

**Beverly Public Schools Curriculum
Science grades K-8**

DOE Standard Number	State Standard	Students will be able to:
1.E.1	Describe the weather changes from day to day over the seasons	Observe and record seasonal weather changes as they occur.
1.E.2	Identify some events around us that have repeating patterns, including the seasons of the year, day and night	Learn to use a thermometer by conducting multiple experiments in different context, e.g. water temperature, outside temperature, etc. List observations that show daily weather changes by keeping charts, e.g. amount of snow on the ground.
1.L.1	Life Science (no state standard)	Have many experiences with sorting and sub-sorting organisms. Compare and contrast groups of organisms.
1.L.2	Recognize that plants and animals have life cycles and that life cycles vary for different living things	Follow the cycle changes in plants.
1.L.3	Recognize that animals and plants are living things that grow, reproduce and need food, air and water	Grow seeds from plants they know and see that the new plants are more like the parent plants than like other types of plants.
1.P.1	Describe the various ways that objects can move, such as in a straight line, zigzag, back and forth, round and round, fast and slow	Manipulate, observe, compare, and describe the behaviors of various rolling or stacking objects on different surfaces and inclines.
1.P.2	Sort objects by observable properties such as size, weight, texture, color and shape	Manipulate, observe, compare and describe the behavior of various rolling or stacking objects on different surfaces and inclines. Sort and compare objects by properties.
1.P.3	Identify objects and materials as solid, liquid or gas. Recognize that solids have a definite shape; liquids and gases take the shape of their container.	Observe, compare, sort, and describe various solids and liquids based on their properties
1.T.1	Materials both natural and man-made have specific characteristics that illustrate how they will be used	Explore materials used in the classroom and determine why they were selected for that particular use. Compare properties of materials used in the classroom and how these properties relate to their use.
2.E.1	Recognize and discuss the different properties of soil, including color, texture, ability to retain water and ability to support growth of plants	Examine soil; sort and describe components.
2.E.2	None	Record moon shapes (phases) for a month as a class.
2.I.1	Inquiry	Manipulate various objects and experiment with how counter weighting and the position of the balance point affect balance.

		Classify objects as magnetic and not magnetic. Ask questions about the push and pull of a magnetic object. Describe and communicate observations through discussions, drawings, simple graphs and writing.
2.P.1	Physical science	Manipulate objects and experiment with how counterweighing and the position of the balance point affect balance.
2.T.1	Technology/engineering	Build a physical item (e.g., a structure or toy) using tools and materials in a safe manner. Design and use a device to gather data (mobile).
2.T.2	Technology/engineering	Communicate the design ideas to others through a procedure.
3.E.1	Identify the physical properties of minerals (hardness, color, luster, cleavage and streak,) and explain how minerals can be tested for these different physical properties	Use properties such as hardness, streak and color to sort minerals
3.I.1	Inquiry:	Use properties such as hardness, streak and color to sort minerals
3.E.2	Recognize that the earth revolves around the sun in a year's time and that the earth rotates on its axis once every 24 hours.	Understand the rotation of the earth on its axis and the earth's revolution around the sun
3.L.1	Plant structure and function: recognize that plants and animals go through predictable life cycles that include birth, growth, development, reproduction and death	Grow plants from seed and document a complete life cycle of a flowering plant. Make measurements of plant growth, record and graph their data
3.L.2	Identify the structures in plants (leaves, roots, flowers, stems, bark, wood) that are responsible for food production, support, water transport, growth and protection	Examine the parts of different seed producing plants and know what the main functions are. This would include roots, stems, leaves, and flowers (or cones in conifers) Look at the structure of the seeds and fruits produced by plants with flowers
3.I.2	Inquiry:	Look at variations in plants that have grown from seeds of the same type
3.I.3	Inquiry:	Graph measurements of plant growth in different conditions over time
3.P.1	Differentiate between properties of objects (e.g. size, shape, color, texture, hardness)	Identify substances using readily observable properties such as color, size shape and texture
3.P.1	Differentiate between properties of objects (e.g. size, shape, color, texture, hardness)	Use simple chemical tests or indicators to identify substances
3.P.2 and 3.I.4	Recognize that sound is produced by vibrating objects and requires a medium through which to travel. Relate the rate of vibration to the pitch of sound	Investigate sounds made with objects such as musical instruments, rubber bands, and strings to observe, compare and describe variables that affect changes in pitch and volume
3.T.1	Identify and explain the appropriate materials and tools (e.g. hammer, screwdriver, pliers, tape measure, screws, nails and other	Take something apart and see how it is constructed

	mechanical fasteners) to construct a given prototype safely	
	None	Disassemble and reassemble a product to understand how and why products are constructed the way they are
3.T.2	Identify relevant design features to a given problem	Redesign an object so it can serve a different purpose
3.I.5	None	Solve problems using the scientific method (research, hypothesis, experimentation, findings, conclusion)
3.I.6 and 3.T.3	Describe different ways in which a problem can be represented, e.g. sketches, diagrams, graphic organizers and lists	Use maps and models of the same natural phenomena to better understand three dimensional representations
3.T.4		Working in groups adapt a toy to use in another way, e.g. Make it safer for younger children
4.E.1	Describe how water on earth cycles in different forms and in different locations, including underground and in the atmosphere	Use local or world maps to locate bodies of water, e.g. rivers, oceans or lakes
4.E.2	Distinguish among the various forms of precipitation (rain, snow, sleet, hail) making connections to the weather in a particular time and place.	Relate air temperature changes to the formation of fog, sleet, snow, hail and rain as examples of forms of water
4.I.1 and 4.E.1	Describe how water on earth cycles in different forms and in different locations, including underground and in the atmosphere	Conduct experiments or make observations that show evaporation and condensation
4.E.3	Explain and give examples of the ways in which soil is formed, (the weathering of rock by water and wind and from the decomposition of plant and animal remains)	Use the naked eye, hand lens and/or microscope to observe and classify soil components
4.E.4 and 4.I. 2	Recognize and discuss the different properties of soil, including color, texture (size of particles) the ability to retain water and the ability to support growth of plants	Pour a measured amount of water through different soil samples and compare a soil's ability to hold water with its composition
4.L.1	Classify plants and animals according to the physical characteristics they share	Build a classification scheme as they study the different animals
4.L.2	Give examples of how inherited characteristics may change over time as adaptations to changes in the environment that enable organisms to survive, e.g. shape of beak or	Study animals from widely different habitats (e.g. land, water or where land and water meet). Explore how each is adapted for its habitat

	foot, placement of eyes on head, shape of teeth, length of neck.	
4.L.3	Differentiate between observed characteristics of plants and animals that are fully inherited (e.g. color of flower, shape of leaves, color of eyes, number of appendages) and characteristics that are affected by climate or environment (e.g., browning of leaves due to too much sun, language spoken)	Look at the variation in individuals. Variation among domestic dogs and cats provides familiar animal examples, as well as looking at variation in humans
	None	Look at variations in plants that have grown from seeds of the same type
4.L.3	Differentiate between observed characteristics of plants and animals that are fully inherited (e.g. color of flower, shape of leaves, color of eyes, number of appendages) and characteristics that are affected by climate or environment (e.g., browning of leaves due to too much sun, language spoken)	Make charts or graphs of the number of students with certain inherited characteristics
4.L.3	Differentiate between observed characteristics of plants and animals that are fully inherited (e.g. color of flower, shape of leaves, color of eyes, number of appendages) and characteristics that are affected by climate or environment (e.g., browning of leaves due to too much sun, language spoken)	Make charts or graphs of non-inherited variation such as the number of students with long or short hair
4.P.1	Recognize that electricity in circuits requires a complete loop through which an electrical current can pass and that electricity can produce heat, light and sound.	Investigate various arrangements of wires, batteries, and bulbs or small electric motors to develop the concept of a complete circuit.
4.P.2	Identify and classify objects and materials that conduct electricity and objects and materials that are insulators of electricity.	Use a variety of materials in circuits to find out that some materials are conductors and some are not.
4.P.2	Identify and classify objects and materials that conduct electricity and objects and materials that are insulators of electricity.	Investigate how different battery arrangements (series and parallel) affect the brightness of bulbs.
4.P.3	Recognize that electricity in circuits requires a complete loop through which an electrical current can pass and that electricity can produce heat, light and sound.	Describe and illustrate how a complete electric circuit is required for electricity to light a bulb.

4.P.1	Recognize that electricity in circuits requires a complete loop through which an electrical current can pass and that electricity can produce heat, light and sound.	Explain how electricity can produce light and heat
4.P.4	Explain how electromagnets can be made, and give examples of how they can be used.	Create electromagnets by wrapping wire around a ball.
4.T.1	Identify and describe characteristics of natural materials and human-made materials	Classify materials as natural, synthetic and mixed
4.T.2	Identify and explain the appropriate materials and tools to construct a given prototype safely	Research and brainstorm ideas for designing a product that will solve an identified problem (e.g. cage, storage cabinet, ramp for moving something heavy)
5.E.1	Explain how air temperature, moisture, wind speed and direction and precipitation make up weather in a particular place and time.	Understand and use weather instruments such as a rain gauge or wind gauge
5.L.1	Classify plants and animals according to the physical characteristics they share.	Look at the variation in individuals, domestic animals as well as humans
5.L.2	Grow plants from seed. Document the life cycle of the plant.	Look at the variations in plants that the students have grown from seeds of the same type
5.I.1	Grow plants from seed. Document the life cycle of the plant.	Make charts of the growth of the plants.
5.I.2	Grow plants from seed. Document the life cycle of the plant	Recognize and analyze data from observations using scientific tools (e.g. ecosystems, micro worlds)
6.E.1	Explain how air temperature, moisture, wind speed and direction and precipitation make up the weather in a particular place and time.	Identify tools of the meteorologist and how to use them (barometer, thermometer, anemometer, wind vane, rain gauge) Distinguish between temperature in Fahrenheit and Celsius.
6.E.2	Distinguish among the various forms of precipitation (rain, snow, sleet and hail) making connections to a particular place and time.	Classify clouds by their composition, height and type of precipitation. Show how cloud cover reflects normal heat energy by absorbing infrared energy. Describe ways this affects the Earth's global climate. (Greenhouse effect-black and white)
6.E.3	Differentiate between weather and climate	Describe ways this affects the Earth's global climate. (Greenhouse effect-black and white)
6E.4	Describe and give examples of ways in which the earth's surface is built up and torn down by natural processes, including deposition of sediments, rock formation, erosion and weathering.	Understand that ecosystems have a limited capacity to replenish and cleanse themselves naturally but man can and will reduce the capacity.
6.E.5	Recognize that the universe contains many	Identify constellations.

	billions of galaxies and that each galaxy contains many billions of stars.	Understand that the tilt of the Earth's axis and its revolution account for different stars being seen in different seasons Recognize that different seasons are caused by these factors.
6.E.6	Recognize that the earth revolves and orbits the sun in a year's time and that the earth rotates on its axis once every 24 hours. Make connections between the rotation of the earth and day/night and the apparent movement of the sun, moon, and stars across the sky.	Identify constellations. Understand that the tilt of the Earth's axis and its revolution account for different stars being seen in different seasons Recognize that different seasons are caused by these factors.
6.E.7	Compare and contrast properties and conditions of objects in the solar system (i.e. sun, planets, moons) to those on Earth (i.e. gravitational force, distance from the sun, speed, movement, temperature and atmospheric conditions)	Describe the solar system and its various bodies. Describe differences in planets (i.e. size, temperature, composition, surface features, and number of rings and moons). Recognize that the earth is the only planet suitable for life due to these conditions.
6.E.8	Recognize that the universe contains many billions of galaxies and that each galaxy contains billions of stars.	Understand that the universe contains billions of galaxies, and within a galaxy, billions of stars.
6.E.9	Describe the changes that occur in the observable shape of the moon over the course of a month.	Recognize the phases of the moon and that it circles the planet approximately every 29 days
6.E.10	Describe lunar and solar eclipses, the observed moon phases and tides. Relate them to the relative positions of the earth, moon and sun.	Understand the moon is involved in lunar and solar eclipse. Show that the moon's orbit affects the tides.
6.E.11	Explain how the tilt of the earth and its revolution around the sun result in an uneven heating of the earth, which in turn causes seasons.	Give evidence that the sun's energy drives many processes on Earth and in its atmosphere (i.e. food chains and weather)
6.L.1	Recognize that producers (plants that contain chlorophyll) use the energy from sunlight to make sugars from carbon dioxide and water through a process called photosynthesis.	Give evidence that the sun's energy drives many processes on Earth and in its atmosphere (i.e. food chains and weather)
6.L.2	Give examples of ways in which organisms interact and have different functions within an ecosystem that enable the ecosystem to survive.	Explain the results of limiting factors in an environment (food, moisture, etc). Illustrate how this affects populations.
6.L.3	Explain the roles of producers, consumers, and decomposers in the process of energy transfer	Identify the needs of living things.

	within a food web.	
6.L.4	Give examples of ways in which organisms interact and have different functions within an ecosystem that enable the ecosystem to survive	Demonstrate the movement of energy and organisms through an ecosystem using chains and webs. Describe an interdependence of organisms and non-living factors within an environment.
6.L.5	Recognize that produces (plants that contain chlorophyll) use the energy from sunlight to make sugars from carbon dioxide and water through a process called photosynthesis. This food can be used immediately or stored for later use, or used by other organisms.	Show that the sun is the primary energy source for the planet and all life. Show that plants convert that energy, store it and use it to carry out its life processes. Show how this starts the beginning of a food chain.
6.L.6	Explain the roles and relationships among producers, consumers and decomposers in the process of energy transfer in a food web. Explain how dead plants and animals are broken down by other living organisms and how this process contributes to the system as a whole.	Identify which types of organisms are producers and which are consumers. Identify forces of decomposition. Show relationships within a food chain.
6.P.1	Recognize that there are more than 100 elements that combine in a multitude of ways to produce compounds that make up all of the living and nonliving things we encounter.	Show the structure of a generic atom. Show how adding one proton changes the properties of an atomic substance (C6 carbon, N7 Nitrogen) Draw atoms using information in the periodic table.
6.P.2	Differentiate between an atom and a molecule.	Draw atoms using information in the periodic table. Show the structure of a generic atom.
6.P.3	Recognize that electricity in circuits requires a complete loop through which an electrical current can pass, and that electricity can produce light, heat and sound.	Use batteries bulbs and wires to construct and complete electrical circuits, including parallel and series circuits. Use instruments and measure current, voltage and power. Organize objects in order of increasing resistance.
6.P.4	Explain how electromagnets can be made and give examples of how they can be used.	Build an electromagnet and conversely use a magnet to produce an electric current in a circuit.
6.T.1	Demonstrate methods of representing solutions to a design problem, e.g. sketches, orthographic projections, multi-view drawings.	Determine a feasible solution to a problem and sketch it. Evaluate whether their solution parameters are consistent with the problem. Draw an exploded view of a product
6.T.2	Identify the five elements of a universal systems model: goal, inputs, processes, outputs and feedback.	Create a rubric to evaluate each identified problem and judges design against criteria, and suggest modifications

6.T.3	Identify and explain the steps of the engineering process, i.e. identify the need or problem, research the problem, develop possible solutions, select the best possible solution(s) construct a prototype, test and evaluate and communicate the solution(s) and redesign.	Give a coherent class presentation /project and the process used to create it. Create a spreadsheet showing multiple variables and their impact on the outcome, e.g. nose cone shape vs. maximum height, number of fins, and the stability of the trajectory.
6.T.4	Describe and explain the purpose of a given prototype.	Give a coherent class presentation /project and the process used to create it. Create a spreadsheet showing multiple variables and their impact on the outcome, e.g. nose cone shape vs. maximum height, number of fins, and the stability of the trajectory.
6.T.5	Identify appropriate materials, tools and machines needed to construct a prototype of a given engineering design.	Give a coherent class presentation /project and the process used to create it. Create a spreadsheet showing multiple variables and their impact on the outcome, e.g. nose cone shape vs. maximum height, number of fins, and the stability of the trajectory.
6.T.6	Explain how such design features as size, shape, weight, function, and cost limitations would affect the construction of such a prototype	Give a coherent class presentation /project and the process used to create it. Create a spreadsheet showing multiple variables and their impact on the outcome, e.g. nose cone shape vs. maximum height, number of fins, and the stability of the trajectory.
6.I.1	<p>Inquiry Formulate a testable hypothesis. Design and conduct an experiment specifying variables to be changed, controlled and measured. Select appropriate tools and technology (e.g. calculators, computers, thermometers, meter sticks, balances, graduated cylinders, and microscopes) Present and explain data and findings using multiple representations, including tables, graphs, mathematical and physical models and demonstrations. Draw conclusions based on data or evidence presented in tables or graphs and make inferences based on patterns or trends in data. Communicate procedures and results using appropriate science and technology terminology. Offer explanations of procedures, and critique</p>	<p>Create data tables from information gathered during lab and observation activities. Graph results from data gathered in a lab situation.</p>

	and revise them.	
6.I.2	<p>Inquiry Formulate a testable hypothesis. Design and conduct an experiment specifying variables to be changed, controlled and measured.</p> <p>Select appropriate tools and technology (e.g. calculators, computers, thermometers, meter sticks, balances, graduated cylinders, and microscopes)</p> <p>Present and explain data and findings using multiple representations, including tables, graphs, mathematical and physical models and demonstrations.</p> <p>Draw conclusions based on data or evidence presented in tables or graphs and make inferences based on patterns or trends in data. Communicate procedures and results using appropriate science and technology terminology.</p> <p>Offer explanations of procedures, and critique and revise them.</p>	Make three dimensional models or two dimensional posters/pictures for any information in the 6 th grade domains of science
6.I.3	<p>Inquiry Formulate a testable hypothesis. Design and conduct an experiment specifying variables to be changed, controlled and measured.</p> <p>Select appropriate tools and technology (e.g. calculators, computers, thermometers, meter sticks, balances, graduated cylinders, and microscopes)</p> <p>Present and explain data and findings using multiple representations, including tables, graphs, mathematical and physical models and demonstrations.</p> <p>Draw conclusions based on data or evidence presented in tables or graphs and make inferences based on patterns or trends in data. Communicate procedures and results using</p>	Take models, charges, tables and graphs and orally explain what they illustrate

	<p>appropriate science and technology terminology. Offer explanations of procedures, and critique and revise them.</p>	
6.I.4	<p>Inquiry Formulate a testable hypothesis. Design and conduct an experiment specifying variables to be changed, controlled and measured. Select appropriate tools and technology (e.g. calculators, computers, thermometers, meter sticks, balances, graduated cylinders, and microscopes) Present and explain data and findings using multiple representations, including tables, graphs, mathematical and physical models and demonstrations. Draw conclusions based on data or evidence presented in tables or graphs and make inferences based on patterns or trends in data. Communicate procedures and results using appropriate science and technology terminology. Offer explanations of procedures, and critique and revise them.</p>	<p>Measure and record data using metric measurements.</p>
7.E.1	<p>Describe how water on earth cycles in different forms and in different locations including underground and in the atmosphere</p>	<p>Show how the “water cycle” works Describe how water changes the Earth’s surface over time Show or discuss how climate changes affect the water cycle.</p>
7.E.2	<p>Give examples of how the cycling of water, both in and out of the atmosphere has an effect on climate</p>	<p>Illustrate the Earth’s currents globally Discuss how water carries heat and cold to different areas Show how up welling of minerals etc. are moved through out the ocean. Discuss the probably effects of El Nino and La Nina on the Earth’s currents/oceans</p>
7.L.1	<p>Inquiry</p>	<p>Build a geographically correct water shed (local) Show how water moves through the watershed by gravity Demonstrate how a watershed works with the water cycle on a local watershed.</p>
7.L.2	<p>Recognize that all organisms are composed of cells. Compare and contrast plant and animal cells,</p>	<p>Show different types of cells have different jobs (nervous—carry info, blood cells carry oxygen). Label the internal organelles of a typical plant cell and a typical animal cell.</p>

	including major organelles. Recognize that within cells, many of the basic functions of organisms are carried out (extracting energy from food, getting rid of waste).	Know functions of individual cell organelles. Show how cells go together to form tissues with a single function. Recognize different types of cells. Understand that different cells carry out different functions. Be introduced to the levels of organization of living things. Understand that cells combine to form tissues.
7.L.3	Recognize that within cells, many of the basic functions of organisms are carried out (extracting energy from food, getting rid of waste).	Explain the stages of mitosis (cell division) and that mitosis is on-going. Explain how cell growth aids in the repair of organisms.
7.L.4	Describe the hierarchical organization of multicellular organisms from cells to tissues, to organs to systems to organisms.	Describe the levels of organization of living organisms (cell → organism). Illustrate the parts of metabolism (ingestion, digestion, respiration and excretion) for living organisms. Show how each level of organization up to the level of organism shows life processes.
7.L.5	Identify the general functions of the major systems of the human body (digestion, respiration, reproduction, circulation, excretion, protection from disease, movement, control and coordination) and describe ways that these systems interact with each other.	Demonstrate the life processes of growth and development, reproduction, metabolism (exchanging of materials and energy), response and movement in any given organism.
7.L.6	Recognize that every organism requires a set of instructions that specify its traits. These instructions are stored in the chromosomes. Heredity is the passage of these instructions from one generation to the next.	Discuss the purpose of reproduction to the species. Distinguish between the different types of asexual reproduction (binary fission, budding). Understand that “without reproduction, no one would be left”.
7.L.7	Recognize that hereditary information is contained in genes located on the chromosomes of each cell. A human cell contains about 30,000 different genes on the 23 different pairs of chromosomes.	Show that each parent donates one half of the new generation’s chromosomes. ** Understand that recombining parental genes makes a unique, new individual.
	Grade 9-10 standards	Determine genetic traits of offspring using Punnet Squares. Explain the difference between dominant and recessive genes. Perform monohybrid crosses.
	Grade 9-10 standards	Give evidence of recessive genes and sex linked traits. Perform monohybrid crosses and analyze them for outcome.
7.L.8	Compare sexual reproduction (offspring inherit	Understand the process of meiosis.

	half their genes from each parent) with asexual reproduction (offspring is an identical copy of parental cell).	Compare and contrast sexual reproduction with asexual reproduction. Compare and contrast sexual reproduction with asexual reproduction
7.P.1	Give basic examples of elements and compounds. Recognize that there are more than 100 elements that combine in multiple ways to produce compounds that make up all living and non-living matter. Differentiate between an atom (the smallest unit of an element that maintains the properties of that element) and a molecule (the smallest unit of a compound that maintains the characteristics of that compound)	Differentiate between elements and compounds. Classify by substance based on similar properties. Know properties of metal, metallic and non-metals. Identify a substance by its properties.
7.P.2	None	Distinguish between acids and bases using litmus paper, cabbage juice, etc.
7.P.3	None	Know three factors necessary to support combustion.
7.P.4	None	Show the structure of a generic atom. Show structure of atoms.
7.P.5	None	Show how adding one proton changes the properties of an atomic substance (C6=carbon, N7=nitrogen). Draw atoms using the periodic table.
7.P.6	Differentiate between physical and chemical changes. Explain the effect of heat on particle motion through a description of what happens to particles during a change in phase.	Understand relationship between phases of matter (solid, liquid, gas). Show how heat energy can change the phases of matter. Show how heat energy changes molecular or particular motion.
7.T1	Identify and explain the steps of the engineering process, i.e. identify the need or problem, research the problem, develop possible solutions, select the best possible solution(s) construct a prototype, test and evaluate and communicate the solution(s) and redesign.	Identify and choose a problem and propose solutions independently. Given a product, identify raw materials and explain through a flow chart the process of leading them to a final product.
7.T2	Identify and explain the steps of the engineering process, i.e. identify the need or problem, research the problem, develop possible solutions, select the best possible	Determine a feasible solution to a problem and sketch it. Evaluate whether their solution parameters are consistent with their problem.

	solution(s) construct a prototype, test and evaluate and communicate the solution(s) and redesign.	
7.T.3	Demonstrate methods of representing solutions to a design problem, e.g. sketches, orthographic projections, multi-view drawings.	Draw an exploded view of their product. Develop a flow chart that shows operations happening simultaneously in the manufacturing process in the most efficient method. Make a plan to build air transport mechanisms, e.g. Parachutes, nose cones, fins.
7.T.4	Identify and explain the steps of the engineering process, i.e. identify the need or problem, research the problem, develop possible solutions, select the best possible solution(s) construct a prototype, test and evaluate and communicate the solution(s) and redesign.	Create a rubric to evaluate each identified problem and judge design against criteria, suggest modifications.
7.T.5	Identify and explain the steps of the engineering process, i.e. identify the need or problem, research the problem, develop possible solutions, select the best possible solution(s) construct a prototype, test and evaluate and communicate the solution(s) and redesign.	Give a coherent class presentation/project and the process used to create it. Create a spreadsheet showing multiple variables and their impact on the outcome, e.g. nose cone shape vs. max height, number of fins, and the stability of the trajectory
7.I.1	Formulate a testable hypothesis. Design and conduct an experiment specifying variables to be changed, controlled and measured. Select appropriate tools and technology (e.g. calculators, computers, thermometers, meter sticks, balances, graduated cylinders, and microscopes) Present and explain data and findings using multiple representations, including tables, graphs, mathematical and physical models and demonstrations. Draw conclusions based on data or evidence presented in tables or graphs and make inferences based on patterns or trends in data. Communicate procedures and results using appropriate science and technology	Observe situations and hypothesize reasons for such events. Suggest methods and procedures to test observed events. Identify controlled variable factors in test/experiment situations. Use specific tools in lab situations. Explain data collected in lab situations, create graphs from data and hypothesize further events in any situation. Measure and record data using metric units of length, volume and mass and temperature. Identify metric units of measure for mass, length, volume and temperature.

	terminology. Offer explanations of procedures, and critique and revise them.	
8.E.1	Compare and contrast properties and conditions of objects in the solar system (i.e. sun, planets and moons) to those on earth, (i.e. gravitational force, distance from the sun, speed, movement, temperature, and atmospheric conditions.	Give evidence that weight is a function of gravity. Demonstrate that mass and weight are different properties. Illustrate or explain how gravity affects weight and mass on the Earth or in space.
		Distinguish between the three types of rock by physical characteristics. Illustrate the rock cycle.
8.E.2	Describe how movement of the earth's crustal plates causes both slow changes in the earth's surface (e.g. Formation of mountains and ocean basins) and rapid ones (e.g. Volcanic eruptions and earthquakes)	Show an understanding of the theory of plate tectonics. Understand the idea of continental drift. Explain that the earth's landmass was once one large landmass called Pangea. Understand the "jigsaw puzzle theory" in dealing with the idea of continental drift.
8.E.3	Describe and give examples of ways in which the earth's surface is built up and torn down by natural processes including deposition of sediments, rock formation, erosion and weathering.	Distinguish between physical and chemical weathering. Show the steps of soil formation. Show how plants need soil and how they add to the quality of the soil with decomposing animals.
8.I.1	Inquiry	Research local climate through interviews, newspapers and personal experience. Analyze research on local climate. Study the global climate from ice age to now using the dinosaur record, fossils, the coral reef and recent global occurrences (ozone, greenhouse).
8.E.2	Explain and give examples of how physical evidence, such as fossils and surface features of glaciation supports theories that the earth has evolved over geologic time.	Understand the ideas of the "rock record" and "fossil records" and the clues they give us about the Earth's past. (For example, coal deposits are found on Antarctica indicating that Antarctica once had a much warmer climate.)
8.E.3	Inquiry, Technology,	Identify the instruments used by astronomers (reflecting refracting and radio telescopes and spectroscopes). Explain how telescopes work.
8.I.2 8.T.1	Recognize that the universe contains many billions of galaxies and each galaxy contains many billions of stars.	Compare the amount of stars seen by the unaided eye with the amount seen with a telescope.
8.E.1	None	Understand planets orbits the sun, stars, don't. Describe our solar system, and the earth's position in it.

		Make a 3 dimensional model of the solar system.
8.E.4	Compare and contrast properties and conditions of objects in the solar system (i.e. sun, planets and moons) to those on earth, (i.e. gravitational force, distance from the sun, speed, movement, temperature, and atmospheric conditions.	Give evidence that weight is a function of gravity. Demonstrate that mass and weight are different properties. Illustrate or explain how gravity affects weight and mass on the Earth or in space.
8.L.1	Recognize that evidence, drawn from geology, fossils and comparative anatomy; provide the basis of the theory of evolution.	Discuss how single cells may have evolved into complex organisms. Distinguish between the four geological eras and the life evolving through each.
8.L.2	Relate the extinction of species to a mismatch of adaptation and the environment.	Discuss short-term changes leading to adaptation or extinction.
8.P.1	Differentiate between physical and chemical changes. Recognize that heat is a form of energy, and that temperature change results from adding or taking away heat from a system. Grade 9-10 standards	Show energy is released or absorbed during a chemical reaction. Explain the difference between exothermic reactions and endothermic reactions. Show how original properties are changed to new ones after a reaction. Explain the types of reactions-single replacement, double replacement, synthesis and decomposition.
	Grade 9-10 standards	Understand that matter can be changed but not destroyed.
	Grade 9-10 standards	Show that if the temperature of a gas sample increases, the volume increases. Show that if the pressure of a gas increases the volume decreases. Define Brownian motion.
	Grade 9-10 standards	Explain the steps necessary to balance equations. Interpret the information contained in the periodic table of the elements.
	Grade 9-10 standards	Explain Newton's three laws of motion: inertia; force equals mass times acceleration; for every action there is an equal and opposite reaction. Understand that forces must always act in pairs.
	Grade 9-10 standards	Demonstrate the magnitude and direction of forces (for example; tug of war)
	Grade 9-10 standards	Use the formula for speed-that speed equals distance divided by time ($s=d/t$)/ Explain that velocity incorporates both speed and direction (for example "50 meters per seconds" describes speed, whereas 50 meters west per second, describes velocity.