type: none">• Items will not require memorization of formulas or values for specific heat, heat of fusion, or heat of vaporization for substances.• Items may assess the concept of specific heat but not assess concepts of insulators or conductors in isolation.• Temperature will only be shown in Celsius.• Heat transfers from hot to cold. “You cannot give away cold!”• STEM Lab #1 is an example of replication, not repetition. Repetition would require each student to test the experiment more than once	
STEM Lab	<u>STEM Lab (SL)</u> STEM LAB 1 – Heat Insulation Lab The heat Insulation Lab is the STEM Lab for the first semester. This lab provides an opportunity for students to practice measuring, identifying variables, and analyzing data. This is also a great time to discuss replication as students each perform the experiment and all contribute to the class data.		
Sample FOCUS Question		Lab and Activities	
<p>Erin places some ice cubes into freshly made tea that is still quite warm. Which of the following correctly describes what happens to the ice cubes?</p> <p>A. Some of the heat from the tea is transferred to the ice cubes and causes them to melt.</p> <p>B. The temperature of the ice cubes remains the same as the temperature of the tea drops.</p> <p>C. The cold from the ice cubes is transferred into the tea and causes the cubes to warm up and melt.</p> <p>D. Heat is transferred between the ice cubes and the tea, which causes the temperature of the tea to increase.</p>		<p>Labs and Activities can be found on Google Drive in the 7th Grade Science Resources – Temperature and Heat folder.</p> <p>Lab Heat Insulation</p> <p>MSP Activity – Investigating How Heat Flows</p> <p>The following lab can be found in the ESLB.</p> <p>ESLB - Temperature Changes Everything</p>	
Prefix / Suffix	Kine- moving Temper- hot		
Unit 2 - Electromagnetic Spectrum and Light			WEEKS 7-8
Topics	Learning Targets and Skills		Standards Vocabulary

Electromagnetic Spectrum and Light	<p>Students will:</p> <ul style="list-style-type: none"> • illustrate how energy arrives to Earth from the Sun • differentiate the variety and types of radiation present from the Sun, including: o infrared, visible, and ultraviolet • investigate with a prism the colors that compose white light (ROYGBIV) • identify the parts of a wave on a diagram, including: <ul style="list-style-type: none"> o amplitude, wavelength, crest, trough • differentiate between frequency and wavelength <p><u>NOS Focus: Discuss the benefits and limits of a model as it applies to waves (EM and/or sound</u></p>	<p>SC.7.P.10.1</p> <p>SC.7.N.1.1</p> <p>SC.7.N.3.2</p>	<p>electromagnetic radiation electromagnetic spectrum wave crest trough frequency infrared (IR) non-visible radiation spectrum ultraviolet (UV) light wavelength visible/white light absorption color light medium reflection refraction speed of sound</p>
	<p>Students will:</p> <ul style="list-style-type: none"> • investigate different ways light can be reflected, refracted, and/or absorbed • cite examples when light is reflected, refracted, and/or absorbed • compare how light is absorbed between lighter and darker objects • explain why objects appear specific colors <p><u>NOS Focus: Make observations and inferences.</u></p>	<p>SC.7.P.10.2</p> <p>SC.7.N.1.1</p>	
	<p>Students will:</p> <ul style="list-style-type: none"> • recognize that light and sound energy move in the form of waves, however light waves do not require a medium within which to travel • explain how waves move at different speeds through different mediums: <ul style="list-style-type: none"> o solid, liquid, gas 	<p>SC.7.P.10.3</p>	
	CSA – 2 : Temperature and Heat		October 6-7

Electromagnetic Spectrum and Light Resources	
Textbook and NOS Focus	Textbook Pages - 391-395 NOS Focus: Discuss the benefits and limits of a model as it applies to waves (EM and/or sound). Make observations and inferences.
Safari Montage / Videos	“Transmission of Sound through a Medium” “Attenuation of Sound in a Vacuum”
Websites	Tour of the Electromagnetic Spectrum The Happy Scientist - (must subscribe to access) Study Jams – Light Absorption, Reflection & Refraction Study Jams – Light Brain Pop – Energy : Waves ; Light ; Color ; Electromagnetic Spectrum ; Rainbows ; Refraction and Diffraction
Keeley Probes	Physical Science - Volume 1 - #2 - Apple in the Dark Physical Science Volume 3 - #6 - Mirror on the Wall
Teacher Hints & Instruction Focus	<ul style="list-style-type: none"> • Items may assess relative order of frequencies of wavelength in the electromagnetic spectrum but will not require memorization of specific frequencies and wavelengths of the electromagnetic spectrum (ROYGBIV.) • Items will not address hazards of electromagnetic spectrum. • Items will not require calculations of wave speed through different mediums. <ul style="list-style-type: none"> • Items will not assess electromagnetic waves traveling in a vacuum. • Frequency and wavelengths have specific energies associated with them. • This is the first and last time this concept is taught in middle school. <p style="text-align: center;">Misconception Alert Many students think that waves with higher frequencies travel faster than waves with lower frequencies. Use the sample FOCUS question to discuss that the speed of light is constant.</p>
Sample FOCUS Question	
<p>If a radio wave has a longer wavelength than ultraviolet waves, what must also be true of the two waves?</p> <p>A. the radio wave will have a higher frequency</p> <p>B. the ultraviolet wave will have a higher frequency</p> <p>C. the radio wave is slower than the ultraviolet wave</p> <p>D. the radio wave has more energy than the ultraviolet wave</p>	
Labs and Activities	
<p>Labs and Activities can be found on Google Drive in the 7th Grade Science Resources – EM Spectrum and Light folder.</p> <p>The following labs can be found in the ESLB.</p> <p>ESLB – Solar Energy vs. Color – How does color affect how much solar energy is absorbed?</p> <p>ESLB – Wave Speed – How does the material/medium affect the speed (frequency) of waves?</p>	
Prefix / Suffix	Re-back - again

Review for 1 st Quarter Test		Week 9	
Topics	Learning Targets and Skills	Standards	UNIT
Review	Scientific Processes	SC.7.N.1.1 SC.7.N.1.2 SC.7.N.1.3 SC.7.N.1.4 SC.7.N.1.5 SC.7.N.1.6 SC.7.N.1.7 SC.7.N.2.1	UNIT 1
	Energy and Transformations	SC.6.N.3.2 SC.7.P.11.2 SC.7.P.11.3	UNIT 1
	Temperature and Heat	SC.7.P.11.1 SC.7.P.11.4	UNIT 2
	Electromagnetic Spectrum	SC.7.N.3.2 SC.7.P.10.1 SC.7.P.10.2 SC.7.P.10.3	UNIT 2

	1st Quarter Assessment	October 13-14
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2nd Quarter

Unit 3 : Earth's Layers		Weeks 10-11	
Topics	Learning Targets and Skills	Standards	Vocabulary
Earth's Layers	<p>Students will:</p> <ul style="list-style-type: none"> • identify and describe the layers of the Earth, including: <ul style="list-style-type: none"> o crust, lithosphere, hot convecting mantle, the outer liquid core, and high-pressure inner solid core • identify the layer of the Earth that has convection currents resulting in plate tectonics • differentiate the density differences between the layers of the Earth • build a model of the Earth's Layers based on characteristics of the layers <p><u>NOS Focus: Discuss the benefits and limitations of models as it applies to Earth's layers.</u></p>	<p>SC.7.E.6.1</p> <p>SC.7.N.3.2</p>	<p>convection currents crust density inner core lithosphere mantle outer core plate tectonics pressure scientific models</p>
	<p>Advanced :</p> <ol style="list-style-type: none"> 1. describe and differentiate the layers of Earth and the interactions among them 2. recognize the importance of the study of seismic wave data and how it can be used to determine the internal structure, density variations, and dynamic processes between Earth's Layers. 	<p>Advanced</p> <p>SC.912.E.6.1</p>	
CSA – 3 : Earth's Layers		November 10-11	

Earth's Layers Resources			
Textbook and NOS Focus	Textbook Pages - 8 through 36 <u>NOS Focus: Discuss the benefits and limitations of models as it applies to Earth's layers.</u>		
Safari Montage / Videos	Earth's Layers – YouTube		
Websites	Earth's Layers Foldable Instructions- YouTube The Happy Scientist – Continuous Change; Fast and Slow Change (must subscribe to access this) Study Jams – Scientific Theory and Evidence Brain Pop – Earth's Systems : Earth's Structure		
Keeley Probes	Earth Science - Volume 2 -#21 - Is it a Rock - 2		
Teacher Hints & Instruction Focus	<ul style="list-style-type: none"> • This is the first and last time this concept is taught in middle school. • Students will not have to classify or identify rocks (i.e. metamorphic, igneous etc.) but will need to know how rocks are formed and changed through the rock cycle. • Items may assess the density of the layers of the Earth. • Students need to be able to explain why theories may be modified but are rarely discarded 	<ul style="list-style-type: none"> • Students will need to identify scientific laws: the Law of Universal Gravitation, the Law of Superposition, the Law of Conservation of Mass, and Law of Conservation of Mass. • Students will need to identify scientific theories and know why they are theories and not laws. • Students will build models of the layers of the Earth. The evaluation of their models should include how their model is like and unlike the real Earth and how the model may help or cause misconceptions 	
Sample FOCUS Question		Labs and Activities	
<p>Which of the following layers of the Earth are in order from least to most dense?</p> <p>A. crust, mantle, outer core, inner core</p> <p>B. mantle, inner core, outer core, crust</p> <p>C. outer core, mantle, crust, inner core</p> <p>D. inner core, outer core, mantle, crust</p>		<p>Labs and Activities can be found on Google Drive in the 7th Grade Science Resources – Earth's Layers folder.</p> <p>MSP Activity – Layers and Laws</p>	
Prefix / Suffix	Ignis- fire Veh(ct)-to carry	Meta- changed Dens- thick	Morphic- shape Pan- across
	Sed- to sit	Sub- under/ below Gaea- earth	De- from/away
			Lithos- rock
			Con- with

Unit 3 - Plate Tectonics		Weeks 12-13	
Topics	Learning Targets and Skills	Standards	Vocabulary
Plate Tectonics	<p>Students will:</p> <ul style="list-style-type: none"> • describe the Theory of Plate Tectonics <ul style="list-style-type: none"> o cite examples of physical evidence that supports the Theory of Plate Tectonics <p><u>NOS Focus: differentiate between scientific theories and scientific laws.</u></p> <ul style="list-style-type: none"> • explain how convection currents cause Earth's crustal plates to move, including: <ul style="list-style-type: none"> o convergent, divergent, and transform boundaries • describe how the movement of crustal plates can cause changes to Earth's surface <ul style="list-style-type: none"> o earthquakes, volcanic eruptions and mountain building • explain the role of subduction in plate movement • differentiate slow and rapid changes to the Earth's surface, such as: <ul style="list-style-type: none"> o mountain building vs. earthquakes • explain and give examples of how scientific knowledge has changed when new evidence or new interpretations are encountered <ul style="list-style-type: none"> o examples: continental drift, Theory of Plate Tectonics, and Pangaea • describe the benefits and limits of scientific models <ul style="list-style-type: none"> o for example, Wegener's model of continental drift 	<p>SC.7.E.6.5</p> <p>SC.7.N.3.1</p> <p>SC.7.E.6.7</p> <p>SC.7.N.2.1</p> <p>SC.7.N.1.6</p> <p>SC.7.N.3.2</p>	<p>Theory of Continental Drift</p> <p>Theory of Plate Tectonics</p> <p>Pangaea</p> <p>sea floor spreading</p> <p>convergent</p> <p>divergent</p> <p>transform</p> <p>subduction</p> <p>crustal plates</p> <p>earthquakes</p> <p>volcanoes</p> <p>mountains</p> <p>mid-ocean ridge</p> <p>ocean basins</p> <p>ocean trench</p> <p>rift valley</p> <p>scientific theory</p> <p>scientific law</p>
	<p>Advanced:</p> <ol style="list-style-type: none"> 1. discuss the development of plate tectonic theory, which is derived from the combination of two theories: continental drift and seafloor spreading 2. explain the origin of geologic features and processes that result from plate tectonics (e.g. earthquakes, volcanoes, trenches, mid-ocean ridges, island arcs and chains, hot spots, earthquake distribution, tsunamis, mountain ranges) 3. investigate plate tectonics using models 	<p>Advanced SC.912.E.6.3</p>	
CSA – 3 : Plate Tectonics		November 10-11	

Plate Tectonics Resources		
Textbook and NOS Focus	Textbook Pages - 124 through 152 NOS Focus: differentiate between scientific theories and scientific laws.	
Safari Montage / Videos	Plate Tectonics- YouTube	
Websites	Study Jams – Scientific Theory and Evidence Brain Pop - Earth Systems : Plate Tectonics Brain Pop – Forces of Nature : Volcanoes ; Earthquakes	
Keeley Probes	Nature of Science - Volume 3 - #11 - Is it a Theory?	
Teacher Hints & Instruction Focus	<ul style="list-style-type: none"> • Students should have an opportunity to design or evaluate a model of plate tectonics and be able to distinguish the benefits and limitations of the model. • This is the first time this concept is taught in middle school. • Discuss why Plate Tectonics is a theory. • Items will not assess types of volcanoes but may assess different causes of volcanic formation. • Items will not assess types of earthquake waves. 	<ul style="list-style-type: none"> • Students have difficulty understanding that theories do not become laws. A theory is the explanation of why something happens in nature, while a law predicts what will happen in nature.
Sample FOCUS Question		Labs and Activities
<p>Which of the following correctly describes the effects of tectonic plate movement on Earth's crust?</p> <p>A. The amount of crust on the surface of Earth is fairly stable.</p> <p>B. The amount of crust on the surface of Earth is slowly shrinking.</p> <p>C. The total amount of Earth's crust will eventually be pulled into the mantle.</p> <p>D. The total amount of Earth's crust is steadily increasing due to volcanic activity.</p>		<p>Labs and Activities can be found on Google Drive in the 7th Grade Science Resources – Plate Tectonics folder.</p> <p>MSP Activity – Edible Plate Tectonics</p>

Prefix / Suffix	Tecktonos- build	Verge- to bend	Con- with	di- away from	trans- across	forma- shape
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Unit 4 - Rock Cycle		Weeks 14-15	
Topics	Learning Targets and Skills	Standards	Vocabulary
Rock Cycle	<p>Students will:</p> <ul style="list-style-type: none"> • describe the processes resulting in the formation of the different rock types: <ul style="list-style-type: none"> o Igneous o Sedimentary o Metamorphic • describe the process of the rock cycle in terms of the different rock types • identify patterns within the rock cycle and relate them to surface events, including: <ul style="list-style-type: none"> o weathering, erosion, and deposition • identify patterns within the rock cycle and relate them to subsurface events, including: <ul style="list-style-type: none"> o plate tectonics and mountain building • identify the beneficial and negative impacts humans have had on Earth in terms of weathering, erosion, and deposition <ul style="list-style-type: none"> o example: deforestation leads to erosion o example: protecting sea oats from sand dunes prevents wind erosion <p><u>NOS Focus : Identifying, and limit variables, collecting data, and drawing conclusions. Differentiate between replication (by others) and repetition (multiple trials).</u></p>	<p>SC.7.E.6.2</p> <p>SC.7.E.6.6</p>	<p>cementation crystals deposition erosion weathering fragments Rock Cycle igneous sedimentary metamorphic minerals melting/cooling particles pressure/heat sand subsurface surface events</p>
	<p>Advanced :</p> <ol style="list-style-type: none"> 1) connect surface features to surface processes that are responsible for their formation 2) identify various landforms (dunes, lakes, sinkholes, aquifers) and describe how they form 3) explain how sea level changes over time have exposed and inundated continental shelves, created and destroyed inland seas, and shaped the surface of the Earth. 	<p>Advanced : SC.912.E.6.2</p>	

	CSA – 4 : Rock Cycle		December 8-9

Rock Cycle Resources		
Textbook and NOS Focus	Textbook Pages - 68 through 74 <u>NOS Focus : Identifying, and limit variables, collecting data, and drawing conclusions. Differentiate between replication (by others) and repetition (multiple trials).</u>	
Safari Montage / Videos	Video- Mr. Lee Rock Cycle Rap (You tube)	
Websites	Rock Cycle Interactive- Annenberg Learner Study Jams – The Rock Cycle Study Jam – Weathering and Erosion Brain Pop - Earth Systems : Rock Cycle ; Types of Rocks ; Types of Rocks ; Mineral Identification Brain Pop – Forces of Nature : Erosion Brain Pop – Weather : Weathering	
Keeley Probes	Earth Science - Volume 2 - #21 - Is it a Rock 2	
Teacher Hints & Instruction Focus	<ul style="list-style-type: none"> • This is the first time and last time this concept is taught in middle school. • Students will not have to classify or identify rocks (i.e. metamorphic, igneous etc.) but will need to know how rocks are formed and changed through the rock cycle. • Students will identify the breaking down of rock (weathering) and the movement of materials from one place to the other (erosion). 	<ul style="list-style-type: none"> • Students will know the impact of deforestation on the Earth in terms of increased erosion.
Sample FOCUS Question		Labs and Activities

<p>The geology of any two regions of Earth may be completely different from each other. Some areas have different types of rock while other are completely covered with sediments. Which of the following areas is most likely to form metamorphic rocks such as gneiss and slate?</p> <p>A. a sea floor B. a windblown desert C. a site deep underground D. a site covered by a glacier</p>					<p>Labs and Activities can be found on Google Drive in the 7th Grade Science Resources – Rock Cycle folder.</p> <p>MSP Activity – Rocks Making Rocks : Rock Cycle Simulation</p> <p>The following labs can be found in the ESLB.</p> <p>ESLB - Density of Rocks</p> <p>ESLB – Density Driven Fluid Flow</p> <p>ESLB – Classifying Rocks</p>			
Prefix / Suffix	Cycle- circl Con- with	gnis- fire Veh(ct)-to carry	Meta- changed Dens- thick	Morphic- shape Pan- across	Sed- to sit Gaea- earth	Sub- under/ below	De- from/away	Lithos- rock

Unit 4 - Age of Earth		Weeks 15-16	
Topics	Learning Targets and Skills	Standards	Vocabulary
Age of Earth	<p>Students will:</p> <ul style="list-style-type: none"> • identify and describe current methods for measuring the age of the Earth, including: <ul style="list-style-type: none"> o relative dating: Law of Superposition o absolute dating: radioactive dating, carbon dating • explain how folding and faulting may affect the accuracy of Law of Superposition to date the age of the Earth <p><u>NOS Focus : differentiate between scientific theories and scientific laws.</u></p>	SC.7.E.6.3	absolute dating carbon dating faulting folding Law of Superposition radioactive dating relative dating

	<p>Students will:</p> <ul style="list-style-type: none"> • give examples of physical evidence that supports scientific theories that Earth has evolved over geological time due to natural processes, such as: <ul style="list-style-type: none"> o index fossils, rock layers, and radioactive dating 	SC.7.E.6.4	
	CSA – 4 : Age of Earth		December 8-9

Age of Earth Resources	
Textbook and NOS Focus	<p>Textbook Pages - 89 through 103</p> <p><u>NOS Focus : differentiate between scientific theories and scientific laws.</u></p>
Safari Montage	4 ways to understand the age of the earth – YouTube
Websites	<p>Brain Pop – Earth Systems : Geologic Time</p> <p>Brain Pop – Paleontology and Anthropology : Ice Age</p>
Keeley Probes	Earth Science - Volume 1 - #23 - Mountain Age

Teacher Hints & Instruction Focus	<ul style="list-style-type: none"> • This is the first time this concept is taught in middle school. • Students will not have to calculate the age of the Earth. • Items assessing radioactive dating will be limited to a conceptual level. • Students will not have to calculate half-life. • Students do not need to know the different types of folding and faulting. Students only need to know how this affects Law of Superstition. 	
Common Lab	<p><u>Common Lab (CL)</u> CL 2 – Rock Cycle Lab</p> <p>The Rock Cycle Lab provides an opportunity for students to model how rocks change.</p>	
Sample FOCUS Question		Labs and Activities
<p>On a trip to the desert, Geraldo finds fossils of ancient oceanic shells. Which of the following best explains how these fossils ended up in the desert?</p> <p>A. Oceanic storms washed the shells into the desert.</p> <p>B. The desert was once covered by an ocean that receded.</p> <p>C. Earthquakes shifted debris from the ocean into the desert.</p> <p>D. Animals carried the shells from the ocean to the area for food</p>		<p>Labs and Activities can be found on Google Drive in the 7th Grade Science Resources – Age of Earth folder.</p> <p>Common Lab #2 - The Rock Cycle Lab</p> <p>The following lab can be found in the ESLB.</p> <p>ESLB – Fossils and the Law of Superposition</p>
Prefix / Suffix	<p>Geo- earth cronos- time super-above sub- below</p>	

2nd Quarter Assessment Review		Week 17	
Topics		Standards	UNIT
Review	Earth's Layers	<p>SC.7.N.3.2</p> <p>SC.7.E.6.1</p>	UNIT 3

	Plate Tectonics	SC.7.N.1.6 SC.7.N.2.1 SC.7.N.3.1 SC.7.N.3.2 SC.7.E.6.5 SC.7.E.6.7	UNIT 3
	Rock Cycle	SC.7.E.6.2 SC.7.E.6.6	UNIT 4
	Age of Earth	SC.7.E.6.3 SC.7.E.6.4	UNIT 4
	2nd Quarter Assessment		December 14-15

3rd Quarter

Unit 5 - Heredity and Reproduction			WEEKS 18-20	
Topics	Learning Targets and Skills	Standards	Vocabulary	

Heredity and Reproduction	<p>Students will:</p> <ul style="list-style-type: none"> • describe heredity as the passage of traits from one generation to another, for example: <ul style="list-style-type: none"> o acquired vs. learned, a skin wound would not be passed on to offspring, etc. • explain why every organism requires a set of instructions to specify its traits • explain how genes store hereditary information (in DNA) and where genes are located within a cell • describe the location of genes: cells ◇ nucleus --> chromosome ◇ DNA ◇ gene <p><u>NOS Focus : Identifying and limit variables, collecting data, and drawing conclusions. Differentiate between replication (by others) and repetition (multiple trials).</u></p>	SC.7.L.16.1	cell chromosomes DNA generation genes genetics heredity traits
	<p>Students will:</p> <ul style="list-style-type: none"> • differentiate between the general processes of sexual reproduction (requiring meiosis) and asexual reproduction (requiring mitosis) • identify both the advantages and disadvantages of sexual and asexual reproduction • differentiate between mitosis and meiosis, including: <ul style="list-style-type: none"> o a complete set of chromosomes in mitosis vs. a half set of chromosomes in meiosis <p>(Students do NOT need to memorize the phases of mitosis or meiosis)</p>	SC.7.L.16.3	cell division asexual reproduction mitosis meiosis sexual reproduction
	CSA – 5 : Heredity and Reproduction		February 9-10

Heredity and Reproduction Resources

Textbook and NOS Focus	Textbook Pages - 424 through 449 <u>NOS Focus : Identifying and limit variables, collecting data, and drawing conclusions. Differentiate between replication (by others) and repetition (multiple trials).</u>	
Safari Montage	Mitosis Song – YouTube	
Websites	Websites: Heredity; Genetic Discoveries; Mitosis; Mitosis vs. Meiosis; Simulation Brain Pop – Cellular Life and Genetics : Asexual Reproduction ; Cloning ; DNA ; Dolly the Sheep ; Heredity ; Mitosis	
Keeley Probes	Life Sciences - Volume Life #21 - DNA, Genes, and Chromosomes	
Teacher Hints & Instruction Focus	<ul style="list-style-type: none"> • This is the first time this concept is taught in middle school. • Items will not assess: incomplete dominance, sex-linked traits, polygenic traits, multiple alleles, or codominance, mutations or genetic disorders. • This concept is only taught in 7th grade. • Items will assess mitosis and meiosis but will not assess the phases of mitosis or meiosis. 	<ul style="list-style-type: none"> • Items will not use haploid or diploid terms. • Items will not assess fertilization or zygote formation. • Items referring to sexual reproduction will not address human reproduction. • Items will not assess crossing over.
Sample FOCUS Question		Labs and Activities
<p>Leigh Ann is learning about the differences between inherited traits and learned behaviors in organisms. For example, she knows that being able to read is learned, while having straight or curly hair is inherited. How does a person inherit a trait such as hair texture?</p> <p>A. through the storage of excess fatty acids in tissues</p> <p>B. through DNA that is passed from parents to offspring</p> <p>C. through the breakdown of different proteins during birth</p> <p>D. through different viruses that are passed from parents to offspring</p>		<p>Labs and Activities can be found on Google Drive in the 7th Grade Science Resources –Heredity and Reproduction folder:</p> <p>The following lab can be found in the ESLB.</p> <p>ESLB - Human Variations</p>
Prefix / Suffix	Chromo- color Soma- body Gene- beginning Mito- thread -osis- process Mei- to make small In- not	

Unit 5 - Genetics		WEEKS 21-23	
Topics	Learning Targets and Skills	Standards	Vocabulary
Genetics	<p>Students will:</p> <ul style="list-style-type: none"> • differentiate between dominant and recessive traits • differentiate between genotype and phenotypes • create and solve Punnett Squares to determine the probabilities for genotype and phenotype outcomes o Punnett Squares will be given in % • differentiate between a Punnett Square and a pedigree chart • analyze pedigrees to determine probabilities of genotypes and phenotypes <p>the benefits and drawbacks of biotechnology, such as:</p> <ul style="list-style-type: none"> • explore <ul style="list-style-type: none"> o cloning, artificial selection, genetic engineering, etc. • describe how heredity can affect personal health, such as: o sickle cell anemia, diabetes, acne, etc. <p><u>NOS Focus : Identifying and limit variables, collecting data, and drawing conclusions. Differentiate between replication (by others) and repetition (multiple trials).</u></p>	<p>SC.7.L.16.2</p> <p>SC.7.L.16.4</p> <p>HE.7.C.1.7</p>	<p>allele dominant recessive phenotypes genotypes heterozygous homozygous probabilities Punnett Squares pedigree hybrid purebred biotechnology clone</p>
	CSA – 5 : Genetics	February 9-10	

Genetics Resources		
Textbook and NOS Focus	Textbook Pages - 460 through 490 <u>NOS Focus : Identifying and limit variables, collecting data, and drawing conclusions. Differentiate between replication (by others) and repetition (multiple trials).</u>	
Safari Montage/ Videos	Introduction to Genetics and Heredity- YouTube Video Are Your Traits Dominant? – You Tube Video – How Special Are Your Physical Traits? – You Tube	
Websites	Websites : Genetics ; Punnett Squares Brain Pop – Cellular Life and Genetics : Genetic Mutations ; Genetics ; Heredity	
Keeley Probes	Science - Volume 2 - #17 - Baby Mice	
Teacher Hints & Instruction Focus	<ul style="list-style-type: none"> • Items will only assess Punnett squares and pedigrees that are dominant or recessive. • Items assessing pedigrees are limited to assessing the probability of a genotype or phenotype of a single individual. Items may require the identification of parental genotypes that result in certain genotypic or phenotypic probabilities in offspring. • Punnett Squares are limited to P and F1 generations. 	
Sample FOCUS Question		Labs and Activities
<p>In pea plants, purple flower color is dominant to white flower color. Susan has pea plants in her garden. Most of them have purple flowers, while some have white flowers. If she crosses two pea plants that have white flowers, what color flowers will the resulting pea plants have?</p> <p>A. 100% purple</p> <p>B. 100% white</p> <p>C. 50% purple and 50% white</p> <p>D. 75% purple and 25% white</p>		<p>Labs and Activities can be found on Google Drive in the 7th Grade Science Resources – Genetics folder:</p> <p>The following lab can be found in the ESLB.</p> <p>ESLB - Incomplete Dominance</p>

Prefix / Suffix	In- not	Pheno- to be evident	Homo- same	Hetero- different	Zygous- yolk/egg

Unit 6 - Natural Selection		WEEKS 24-26	
Topics	Learning Targets and Skills	Standards	Vocabulary
<div style="writing-mode: vertical-rl; transform: rotate(180deg);">Natural Selection</div>	<p>Students will:</p> <ul style="list-style-type: none"> • describe the ways in which genetic variation (through many generations) and environmental factors contribute to evolution by natural selection and diversity • simulate the effects of natural selection and genetic variation with specific environmental factors, such as: o food sources, climate change, predators, and geography <p>NOS Focus: discuss examples of scientific knowledge not derived from experimentation (ex: observations, surveys, data collections, simulation).</p>	<p>SC.7.L.15.2</p> <p>SC.7.N.3.2</p> <p>Sc.7.N.1.3</p>	<p>Diversity</p> <p>genetic variation</p> <p>environmental factors</p> <p>geographical isolation</p> <p>natural selection</p> <p>species</p>
	<p>Advanced:</p> <p>1. the conditions required for natural selection, including: overproduction of offspring, inherited variation, and the struggle to survive, which result in differential reproductive success</p>	<p>Advanced</p> <p>SC.912.L.15.1 3</p>	

	<p>Students will:</p> <ul style="list-style-type: none"> • explain how the inability of a species to adapt in a quickly changing environment may contribute to the extinction of that species, such changes may include: <ul style="list-style-type: none"> o human impact, natural disasters, food scarcity, and non-native species • simulate how adaptations may or may not contribute to extinction 	<p>SC.7.L.15.3</p> <p>SC.7.N.3.2</p>	<p>adaptations extinction</p>
	CSA – 6 : Natural Selection		March 2-3

Natural Selection Resources		
Textbook and NOS Focus	<p>Textbook Pages 509 through 536</p> <p><u>NOS Focus :Differentiate between scientific theories and scientific laws.</u> NOS Focus: discuss examples of scientific knowledge not derived from experimentation (ex: observations, surveys, data collections, simulation) .</p>	
Safari Montage	<p>Pocket Mouse- YouTube</p> <p>SM- Bill Nye Natural Selection</p>	
Websites	<p>Brain Pop – Cellular Life and Genetics : Natural Selection Brain Pop – Paleontology and Anthropology : Charles Darwin ; Carbon Dating</p>	
Keeley Probes	<p>Life Science - Volume 4 - #15 - Adaptation Life Science - Volume 4 - #16 - Is it Fitter?</p> <p>Life Science - Volume 4 - #13 – Biological Evolution Life Science - Volume 2 - #19 - Habitat Change</p>	
Teacher Hints & Instruction Focus	<ul style="list-style-type: none"> • Items will not address: speciation, genetic drift, gene pools, hominid evolution, or primate fossils. • This is the only time this concept is taught in middle school. • Items assessing fossil evidence should focus on progressions over time/evolution from earlier species and or the idea that not all species alive today were alive in the past. 	

Common Lab	Common Lab (CL) CL 3- Bird Beak Adaptations Lab The Bird Beak Adaptations Lab for the 3rd 9 weeks. This lab provides an opportunity for students understand natural selection by examining the relationship between bird beaks and food types.		
Sample FOCUS Question		Labs and Activities	
In plants and animals, sexual reproduction causes variation within a species. This variation is vital to their survival. How does genetic variation affect a species' survival? A. A species with variation is more easily found by predators. B. A species that shows more variation will have a longer life cycle. C. A species that has no variation might eventually become extinct. D. A species without variation will overpopulate and produce new species.		Labs and Activities can be found on Google Drive in the 7 th Grade Science Resources – Natural Selection folder: The following lab can be found in the ESLB. ESLB - Moth Catcher ESLB - Dissecting A Flower	
Prefix / Suffix	Gene- beginning	Apt- fitted	Ex- from/out

3rd Quarter Assessment Review		Week 27	
Topics		Standards	UNIT
Review	Heredity and Reproduction	<p>SC.7.L.16.1</p> <p>SC.7.L.16.3</p>	UNIT 5

	Genetics	SC.7.L.16.2 SC.7.L.16.4 HE.7.C.1.7	UNIT 5
	Natural Selection	SC.7.N.1.3 SC.7.N.3.2 SC.7.L.15.2	UNIT 6
	3rd Quarter Assessment		March 9-10

4th Quarter

Unit 7 - Evidence of Evolution		WEEKS 28-29	
Topics	Learning Targets and Skills	Standards	Vocabulary

Evidence of Evolution	<p>Students will:</p> <ul style="list-style-type: none"> • explain how scientists use fossil evidence to support the scientific theory of evolution: <ul style="list-style-type: none"> o that living things evolved from earlier species o not all species today were alive in the past • explain what makes Evolution a scientific theory 	<p>SC.7.L.15.1</p> <p>SC.7.N.3.1</p>	<p>Evidence</p> <p>Fossil</p> <p>scientific knowledge</p> <p>scientific theory</p> <p>Theory of Evolution</p>
	CSA – 7 : Evidence of Evolution		

Evidence of Evolution Resources

Textbook and NOS Focus	Textbook Pages - 89 through 103 <u>NOS Focus : differentiate between scientific theories and scientific laws.</u>	
Safari Montage		
Websites	Brain Pop – Paleontology and Anthropology : Human Evolution ; Extinction Brain Pop – Diversity of Life : Fossils ; Carbon Dating	
Keeley Probes		
Teacher Hints & Instruction Focus	<ul style="list-style-type: none"> • Items will not address: speciation, genetic drift, gene pools, hominid evolution, or primate fossils. • This is the only time this concept is taught in middle school. • Items assessing fossil evidence should focus on progressions over time/evolution from earlier species and or the idea that not all species alive today were alive in the past. 	
Common Lab	Common Lab (CL) CL 3- Bird Beak Adaptations Lab The Bird Beak Adaptations Lab for the 3rd 9 weeks. This lab provides an opportunity for students understand natural selection by examining the relationship between bird beaks and food types.	
Sample FOCUS Question		Labs and Activities
In plants and animals, sexual reproduction causes variation within a species. This variation is vital to their survival. How does genetic variation affect a species' survival? A. A species with variation is more easily found by predators. B. A species that shows more variation will have a longer life cycle. C. A species that has no variation might eventually become extinct. D. A species without variation will overpopulate and produce new species.		Labs and Activities can be found on Google Drive in the 7 th Grade Science Resources – Evolution folder: The following lab can be found in the ESLB. ESLB - Becoming Whales : Fossil Records
Prefix / Suffix	Gene- beginning Apt- fitted Ex- from/out	

FSA TESTING

WEEKS 30-31

Unit 8 - Interdependence		WEEKS 32-33	
Topics	Learning Targets and Skills	Standards	Vocabulary
Interdependence	<p>Students will:</p> <ul style="list-style-type: none"> • differentiate among the roles and relationships among producers, consumers and decomposers • differentiate between a food chain and a food web • identify the roles of organisms in food webs • trace the flow of energy through food chains in a food web • identify a species in a food web as primary, secondary, or tertiary consumers • create a food web using a maximum of 15 organisms <p><u>NOS Focus : Identifying and limit variables, collecting data, and drawing conclusions. Differentiate between replication (by others) and repetition (multiple trials).</u></p>	SC.7.L.17.1	abiotic biotic autotrophs heterotrophs food chain food web organism producer consumers primary (1st) secondary (2nd) tertiary (3rd) decomposers
	<p>Students will:</p> <ul style="list-style-type: none"> • identify the types of symbiotic relationship between organisms, given a description of their interactions • differentiate the relationships among organisms, including: <ul style="list-style-type: none"> o mutualism, predation, parasitism, competition, and commensalism 	SC.7.L.17.2	commensalism competition mutualism parasitism predation

	Advanced: 1. discuss distinguishing characteristics of the domains and kingdoms of living organisms. 2. calculate the energy flow in a food web. 3. compare and contrast the relationship among organisms, including predation, parasitism, competition, commensalism, and mutualism.	Advanced SC.912.L.15.6	
	CSA – 8 : Interdependence		May 11-12

Interdependence Resources		
Textbook and NOS Focus	Textbook Pages - 548 through 576 <u>NOS Focus : Identifying and limit variables, collecting data, and drawing conclusions. Differentiate between replication (by others) and repetition (multiple trials).</u>	
Safari Montage / Videos	Trials of Life- Episode 7 - Living Together- YouTube	
Websites	Internet 4Classrooms Brain Pop – Ecology and Behavior : Carbon Cycle ; Nitrogen Cycle ; Energy Pyramid ; Food Chains ; Symbiosis	
Keeley Probes	Life Science – Volume 3 - #18 – Rotting Apple	
Teacher Hints & Instruction Focus	<ul style="list-style-type: none"> • This is the only time this concept is taught in middle school. • Items assessing relationships between organisms may require the identification of the relationship of mutualism, predation, parasitism, competition or commensalism. • Items will not require specific knowledge of specific organisms. • Items will not assess energy pyramids or use the term trophic level. • Students may be asked to analyze food webs with up to 15 organisms. • Food webs are limited to: primary, secondary and tertiary consumers. 	<ul style="list-style-type: none"> • EARTH DAY: Refuse, Reduce, Reuse, Recycle • Refuse: No Plastic Day • Reuse: Trash Art • Reduce/Recycle: Lunch Trash • Reuse: Books-swap, Clothes-swap, • Pollution: Pacific Garbage Patch, Marine Life • Debates: Human Impact • Field Study to Environmental Site • Guest Speaker • Earth Day Art Contest • Paperless Classroom
Sample FOCUS Question		Labs and Activities

Commensalism is the relationship between organisms where one organism benefits while the other is not affected. Which set of organisms is an example of this close interaction?

A. clownfish and sea anemone

B. flower and bee

C. tapeworm and dog

D. tick and cow

Labs and Activities can be found on Google Drive in the 7th Grade Science Resources – Interdependence folder.

Unit 8 - Limiting Factors

WEEKS 34-25

Topics	Learning Targets and Skills	Standards	Vocabulary
Limiting Factors	<p>Students will:</p> <ul style="list-style-type: none"> • describe and investigate the impact various limiting factors (<i>such as food, shelter/space, water, disease, predation, parasitism, nesting space, etc.</i>) have on native populations • explain how the amount of available resources can restrict the size of a population (carrying capacity) • research an example of how limiting factors impact ecosystems, such as: <ul style="list-style-type: none"> o sea turtle nesting sites versus erosion from loss of biodiversity on beaches 	<p>SC.7.L.17.3</p> <p>SC.7.N.1.1</p>	<p>ecosystems</p> <p>environment</p> <p>native species</p> <p>non-native species</p> <p>limiting factors</p>

	<p>Students will:</p> <ul style="list-style-type: none"> • describe the positive and negative impacts that humans have on native populations o example: deforestation impacts habitats and biodiversity • discuss how environmental factors affect personal health. 	<p>SC.7.E.6.6</p> <p>HE.7.C.1.3</p>	<p>air quality</p> <p>deforestation</p> <p>desertification</p> <p>urbanization</p> <p>water quality</p>
	CSA – 8 : Limiting Factors		May 11-12

Limiting Factors Resources		
Textbook and NOS Focus	Textbook pages 244 through 277	
Safari Montage	How Wolves Change Rivers- YouTube	
Websites	<p>Website: Garbage Patch; Oprah Garbage Patch</p> <p>Brain Pop – Our Fragile Environment : Humans and the Environment ; Climate Change</p> <p>Brain Pop - Ecology and Behavior : Ecosystems</p>	
Keeley Probes		
Teacher Hints & Instruction Focus	<ul style="list-style-type: none"> • Students may experiment with plants or invertebrates to demonstrate limiting factors. 	

Common Lab	Common Lab (CL) CL 4 – Limiting Factors Owl Lab The Limiting Factors Labs is the Common Lab for the 4 th 9 week common labs. This common lab gives students the opportunity to see how limiting factors affect the resources in an ecosystem. All resources can be found in the 7th grade CL folder on XXXXXX.		
Sample FOCUS Question		Labs and Activities	
<p>In any ecosystem, the survival of a species depends on the resources that are available. Beneath the tree canopy in a tropical rainforest, growth of some plant species may be limited. The availability of which of these resources most likely limits the growth of plants on the ground level in this ecosystem?</p> <p>A. carbon dioxide B. minerals C. sunlight D. water</p>		<p>Labs and Activities can be found on Google Drive in the 7th Grade Science Resources – Limiting Factors folder:</p> <p>The following lab can be found in the ESLB.</p> <p>ESLB - Modeling the Greenhouse Effect</p>	
Prefix / Suffix	De- from/out	e/ex- away	rodere – to gnaw

Common Course Exam Review		Week 36	
Topics		Standards	UNIT
	<p><u>Review 1st 9 Weeks :</u></p> <p>Scientific Processes</p>	<p>SC.7.N.1.1 SC.7.N.1.2 SC.7.N.1.3 SC.7.N.1.4 SC.7.N.1.5 SC.7.N.1.6 SC.7.N.1.7 SC.7.N.2.1</p> <p>SC.6.N.3.2</p>	<p>UNIT 1</p> <p>UNIT 1</p>

	<p>Energy and Transformation</p> <p>Temperature and Heat</p> <p>Electromagnetic Spectrum</p>	<p>SC.7.P.11.2 SC.7.P.11.3</p> <p>SC.7.P.11.1 SC.7.P.11.4</p> <p>SC.7.N.3.2 SC.7.P.10.1 SC.7.P.10.2 SC.7.P.10.3</p>	<p>UNIT 2</p> <p>UNIT 2</p>
	<p><u>Review 2nd 9 Weeks :</u></p> <p>Earth's Layers</p> <p>Plate Tectonics</p> <p>Rock Cycle</p> <p>Age of Earth</p>	<p>SC.7.N.3.2 SC.7.E.6.1</p> <p>SC.7.N.1.6 SC.7.N.2.1 SC.7.N.3.1 SC.7.N.3.2 SC.7.E.6.5 SC.7.E.6.7</p> <p>SC.7.E.6.2 SC.7.E.6.6</p> <p>SC.7.E.6.3 SC.7.E.6.4</p>	<p>UNIT 3</p> <p>UNIT 3</p> <p>UNIT 4</p> <p>UNIT 4</p>
	<p><u>Review 3rd 9 Weeks :</u></p> <p>Heredity and Reproduction</p> <p>Genetics</p>	<p>SC.7.L.16.1 SC.7.L.16.3</p> <p>SC.7.L.16.2 SC.7.L.16.4 HE.7.C.1.7</p>	<p>UNIT 5</p> <p>UNIT 5</p>

	Natural Selection	SC.7.N.1.3 SC.7.N.3.2 SC.7.L.15.2	UNIT 6
	<u>Review 4th 9 Weeks :</u>		
	Evidence of Evolution	SC.7.L.15.1 SC.7.N.3.1	UNIT 7
	Interdependence	SC.7.L.17.1 SC.7.L.17.2	UNIT 8
	Limiting Factors	SC.7.L.17.3 SC.7.N.1.1 SC.7.E.6.6 HE.7.C.1.3	UNIT 8
	Common Course Exam Assessment		May 18-19

Middle Grades ELA Florida Standards	
*English/Language Arts Florida Standards integrated during science labs and activities:	*During Volusia Literacy Tasks (VLT) or ISN activities:

<p>LAFS.68.RST.1.3 – Follow precisely a multistep procedure when carrying out experiments, taking measurement or performing technical tasks.</p> <p>LAFS.68.RST.3.7 – Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flow chart, diagram, model, graph, or table.)</p> <p>*During class discussion and debates (ADI):</p> <p>LAFS.68.SL.1.1 – Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others’ ideas and expressing their own clearly.</p> <ul style="list-style-type: none"> a. Come to discussions prepared, having read or researched material under study; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion. b. Follow rules for collegial discussions and decision-making, track progress toward specific goals and deadlines, and define individual roles as needed. c. Pose questions that connect the ideas of several speakers and respond to others’ questions and comments with relevant evidence, observations, and ideas. d. Acknowledge new information expressed by others, and, when warranted, qualify or justify their own views in light of the evidence presented. 	<p>LAFS.68.WHST.1.2 – Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.</p> <ul style="list-style-type: none"> a) Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information into broader categories as appropriate to achieving purpose; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension. b) Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples. c) Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts. d) Use precise language and domain-specific vocabulary to inform about or explain the topic. e) Establish and maintain a formal style and objective tone. f) Provide a concluding statement or section that follows from and supports the information or explanation presented. <p>*During reading in the content area (CLOSE reading, SLAM, ISN, etc.):</p> <p>LAFS.68.WHST.3.9 – Draw evidence from informational texts to support analysis reflection, and research.</p> <p>LAFS.68.RST.2.4 – Determine the meaning of symbols, key terms, and other domain specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6 – 8 text and topics.</p> <p>LAFS.68.RST.4.10 – By the end of grade 8, read and comprehend science / technical text in grades 6 – 8 text complexity band independently and proficiently.</p>
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Middle Grades Math Florida Standards

***All Math Florida Standards integrated during science labs and activities:**

MAFS.6.EE.3.9 – Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation $d = 65t$ to represent the relationship between distance and time.

MAFS.6.SP.1.3 – Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.

MAFS.8.G.3.9 – Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.

MAFS.6.SP.2.5 – Summarize numerical data sets in relation to their context, such as by:

- a) Reporting the number of observations.
- b) Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.
- c) Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.
- d) Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.

MAFS.8.F.2.5 – Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g. where a function is increasing or decreasing, linear or nonlinear.) Sketch a graph that exhibits the qualitative features of a function that have been described verbally.