



## 8<sup>th</sup> Grade Science Standards

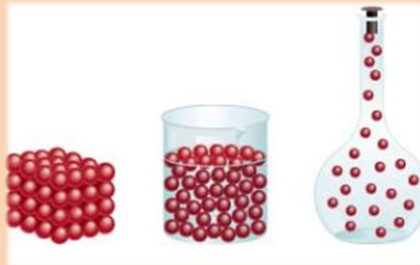
### Inquiry Technology & Engineering



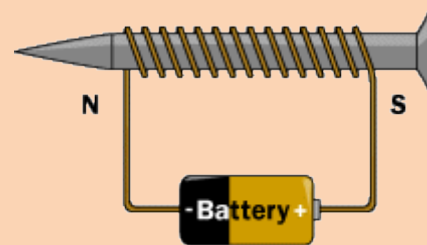
### Biodiversity and Change



### Matter



### Forces in Nature



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## Knox County Schools

### Parent Curriculum

Standard	Inquiry and Technology & Engineering
<b>What are the big ideas?</b>	<ul style="list-style-type: none"><li>Students need to be able to design a scientific investigation with <a href="#">variables</a>.</li><li>Students need to translate data from graphs, tables, and diagrams.</li><li>Students need to identify tools that can be used in a moderately complex experiment.</li><li>Students need to draw conclusions about the evidence of a science experiment and identify the <a href="#">cause and effect</a>.</li><li>Identify faulty interpretation of data that is due to <a href="#">bias</a> or <a href="#">experimental error</a>.</li><li>Students need to understand the <a href="#">engineering design process</a>.</li><li>Identify that there are intended benefits and unintended consequence of new technology.</li></ul>
<b>How can I find more information to help my child?</b>	<p>How to interpret data and graphs website. <a href="http://www.mathgoodies.com/lessons/toc_vol11.html">http://www.mathgoodies.com/lessons/toc_vol11.html</a></p> <p>6<sup>th</sup> Grade Science Projects <a href="http://www.scholastic.com/resources/article/6th-grade-science-projects/">http://www.scholastic.com/resources/article/6th-grade-science-projects/</a></p> <p>Information on Engineering Design Process <a href="http://www.nasa.gov/audience/foreducators/plantgrowth/reference/Eng_Design_5-12.html">http://www.nasa.gov/audience/foreducators/plantgrowth/reference/Eng_Design_5-12.html</a></p> <ul style="list-style-type: none"><li>Talk with your child about how technology has changed. Show them how technology has changed in your life time with pictures.</li></ul>
<b>Vocabulary</b>	Bias, science methods, observation, hypothesis, data, model, theory, law, technology, engineering, engineering design process, prototype, bioengineering, assistive bioengineering, adaptive bioengineering, meter, area, mass, volume, temperature, SI units, meter, liter, gram, Celsius, Fahrenheit, control variables, adaptive engineering, assistive engineering
<b>Student Websites</b>	<p>Design Roller-coasters and Checkout Skateboarding Engineering : <a href="http://www.discoverengineering.org/">http://www.discoverengineering.org/</a></p> <p>Design a parachute, bionic arm, or race solar cars: <a href="http://www.tryengineering.org/play.php">http://www.tryengineering.org/play.php</a></p> <p>Create your own slime with chemical engineering <a href="http://www.discoverengineering.org/">http://www.discoverengineering.org/</a></p> <p>Scientific Theory and Evidence <a href="http://studyjams.scholastic.com/studyjams/jams/science/scientific-inquiry/scientific-theory-and-evid.htm">http://studyjams.scholastic.com/studyjams/jams/science/scientific-inquiry/scientific-theory-and-evid.htm</a></p>
<b>Current Events and Real World Application Online Articles</b>	<p>Shrinky Dink Science, Will it Crush? <a href="http://cen.acs.org/articles/89/i48/Crush-Shrinky-Dink-Science.html">http://cen.acs.org/articles/89/i48/Crush-Shrinky-Dink-Science.html</a></p> <p>Young Scientists Work Together <a href="http://www.sciencenewsforkids.org/2011/11/young-scientists-work-together-and-win/">http://www.sciencenewsforkids.org/2011/11/young-scientists-work-together-and-win/</a></p> <p>Cars of the Future <a href="http://www.sciencenewsforkids.org/2011/10/cars-of-the-future/">http://www.sciencenewsforkids.org/2011/10/cars-of-the-future/</a></p>



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Standard	Biodiversity and Change
What are the big ideas?	<ul style="list-style-type: none"><li>• Use a simple classification chart to classify an organism.</li><li>• Students must be able to look at structural, behavioral, and physiological <a href="#">adaptations</a> to predict what populations are likely to survive in a particular environment.</li><li>• Identify several reasons for maintaining the Earth's <a href="#">biodiversity</a>.</li><li>• Investigate <a href="#">fossils</a> in sedimentary rock layers to gather evidence of changing life forms.</li></ul>
How can I find more information to help my child?	What is biodiversity? <a href="http://www.ecokids.ca/pub/eco_info/topics/biodiversity/index.cfm">http://www.ecokids.ca/pub/eco_info/topics/biodiversity/index.cfm</a> Animal Adaptations <a href="http://animals.pppst.com/adaptations.html">http://animals.pppst.com/adaptations.html</a> Fossils <a href="http://pubs.usgs.gov/gip/fossils/rocks-layers.html">http://pubs.usgs.gov/gip/fossils/rocks-layers.html</a>
Vocabulary	adaptation, structural adaptation, behavioral adaptation, physiological adaptation, natural selection, genetic diversity, population, biodiversity, relative age, dichotomous key, species, evolution, extinct species, threatened species, introduced species, native species, endangered species, uniformitarianism, catastrophism, relative age/dating, absolute dating, fossil, trace fossil, cast, mold, index fossil, sedimentary rock, principle of superposition, fossil record, radioactive element, half-life, classification, taxonomy, trait,
Student Websites	Endangered Species Game <a href="http://www.amnh.org/ology/biodiversity">http://www.amnh.org/ology/biodiversity</a> Biodiversity Basics and Fun Games <a href="http://www.biodiversity911.org/">http://www.biodiversity911.org/</a> Kratt's Creatures <a href="http://pbskids.org/krattscreatures/flash.shtml">http://pbskids.org/krattscreatures/flash.shtml</a> Games, powerpoints and more <a href="http://animals.pppst.com/adaptations.html">http://animals.pppst.com/adaptations.html</a> Fossils <a href="http://www.backyardnature.net/g/fossils.htm">http://www.backyardnature.net/g/fossils.htm</a>
Current Events and Real World Application Online Articles	Human Hunting Shapes Animal Populations <a href="http://dsc.discovery.com/news/2009/01/13/hunting-animal-size.html">http://dsc.discovery.com/news/2009/01/13/hunting-animal-size.html</a> Overpopulation: A Key Factor in Species Extinction <a href="http://www.biologicaldiversity.org/campaigns/overpopulation/index.html">http://www.biologicaldiversity.org/campaigns/overpopulation/index.html</a>



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<b>Standard</b>	Forces in Nature
<b>What are the big ideas?</b>	<ul style="list-style-type: none"><li>• Students need to know what is an electromagnet and how does it work.</li><li>• Students need to know the relationship between electricity and magnetism.</li><li>• Compare and contrast the Earth's magnetic field to that of a magnet and electromagnet.</li><li>• Identify factors (mass, weight, density) that effect the amount of gravitational force between objects.</li></ul>
<b>How can I find more information to help my child?</b>	Electricity and Magnets Worksheets, Information and more <a href="http://www.teach-nology.com/teachers/lesson_plans/science/physics/electricity/">http://www.teach-nology.com/teachers/lesson_plans/science/physics/electricity/</a> Magnetism <a href="http://www.scienceclarified.com/everyday/Real-Life-Physics-Vol-3-Biology-Vol-1/Magnetism.html">http://www.scienceclarified.com/everyday/Real-Life-Physics-Vol-3-Biology-Vol-1/Magnetism.html</a>
<b>Vocabulary</b>	magnet, magnetic pole, magnetic force, electromagnetism, electric motor, electromagnetic induction, electric generator, alternating current, direct current, solenoid, electromagnet, rotation, revolution, orbit, Newton's law of gravitation, conduction, gravity, gravitational force, inertia, weight, mass, Earth's magnetic field, orbit, ellipse
<b>Student Websites</b>	From Apples to Orbits <a href="http://library.thinkquest.org/27585/frameset_intro.html">http://library.thinkquest.org/27585/frameset_intro.html</a> Cool Experiments with Magnets <a href="http://www.coolmagnetman.com/magindex.htm">http://www.coolmagnetman.com/magindex.htm</a>
<b>Current Events and Real World Application Online Articles</b>	What are Electromagnets Used for? <a href="http://www.buzzle.com/articles/uses-of-electromagnets-what-are-electromagnets-used-for.html">http://www.buzzle.com/articles/uses-of-electromagnets-what-are-electromagnets-used-for.html</a>



## Knox County Schools

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Standard	Matter
<b>What are the big ideas?</b>	<p>Students need to understand all matter is made up of atoms and parts of atom.</p> <p>Students must explain that matter has properties that are determined by the structure and arrangement of atoms.</p> <p>Students must understand physical and chemical changes.</p> <p>Distinguish between elements, compounds, and mixtures.</p> <p>Describe the chemical <a href="#">makeup of the atmosphere</a>.</p> <p>Use the periodic table to determine the properties of an element.</p> <p>Explain the Law of Conservation of Mass.</p> <p>Identify <a href="#">reactants and products</a> of a chemical equation.</p> <p>Explain the basic differences between acids and bases.</p>
<b>How can I find more information to help my child?</b>	<p>More Information on Matter <a href="http://misterguch.brinkster.net/worksheets.html">http://misterguch.brinkster.net/worksheets.html</a></p> <p>Atoms, Density, states of matter <a href="http://www.internet4classrooms.com/grade_level_help/physical_science_eighth_8th_grade_science.htm">http://www.internet4classrooms.com/grade_level_help/physical_science_eighth_8th_grade_science.htm</a></p> <p>Middle School Chemistry <a href="http://www.middleschoolchemistry.com/lessonplans/chapter4/lesson2">http://www.middleschoolchemistry.com/lessonplans/chapter4/lesson2</a></p> <p>Science Clarified <a href="http://www.scienceclarified.com/everyday/Real-Life-Chemistry-Vol-1/index.html">http://www.scienceclarified.com/everyday/Real-Life-Chemistry-Vol-1/index.html</a></p> <p>Elements, Compounds, Mixtures <a href="http://mysciencelessons.wordpress.com/2009/12/02/elements-compounds-mixtures-notesppt-activity/">http://mysciencelessons.wordpress.com/2009/12/02/elements-compounds-mixtures-notesppt-activity/</a></p> <p>Reactants and Products <a href="http://www.saskschools.ca/curr_content/science9/chemistry/lesson10.html">http://www.saskschools.ca/curr_content/science9/chemistry/lesson10.html</a></p> <p>Law of Conservation of Matter <a href="http://www.nclark.net/conservation_of_matter_lab.pdf">http://www.nclark.net/conservation_of_matter_lab.pdf</a></p> <p>Acids and Bases <a href="http://www.chemtutor.com/acid.htm">http://www.chemtutor.com/acid.htm</a></p> <p>Periodic Table <a href="http://www.chem4kids.com/files/elementable.html">http://www.chem4kids.com/files/elementable.html</a></p>
<b>Vocabulary</b>	<p>chemical and physical change, physical and chemical property, Law of Conservation of Mass, surface tension, viscosity, condensation, sublimation, evaporation, melting, boiling, element, proton, neutron, electron, isotope, half-life, electron cloud, atomic number, atomic mass, metal, nonmetal, metalloid, conductor, insulator, alkali metals, alkaline earth metals, halogens, lanthanides, actinides, noble gases, period, family, group, synthetic element, transition metals, chemical bond, chemical formula, covalent bond, energy levels, ion, ionic bond, cation, anion, metallic bond, molecule, valence electron, precipitate, chemical reaction, reactant, product, synthesis reaction, decomposition reaction, single-replacement, double-replacement, exothermic reaction, endothermic reaction, activation energy, inhibitor, catalyst, acid, base, salt, pH, indicator, heterogeneous mixture, homogeneous mixture, neutralization reaction, solute, solvent, solution, solubility, saturated, suspension, colloid, solid, liquid, gas, compound, mixture, acid rain, ozone depletion</p>



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<b>Student Websites</b>	Middle School Chemistry <a href="http://www.middleschoolchemistry.com/lessonplans/chapter4/lesson2">http://www.middleschoolchemistry.com/lessonplans/chapter4/lesson2</a> Science Clarified <a href="http://www.scienceclarified.com/everyday/Real-Life-Chemistry-Vol-1/index.html">http://www.scienceclarified.com/everyday/Real-Life-Chemistry-Vol-1/index.html</a> Meet the Elements <a href="http://www.youtube.com/watch?v=d0zlON8xjbM">http://www.youtube.com/watch?v=d0zlON8xjbM</a> THE PERIODIC TABLE SONG <a href="http://www.youtube.com/watch?v=zGM-wSKFBpo">http://www.youtube.com/watch?v=zGM-wSKFBpo</a>
<b>Current Events and Real World Application Online Articles</b>	Sour Showers <a href="http://www.scientificamerican.com/article.cfm?id=acid-rain-caused-by-nitrogen-emissions">http://www.scientificamerican.com/article.cfm?id=acid-rain-caused-by-nitrogen-emissions</a>