**2012 Charlotte-Mecklenburg Schools**

**2nd Grade Science**

**North Carolina Essential Standards Resource Guide**

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| **Overview of 2nd Grade Science** | |
| **Unit** | **Suggested Pacing** |
| **Matter: Properties and Change** | 6-7 weeks |
| **Forces and Motion: Sound** | 4-5 weeks |
| **Earth Systems, Structures and Processes** | 8-9 weeks |
| **Structures and Functions of Living Organisms** | 3-4 weeks |
| **Evolution and Genetics** | 1-2 weeks |
| **Review** | 2-3 week |

**Structures and functions of living Organisms and Evolution and genetics can be taught together in a 6 week period due to the similar objectives. The Health and Nutrition unit can be taught at the end of the year, after testing, for 3-4 weeks.**

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| **Matter: Properties and Change** |
| **Essential Standard:**  **2.P.2** Understand properties of solids and liquids and the changes they undergo. |
| **Clarifying Objective:**  2.P.2.1 Give examples of matter that change from a solid to a liquid and from a liquid to a solid by heating and cooling.  2.P.2.2 Compare the amount (volume and weight) of water in a container before and after freezing.  2.P.2.3 Compare what happens to water left in an open container over time as to water left in a closed container. |
| **Unpacking: What does this standard mean that a student will know and be able to do?**  2.P.2.1 Students know that solids are materials that maintain their own shapes, while liquids tend to assume the shapes of their containers. Students know examples of materials that can be classified as solid and materials that can be classified as liquid. Students know water can be a liquid or a solid and can go back and forth from one form to the other when heat is added or removed. (Other examples include: candle wax, shortening, rock/lava). Students know things can be done to materials to change some of their properties, but not all materials respond the same way to what is done to them.  2.P.2.2 Students know how to measure and compare the volume of a liquid poured into different containers. Students know how to measure and compare the weight of water poured into different containers. Students know if water is turned into ice and then the ice is allowed to melt, the amount of water is the same as it was before freezing.  2.P.2.3 Students know how to measure and compare the volume of liquid poured into different containers. Students know that a container of water left open will contain less water over time, while a closed container of water will not change. |
| **Essential Vocabulary**  Solids, liquids, volume, mass, evaporation, capacity,water vapor, physical change, properties, matter, property, temperature, heat, energy, chemical change, graduated cylinder, milliliters, measuring spoons, table spoon, grams, weight, cooling, heating. measurement, cup |

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| **Essential Questions** | **Criteria for Success: “I Will”** | **Suggested Resources/Activities** |
| How can I identify the properties of solids and liquids? (S)  How can I classify and provide examples of common objects and materials that are solids and liquids? (2.P.2) (S) | I will identify objects whose shape cannot be change, and materials that can change shape.  I will describe solids as hard (rock) or soft (teddy bear), but retain shape.  I will recognize liquids change shape, and takes the shape of its container. | -Teacher provides various examples of solids and liquids. Students provide describing vocabulary.  -teacher will have students sort objects into categories of hard, soft, smooth, rough, grainy, sticky, etc. – pull them from your science kits - and place them on a chart (either poster, paper, or Expo marker on their desks – students love this, baby wipes clean it off)  -teacher will pour different liquids into covered containers, have students shake the containers to try to figure out what liquid is in the container  -Teacher will put objects in paper bags, students will have to feel the object through the bag to figure out the object. |
| **2.P.2.1**  How can I identify solids and liquids whose properties change when they are heated or cooled? (P)  What happens when a liquid is heated or cooled?  What happens when a solid is heated or cooled? (R) | I will create a list of solids and liquids that change when heated and cooled.  I will observe liquids and solids can change state when heated or cooled.    I will be able to sort solids and liquids based on what happens when each is heated or cooled.  I will observe changes in state of solids and liquids. | -The children to create a poster in pairs, showing the changes in state and the processes involved.  -<http://www.bbc.co.uk/schools/teachers/ks2_>  Lesson plans/science/changing\_state.shtml  -melt ice cubes – give each student a small ice cube in a Ziploc see if they can figure out how to melt it the fastest. Time the students.  -Get an electric tea kettle – 12-20 dollars at Target, heat water to show how water can evaporate when heated  -if you are adventurous – this is demonstration only! – take a tea light candle and a metal spoon. Pour water on the metal spoon and hold it over the candle. The water will evaporate completely within a few minutes.  -Make Jello – use the Gelatin from the science kits  -Place small bits of crayon on aluminum foil and float them on hot water from a tea kettle, crayons will start to melt, then pour back on construction paper and they will turn solid again.  -Solids into liquids: shortening, lava, cheese, candle wax |
| **Essential Questions** | **Criteria for Success: “I Will”** | **Suggested Resources/Activities** |
| **2.P.2.2**  What is volume?  How can I measure the volume and mass of liquid?  How can using containers of different sizes and capacity hold the same amount of liquid but look the same? (S)  Does the mass or volume of water change after it freezes or when it thaws? | I will define volume and mass.  I will experiment using different sized containers to determine their effects on volume and mass.  I will use various forms of measuring tools (measuring cups and spoons, graduated cylinders) to measure amounts of liquids  I will be able to define mass and volume.  I will measure the mass and volume of a given amount of water before and after freezing | -The students will learn how to use graduated cylinders and then use that information to understand capacity of various amount of liquid in various shaped containers.  -Give each group of student various sizes of containers and measuring cups. Have them make one cup of water with their container, pour it into an actual measuring cup to determine if it is one cup. Have them find different measurements with the water and see what it looks like in each container. This is easiest if you slightly color the water with blue or green food coloring. It helps the students read the measurements  -Use measuring spoons and put 1 tbsp of water into an ice cube tray put the ice cube tray in a freezer for a few hours.  -Use an electric kitchen scale to measure the amounts in grams before and after freezing  -discuss with students the proper way to read a measuring cup or graduated cylinder. |
| **2.P.2.3**  What is evaporation?  How can I compare water that is left in an open container versus water kept in a closed container will retain its amount? | I will be able to explain evaporation and water vapor.  I will learn and observe how evaporation changes liquid into gas  I will measure the changing amount of water in a container over multiple days | -Fill up two of the same containers with the same amount of water. Cover one of the containers; place them somewhere in the classroom where they can be checked each day. Have the students keep a record of how the water is changing in each container.  -DPI lesson – hot water/room temp water in gallon sized bags, students drop water on the paper towels, hot water should disappear. (lesson number and name)  -give each students a piece of brown paper towel and spray water from the water spritzer – tell the students to ‘make the water disappear’. Give them time to try out different ways – at the end discuss what happened to the water. |
| **Matter Helpful Websites:**  <http://www.neok12.com/States-of-Matter.htm>  <http://science.pppst.com/matter.html>  <http://www.pdesas.org/module/content/resources/16154/view.ashx>  <http://www.bbc.co.uk/schools/teachers/ks2_lessonplans/science/changing_state.shtml>  [www.discoveryeducation.com](http://www.discoveryeducation.com)  [http://www.harcourtschool.com/activity/states\_of\_matter/](https://email.cms.k12.nc.us/owa/redir.aspx?C=7a951d89efb14553beccc2b5241d5425&URL=http%3a%2f%2fwww.harcourtschool.com%2factivity%2fstates_of_matter%2f" \t "_blank)  [http://www2.mcdaniel.edu/Graduate/TI/pages/LEWIS/matterweb.htm](https://email.cms.k12.nc.us/owa/redir.aspx?C=7a951d89efb14553beccc2b5241d5425&URL=http%3a%2f%2fwww2.mcdaniel.edu%2fGraduate%2fTI%2fpages%2fLEWIS%2fmatterweb.htm" \t "_blank)  [http://www.neok12.com/States-of-Matter.htm](https://email.cms.k12.nc.us/owa/redir.aspx?C=7a951d89efb14553beccc2b5241d5425&URL=http%3a%2f%2fwww.neok12.com%2fStates-of-Matter.htm" \t "_blank)  [http://superteacherworksheets.com/matter.html](https://email.cms.k12.nc.us/owa/redir.aspx?C=7a951d89efb14553beccc2b5241d5425&URL=http%3a%2f%2fsuperteacherworksheets.com%2fmatter.html" \t "_blank)  Videos: (Plus tons on DE)  [http://teacher.scholastic.com/activities/studyjams/matter\_states/](https://email.cms.k12.nc.us/owa/redir.aspx?C=7a951d89efb14553beccc2b5241d5425&URL=http%3a%2f%2fteacher.scholastic.com%2factivities%2fstudyjams%2fmatter_states%2f" \t "_blank)  [http://www.youtube.com/watch?v=oAqompxk7fY&feature=related](https://email.cms.k12.nc.us/owa/redir.aspx?C=7a951d89efb14553beccc2b5241d5425&URL=http%3a%2f%2fwww.youtube.com%2fwatch%3fv%3doAqompxk7fY%26feature%3drelated" \t "_blank) (rap with kids)  [http://www.youtube.com/watch?v=UvRvOYCjUP0&feature=related](https://email.cms.k12.nc.us/owa/redir.aspx?C=7a951d89efb14553beccc2b5241d5425&URL=http%3a%2f%2fwww.youtube.com%2fwatch%3fv%3dUvRvOYCjUP0%26feature%3drelated" \t "_blank) (Bill Nye Song)  [http://www.youtube.com/watch?v=V9WYweBA6vA](https://email.cms.k12.nc.us/owa/redir.aspx?C=7a951d89efb14553beccc2b5241d5425&URL=http%3a%2f%2fwww.youtube.com%2fwatch%3fv%3dV9WYweBA6vA" \t "_blank) (Song) | | |
| **Sample Writing Prompts (students need to state and opinion and tell their reasons why)**  **-Thinking about the method you used to make your water evaporate from the paper towel, would you choose this method again or choose another method and why?**  **-(related to the room temp. water and frozen water activity) Explain why the water in both containers weigh the same when one is frozen (solid) and one is liquid?**  **-How do you know a solid is a solid? Use the vocabulary words you used during this unit (How do you know a solid is a solid?)** | | |

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| |  | | --- | | **Forces and Motion - Sound** - Sound is a kind of energy that you hear. | | **Essential Standard:**  **2.P.1** Understand the relationship between sound and vibrating objects. | | **Clarifying Objective:**  2. P.1.1 Illustrate how sound is produced by vibrating objects and columns of air.  2. P.1.2 Summarize the relationship between sound and objects of the body that vibrate – eardrum and vocal cords. | | **Unpacking: What does this standard mean that a student will know and be able to do?**  2.P.1.1 Students know that vibrating objects produce sound. Students know that sound can be described in terms of pitch, which may be higher or lower. Students know that the length of an air column determines if its pitch is high or low. Students know that the shorter the air column is, the higher the pitch is. Students also know that the longer the air column is, the lower the pitch.  2.P.1.2 Students know parts of the body vibrate in order to produce and receive sound. Our voices produce sound when air from the lungs passes over our vocal cords and makes them vibrate. The pitch and volume of the sounds humans can produce are changed by changing the properties of the vocal cords. Students know that sound waves are collected by the outer ear, which helps to funnel sound to the eardrum. The eardrum vibrates when sound waves hit it, and causes the tiny bones in the middle ear to vibrate as well. The vibrations move through the bones to the inner ear where the sounds are changed into a form that is understood by the brain. | | **Essential Vocabulary**  sound, vibration, pitch, volume, ear drum, vocal chords, columns of air, frequency, force, lobe, ear canal, sound waves, outer, middle, inner ear | |

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| **Essential Questions** | **Criteria for Success: “I Will”** | **Suggested Resources/Activities** |
| **2.P.1**  What makes an object produce sound?  What is vibration? (S) | I will locate and experiment with objects that make sound. (1.1) | -Create a maze inside a shoebox with blocks of wood. -Have a friend figure out where the blocks are by listening as a marble rolls inside the box.  -Sound Scavenger Hunt – look around the classroom for items that make sound  -Discovery Education Videos:  A First Look – Sound  I Want to Know Sound  Wonder of Sound |
| **2.P.1.1**  How can I make objects change sound and tell that these changes are either pitch or volume? (S)  How can I describe how an object changes either pitch or volume using different columns of air? (R) | I will describe the difference in how objects sound using the words pitch and volume.  I will list and sort objects that make high/low sounds and loud/soft sounds. I will use different materials to make changes with pitch and volume such as: rubber bands, string, metal, water bottles.  I will demonstrate and explain the changes in pitch and volume using objects that have different air columns. (Ex. water bottle/ pitch pipes) | -Unit E lesson 6 pages E46 – 47  -Reading in Science Resources Worksheet p 273 – 274  -Use musical instruments  -Stereo or SmartBoard speakers to how volume can be turned higher and lower and discuss how this is different than pitch.  -blow air into a straw then cut off a piece and try again, the pitch changes. The shorter the straw the higher the pitch  -Straw harmonica (2 straws, tape, scissors)  -borrow boom sticks and other instruments from your music teacher, so how pitch changes within each instrument  Put different width rubber bands around a cardboard milk carton the long way. Put one pencil under the rubber bands near each end of the carton. Pluck the skinny rubber band and listen. Now pluck the fat rubber band and listen Does the skinny rubber band have a higher or lower pitch than the fat one? Pluck the rubber bands again and watch them vibrate. Does the whole rubber band vibrate or just the part between the pencils |
| **Essential Questions** | **Criteria for Success: “I Will”** | **Suggested Resources/Activities** |
| **2.P.1.2**  How can I show what parts of the body produce and receive sound waves? (K)  How can I identify the parts of the ear that receive, vibrate, and move sound to our brain? (R) | I will locate, and point to and label parts of the body that produce and receive sound. (vocal chords, ears, mouth, voice box)  I will demonstrate and explain how our body creates sound by using common materials  I will identify and show how sound moves through the parts of the outer, middle, and inner ear.  I will sort parts of the ear into receiving sound, vibrating sound, transferring sound waves into moving objects, and processing sound | -Difference in talking and whispering- have students put two fingers on their throat and say their name out loud. They should be able to feel the vibrations from their vocal cords. Have them keep their fingers on their neck and whisper their name – they should not feel anything. This shows that our voice box uses vibrations for us to speak.  -Borrow a drum from the music teacher or create on with the cardboard from a roll of tape and cover it with wax paper. Have the students talk into the wax paper and they should be able to see and/or feel it vibrate this is how our ear drum hears other sounds and transfers it to the nerves that send it to our brain. Show them a diagram or model of the ear and where their ear drum is located. Rubber bands as vocal chords, stretched foil or plastic wrap as the ear drum/ membrane  -Use models of the ear to show the students all the part of the ear.  -Use a flow map or sequencing chart to show how sounds move through our ear  -make a kazoo with wax paper and toilet paper rolls |
| **Forces and Motion: Sound Helpful Websites:**  Discovery Education – The Wonder of Sound (13:00) Discovery Education Science: Explorations: Sound Waves, Reflections of Sound, Pitch, Volume; Reading Passages, Vocabulary animations, Songs  [www.tryscience.org](http://www.tryscience.org)  <http://library.thinkquest.org/19537/>  <http://www.galaxy.net/~k12/sound/> - A resource of 2nd grade designed 30 minute experiments  <http://www.bnl.gov/slc/interactivewebsites.asp#Sound> – a list of websites student can visit either in your classroom or at home  <http://www.internet4classrooms.com/science_elem_sound.htm>  [http://www.philtulga.com/MSSActivities.html](https://email.cms.k12.nc.us/owa/redir.aspx?C=7a951d89efb14553beccc2b5241d5425&URL=http%3a%2f%2fwww.philtulga.com%2fMSSActivities.html" \t "_blank)  Activities  [http://www.engineeringinteract.org/resources/oceanodyssey/flash/concepts/sourcesofsound.htm](https://email.cms.k12.nc.us/owa/redir.aspx?C=7a951d89efb14553beccc2b5241d5425&URL=http%3a%2f%2fwww.engineeringinteract.org%2fresources%2foceanodyssey%2fflash%2fconcepts%2fsourcesofsound.htm" \t "_blank)  [http://www.engineeringinteract.org/resources/oceanodyssey/flash/concepts/loudness.htm](https://email.cms.k12.nc.us/owa/redir.aspx?C=7a951d89efb14553beccc2b5241d5425&URL=http%3a%2f%2fwww.engineeringinteract.org%2fresources%2foceanodyssey%2fflash%2fconcepts%2floudness.htm" \t "_blank)  [http://www.engineeringinteract.org/resources/oceanodyssey/flash/concepts/pitch.htm](https://email.cms.k12.nc.us/owa/redir.aspx?C=7a951d89efb14553beccc2b5241d5425&URL=http%3a%2f%2fwww.engineeringinteract.org%2fresources%2foceanodyssey%2fflash%2fconcepts%2fpitch.htm" \t "_blank)  [http://www.smm.org/sound/nocss/activity/handson.htm](https://email.cms.k12.nc.us/owa/redir.aspx?C=7a951d89efb14553beccc2b5241d5425&URL=http%3a%2f%2fwww.smm.org%2fsound%2fnocss%2factivity%2fhandson.htm" \t "_blank)  [http://scifiles.larc.nasa.gov/text/kids/D\_Lab/acts\_sound.html](https://email.cms.k12.nc.us/owa/redir.aspx?C=7a951d89efb14553beccc2b5241d5425&URL=http%3a%2f%2fscifiles.larc.nasa.gov%2ftext%2fkids%2fD_Lab%2facts_sound.html" \t "_blank)  Videos (Plus tons on DE)  [http://www.youtube.com/watch?v=\_ovMh2A3P5k](https://email.cms.k12.nc.us/owa/redir.aspx?C=7a951d89efb14553beccc2b5241d5425&URL=http%3a%2f%2fwww.youtube.com%2fwatch%3fv%3d_ovMh2A3P5k" \t "_blank)  [http://www.youtube.com/watch?v=r4xYDs5rLNI](https://email.cms.k12.nc.us/owa/redir.aspx?C=7a951d89efb14553beccc2b5241d5425&URL=http%3a%2f%2fwww.youtube.com%2fwatch%3fv%3dr4xYDs5rLNI" \t "_blank)  [http://www.gamequarium.org/cgi-bin/search/linfo.cgi?id=7668](https://email.cms.k12.nc.us/owa/redir.aspx?C=7a951d89efb14553beccc2b5241d5425&URL=http%3a%2f%2fwww.gamequarium.org%2fcgi-bin%2fsearch%2flinfo.cgi%3fid%3d7668" \t "_blank) (Ears and Sound with Bill)  [http://www.youtube.com/watch?v=ahCbGjasm\_E](https://email.cms.k12.nc.us/owa/redir.aspx?C=7a951d89efb14553beccc2b5241d5425&URL=http%3a%2f%2fwww.youtube.com%2fwatch%3fv%3dahCbGjasm_E" \t "_blank) | | |
| **Sample Writing Prompts**  **-Why did changing the length of the straw, change the pitch? How do you know?**  **-What happens to sound if you cup your ear?**  **-Explain in your own words how sound travels through the parts of your ear.**  **-Name one part of your body that makes sound and explain how it works.**  **-Draw a picture to show how sound travels through a column of air and explain in your own words how the sound is traveling.**  **-Draw a picture of how sound is produced by vibration and explain in your own words how sound is made.** | | |

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| **Earth Systems, Structures and Processes** |
| **Essential Standard:**  **2.E.1** Understand patterns of weather and factors that affect weather. |
| **Clarifying Objective:**  2.E.1.1 Summarize how energy from the sun serves as a source of light that warms the land, air and water.  2.E.1.2 Summarize weather conditions using qualitative and quantitative measures to describe:  • Temperature  • Wind direction  • Wind speed  • Precipitation  2.E.1.3 Compare weather patterns that occur over time and relate observable patterns to time of day and time of year.  2.E.1.4 Recognize the tools that scientists use for observing, recording, and predicting weather changes from day to day and during the seasons. |
| **Unpacking: What does this standard mean that a student will know and be able to do?**  2.E.1.1 Students know that light travels from the sun to the earth. Some of this light is reflected back into space, some is absorbed by the land, water, and air.  2.E.1.2 Students know that numbers are used to describe air temperature, wind speed, and the amount of precipitation that occurs. Students know that wind direction is described using cardinal directions (N, S, E, W) and numbers. Students know how to measure air temperature with a thermometer, wind direction with a wind sock or vane, wind speed with an anemometer, and precipitation with a rain gauge.  2.E.1.3 Students know that over time there are patterns that can be observed in the weather and that these patterns are influenced by the time of day (cooler morning, warmer afternoon) and the time of year (seasonal changes).  2.E.1.4 Students are familiar with manual and electronic weather instruments, sensors, and computers as well as how they can produce a ‘running record’ of weather changes that occur over time by collecting and recording data. This collection of data can be analyzed as a basis for predicting weather trends. |
| **Essential Vocabulary**  weather, evaporation, solar energy, absorb, reflect, precipitation, thermometer, air temperature, wind speed, condensation  freezing point of water, weather vane, anemometer, rain gauge, wind sock, seasons, sensors, cardinal/ordinal directions, water cycle |

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| **Essential Questions** | **Criteria for Success: “I Will”** | **Suggested Resources/Activities** |
| **2.E.1.1**  What happens to the sun’s energy in space?  How can I discuss how solar energy from the sun warms (is absorbed) by land, water, and air? (R)  How is solar energy reflected back into space? | I will use graphic organizers to show understanding of evaporation, solar energy, absorb, and reflect  I will observe objects throughout the day to show how solar energy being reflected and absorbed.  I will show, using thermometers, that objects absorb solar energy and become warmer. | -take pieces of black construction paper, white construction paper, plastic wrap and aluminum foil outside. Leave it outside for 10 minutes on a sunny day, when you go back outside you should see how the heat from the sun is absorbed in some materials and not others  -Place thermometers in 3 cups. Fill one cup with soil, one with water, leave one empty. Take them outside on a sunny day and record the temperatures every 5 minutes for a ½ hour, you should see how the sun heats each element differently. |
| **2.E.1.2**  How can I use numbers to represent air temperature, wind speed, and precipitation? (S)  How can I use my cardinal directions to describe wind direction? (S) | I will use a thermometer to measure air temperature and the freezing point of water.  I will keep a weather journal charting the air temperature, wind speed, and precipitation. (use web sites to access information due to a lack of resources)  I will use wind vane to determine the direction of wind on different days | -Use local weather channels and weather channel.com to help you record the weather date for each day in the unit.  -If you are able to buy a digital weather station, around 30-40 dollars, to help you record each.  -Have students place thermometers around the school and check the temperatures from different areas  -Have students create a rain gauge and leave it outside to collect rain samples  -Create anemometers to measure wind speed  -Have students create and use a wind vane with cardinal directions to show the direction the wind is blowing.  -Place windsocks around the school to show the direction the wind is blowing and how the direction changes when it goes around buildings. |
| **Essential Questions** | **Criteria for Success: “I Will”** | **Suggested Resources/Activities** |
| **2.E.1.3**  How can I tell the names of the seasons and weather patterns that  are associated with each? (R)    How can I understand the differences with the changes that occur with our daily weather? (R) | ‐ I will draw pictures of the seasons (spring, summer, fall, winter) and label each with a temperature and general weather conclusions.  I will journal or keep data on the temperatures in early morning and in the afternoon.  I will note differences in wind direction and speed, temperature, and precipitation. | -connect this to information learned in previous grade levels – what do we know about the seasons, what should be wear during each season, what do we know about the weather in each season. Have students go outside an view weather during each of these seasons – not just on sunny days.  -discuss how the Earth turns every day and when the sun rises the earth will get warmer but as we turn the sun will set and the Earth will get cooler.  -Use a globe and a flash light to demonstrate how the sun heat part of the earth as we spin. |
| **2.E.1.4**  How can I distinguish the different types of weather tools and how  they are used? (P) | I will draw and label a weather vane, anemometer, rain gauge, and wind sock.  I will make an example of a weather tool and describe how it is used. | See above, students will create each type of weather tool |
| **Helpful Websites:**  [**http://www.internet4classrooms.com/science\_elem\_weather.htm**](http://www.internet4classrooms.com/science_elem_weather.htm) **-**  **Discovery Education - Weather Smart, Air: A First Look**  [**www.weatherchannel.com**](http://www.weatherchannel.com)  [**http://www.weatherwizkids.com/**](http://www.weatherwizkids.com/)  [**http://theweatherchannelkids.com/**](http://theweatherchannelkids.com/)  [**http://eo.ucar.edu/webweather/**](http://eo.ucar.edu/webweather/)  **http://www.wxdude.com/kidres.html**  **www.weather.com** | | |
| **Sample Writing Prompts:**  **What is the most severe type of weather and why do you think that it is the most severe?**  **What is the best weather tool that scientists use to observe, record, and predict weather patterns? Use facts to support your opinion.**  **How does the time of day affect the temperature?** | | |

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| **Structures and Functions of Living Organisms** |
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| **Essential Standard:**  **2.L.1** Understand animal life cycles. |
| **Clarifying Objective:**  2.L.1.1 Summarize the life cycle of animals including:  • Birth  • Developing into an adult  • Reproducing  • Aging and death  2.L.1.2 Compare life cycles of different animals such as, but not limited to, mealworms, ladybugs, crickets, guppies or frogs. |
| **Unpacking: What does this standard mean that a student will know and be able to do?**  2.L.1.1 Students know that animals experience a cycle of life which begins with birth, then a period of time in which the animal develops into an adult.  At adulthood, animals reproduce in order to sustain their species. In nature, all animals are programmed to age and eventually die. The details of the life cycle are different for specific animals.  2.L.1.2 Students know that different animals spend varying periods of time in each stage of the life cycle and that some animals have few stages, while others have several. Students know that animals might look the same, similar, or completely different at specific stages of development. Students know that animals may have varied needs at different stages of development, and may occupy unique habitats according to these needs. |
| **Essential Vocabulary**  Life cycle, habitat, specific needs, egg, larva, adult, chrysalis, pupa, birth, death, reproduce, stages, food, shelter,  air, space, adolescent, metamorphosis, adaptations, |

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| **Essential Questions** | **Criteria for Success: “I Will”** | **Suggested Resources/Activities** |
| **2.L.1.1**  What is a life cycle?  What are the stages of a life cycle?  How are life cycles different; animal, plants, insects? | I will use work samples to show the life cycle of an animal. (flip book, cycle  map,  I will label the stages of a life cycle using words such as: (egg, larva, adult, chrysalis, pupa, birth, death, and reproduce). | Make flash cards with pictures representing stages in the life cycle of several animals and use them for a game.  MacMillan McGraw-Hill Transparencies – 5 -10  -borrow the animal flash cards from the science kits  -A-Z reading books of life cycles  -books from your school media center  -discovery education science  Discovery Education video – Metamorphosis |
| **2.L.1.2**  How can I recognize that an animal has specific needs like food, shelter, air, and space? (R)  How can I compare and contrast the life cycles of different animals? | I will create and label an animal’s habitat with its basic needs.  I will use sequential maps to identify the stages within an animal’s life cycle  I will identify and compare life cycles of insects, and animals. (frogs, butterflies, grasshoppers, guppies, mealworms..) | -this is a good time to have classroom habitats and fish tanks that the students can observe. If you don’t, take your students on a “field trip” around the school to view the different habitats you have – even if it is just a tree. |
| **Helpful Websites:**  <http://kids.nationalgeographic.com/kids/>  <http://www.stmary.pvt.k12.de.us/Lib_Animal.html>  <http://www.ala.org/gwstemplate.cfm?section=greatwebsites&template=/cfapps/gws/displaysection.cfm&sec=1>  [www.youtube.com](http://www.youtube.com) :  -Complete life cycle of a butterfly  -mealworms turning into a beetle  -the needs of an animal  -the needs of a plant | | |
| **Writing Prompts:**  **-Choose your favorite animal – Explain the life cycle stages of your animal?**  **-Compare the life cycle of a butterfly to the life cycle of a frog. How are they the same/different?**  **-How are the life stages of a frog similar to the life cycle of a human?** | | |

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| **Evolution and Genetics** |
| **Essential Standard:**  **2.L.2** Remember that organisms differ from or are similar to their parents based on the characteristics of the organism. |
| **Clarifying Objective:**  2.L.2.1 Identify ways in which plants and animals closely resemble their parents in observed appearance and ways they are different.  2.L.2.2 Recognize that there is variation among individuals that are related. |
| **Unpacking: What does this standard mean that a student will know and be able to do?**  2.L.2.1 Students know that plants and animals resemble their parents in appearance, needs, life processes, and interactions with the environment, even while being unique.  2.L.2.2 Students know that groups of organisms of the same type have characteristics in common as well as characteristics that may vary. |
| **Essential Vocabulary:** Environmental interaction, organism, classify, pollution, extinction, endangered, classification, mammal, reptile, insect, amphibian, fish or bird, |

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| **Essential Questions** | **Criteria for Success: “I Will”** | **Suggested Resources/Activities** |
| **2.L.2.1**  How do adolescent plant or animal resemble their parents?  Are the needs of a ‘baby’ different from its parents? (P)  How does an adolescent plant or animal affect its environment compared to an adult plant or animal? (S) | I will show the stages of development of a plant.  I will use flow maps or graphic organizers to show the stages of  development of an animal  I will identify the needs of an organism/plant at differing stages of development.  I will identify the needs of species based on its environment of land, water, shelter and air.  I will observe examples of environmental interaction of plants/animals impacting our communities.  I will create a work sample that explains the good and bad interactions of a species with its environment. | This unit is best taught along with the Living Organisms unit, towards the end. This way the students will already have background knowledge of the life cycles of animals.  -Grow seeds and take pictures, compare the pictures of the older plants to the seedlings when they first sprouted.  Discuss this with the objective for the needs of animals – talk about how parents help the baby or child find what they need until they are grown up and can find it themselves.  Animal Planet has a lot of shows that focus on this, whole episodes and video segments are on their website.  You can discuss how animals usually only eat when they are hungry or dig a hole when they need shelter, but when they are a baby they are a lot more destructive because it is a way that they play. The adults will teach the students how to live in their environment around them but when they are young, |
| **2.L.2.2**  How can I analyze groupings of organisms/animals that are similar? | I will use graphic organizers and diagrams to list the similarities of organisms; (students within classroom).  I will use charts and pictures to indicate the classification of an animal into mammal, reptile, insect, amphibian, fish, and bird. | Have students sort pictures, plastic animals, etc, by their different characteristics  Have them talk about which animals are the most alike and which are not. |
| **Helpful Websites:**  [**http://library.thinkquest.org/3696/index2.htm**](http://library.thinkquest.org/3696/index2.htm)  [**http://classroom.jc-schools.net/sci-units/heredity.htm**](http://classroom.jc-schools.net/sci-units/heredity.htm)  [**www.teachertube.com**](http://www.teachertube.com) **-animals look like your parents** | | |