

8th Grade Science Nine Week Curriculum Guide
Developed Summer 2009

Grade 8: Standard 1 Cells (not addressed at this level)

Grade 8: Standard 2 Interdependence (not addressed at this level)

Grade 8: Standard 3 Flow of Matter and Energy (not addressed at this level)

Grade 8: Standard 4 Heredity (not addressed at this level)

Title: Standard 5 Biodiversity and Change			Time Frame: First 9 weeks		
Academic Vocabulary: Link to new list available fall '09 from TnDoE					
Grade Level Expectations (GLEs)	Sample Essential Questions	Resources TE-teacher edition Glencoe series comes with great resources on disk (teacher works, and interactive chalkboard) and web-Glencoe.com	Common Experiences	Checks for Understanding (for Inq. and T/E, see state standards)	Integration Connections including Inquiry, Technology and Engineering *used continually throughout the curriculum
GLE 0807.5.1 Identify various criteria used to classify organisms into groups.	What are specific criteria scientists use to classify living things into groups?	Science Safety Information TE: 6-7, 16-17, 20,24-25, 27-28, 29, 34-37 *0807Inq3 TE-TN 16-17 Internet4classrooms several sites for classification examples.	Activity: classify objects as a group, can use 10 student shoes sort into 2 groups continue until all shoes are classified or Launch lab TE pg. 7 (Determine cause and effect of ways of grouping.)	<input type="checkbox"/> 0807.5.1 Select characteristics of plants and animals that serve as the basis for developing a classification key.	* GLE 0807.Inq.3 Synthesize information to determine cause and effect relationships between evidence and explanations.

<p>GLE 0807.5.2 Use a simple classification key to identify a specific organism.</p>	<p>How can a classification key be used to identify an unknown object?</p>	<p>TE: 6, 24-28, 34-37 Examine various dichotomous keys, Internet options http://www.pbs.org/wgbh/nova/teachers/activities/pdf/2215_reef.pdf http://www.lnhs.org/hayhurst/ips/dichot/ Internet4classrooms Grade level help 8th science option8 under 0807.5.1.</p>	<p>Make a dichotomous key for items of choice (noodles, tools, animals, leaves etc.)</p>	<p><input type="checkbox"/> 0807.5.2 Create and apply a simple classification key to identify an organism.</p>	<p>*GLE0801.2.7 ELA – Group discussions and team work. <i>*Plant the Seed Initiative Activity-</i> Invite a biologist from a park to discuss local species and how they are classified.</p>
<p>GLE 0807.5.3 Analyze how structural, behavioral, and physiological adaptations within a population enables it to survive in a given environment.</p>	<p>What outcomes may result if global warming continues on its current trend?</p>	<p>TE: 6, 16, 19-20, 21,23, 34-38,40,43,45, 47, 6-63 *0807.Inq.4 / 0807.Inq.5 TE-TN 16-17 Additional activity: discuss possible biases in regard to global warming. Should the rest of the world allow countries with rain forests to cut them down? Design an animal</p>	<p>Research organisms that are currently being affected by global warming. Choose one organism, identify and explain 3 adaptations needed for their continued survival (can be a group activity).</p>	<p><input type="checkbox"/> 0807.5.3 Compare and contrast the ability of an organism to survive under different environmental conditions.</p>	<p>*GLE 0807.Inq.4 Recognize possible sources of bias and error, alternative explanations and questions for further exploration. *GLE 0807.Inq.5 Communicate scientific understanding using descriptions, explanations, and models. Greek Root; vit/viv- survive, vital *GLE0801.4.2</p>

		with 3 adaptations (animal cannot be alive today). Can be 3-D model, computer generated illustration or drawing.			ELA – Research using a variety of print and electronic resources
GLE 0807.5.4 Explain why variation within a population can enhance the chances for group survival.	Why are variations within a population important for a survival of a species? Select one of the variations and determine survival of the species without this variation.	TE: 4-5, 38, 40, 43-48, 56, 60-63 *0807.Inq2 TE-TN16-17 *0807.T Launch Lab TE pg.39 or Inquiry Lab TE pg. 56 (Creating and analyzing data from graphs.) http://www.ucmp.berkeley.edu/education/explorations/tours/intro/index.html Good information for checks for understanding and T/E requirements. T/E.3 TE-TN 18-19		<input type="checkbox"/> 0807.5.4 Collect and analyze data relating to variation within a population of organisms.	*GLE 0807.Inq.2 Use appropriate tools and techniques to gather, organize, analyze, and interpret data. *GLE 0807.T/E.3 Compare the intended benefits with the unintended consequences of a new technology. *GLE0801.6.3 ELA – Read interpret and analyze graphics that support informational texts.

<p>GLE 0807.5.5 Describe the importance of maintaining the earth's biodiversity.</p>	<p>How can the loss of a species affect an ecosystem? Choose and explain a strategy that may help stop this loss.</p>	<p>TE: 64-66, 69-70, 73,75-77, 78-79, 80-81, 83, 84-85,88-91, 188-190, 203, 208 * 0807.T/E.TE-TN 18-19 Research population trends over a particular time period and prepare graphs to represent data-group presentations http://www.biodiversityhotspots.org/xp/Hotspots/pages/map.aspx</p>		<p><input type="checkbox"/> 0807.5.5 Prepare a poster that illustrates the major factors responsible for reducing the amount of global biodiversity. <input type="checkbox"/> 0807.5.6 Prepare graphs that demonstrate how biodiversity has changed in a particular continent or biome.</p>	<p>*GLE 0807.T/E.1 Explore how technology responds to social, political, and economic needs. *GLE 0807.T/E.4 Describe and explain adaptive and assistive bioengineered products. *GLE0801.2.6 ELA – Deliver oral presentations.</p>
<p>GLE 0807.5.6 Investigate fossils in sedimentary rock layers to gather evidence of changing life forms.</p>	<p>How can fossils found in rock layers predict previous time periods? If a fossil is found in the third rock layer is it younger or older than the second layer of rock? What evidence do scientists use to conclude the age of fossils.</p>	<p>TE: 4-5,38, 40, 42, 49-51, 53, 55, 60-63 See activity on TE pg. 51 make a model to represent a fossil within rock layers. http://www.stowe.k12.vt.us/shs/teachers/kiefer/biology/evolution/howold.htm (this site is a good activity to meet check for understanding) See TE pg.92 Technology Lab</p>		<p><input type="checkbox"/> 0807.5.7 Create a timeline that illustrates the relative ages of fossils in layers of sedimentary rock.</p>	<p>*GLE0801.4.2 ELA – Write in a variety of modes for a variety of audiences and purposes. *GLE 0806.1.6 Math – Read and interpret math language.</p>

Grade 8: Standard 6 – The Universe (not addressed at this level)

Grade 8: Standard 7 – The Earth (not addressed at this level)

Grade 8: Standard 8 – The Atmosphere (not addressed at this level)

Title: Standard 9 – Matter			Time Frame: 2 nd 9 weeks		
Academic Vocabulary: Link to new list available fall '09 from TnDoE					
Grade Level Expectations (GLEs)	Sample Essential Questions	Resources TE-teacher edition	Common Experiences	Checks for Understanding (for Inq. and T/E, see state standards)	Integration Connections Including Inquiry, Technology and Engineering *used continually throughout the curriculum
GLE 0807.9.1 Understand that all matter is made up of atoms.	What properties are used to identify matter?	TE: 95-96, 126, 128, 132, 148-152, 159, 166, 169-170, 190-192, 194, 196, 201, 216-219, 274-275 http://js082.k12.sd.us/My_Classes/Physical_Science/atoms/atoms_1.htm	Have students identify an unknown object. (For example an item in a bag, film canister, etc. Students can feel and shake to determine properties.)	<input type="checkbox"/> 0807.9.1 Identify atoms as the fundamental particles that make up matter.	<i>Plant the Seed Initiative Activity-</i> Invite the local road supervisor in to discuss why liquid is now used to keep roads from freezing instead of solids (pros and cons of each-Venn diagram)
GLE 0807.9.2 Explain that matter has properties that are determined by the structure and arrangement of its atoms.	How are liquids, solids and gases arranged differently?	TE: 95-96, 126, 128, 130, 132-133, 140, 150-152, 154, 156, 157-160, 163-168, 172-173, 175, 180-183, 190, 192, 201, 250, 252-254	Measurement Lab TE pg 394-395 or other comparable lab	<input type="checkbox"/> 0807.9.2 Illustrate the particle arrangement and type of motion associated with different states of matter.	*GLE 0807.Inq.1 Design and conduct open ended scientific investigations. Greek Root: meter-thermometer

		*0807.Inq.1 TE16-17 http://www.chem.purdue.edu/gchelp/liquids/character.html Good visual.		☐ 0807.9.3 Measure or calculate the mass, volume, and temperature of a given substance.	*GLE 0806.4.4 Math – Understand metric and standard measurements.
GLE 0807.9.3 Interpret data from an investigation to differentiate between physical and chemical changes.	What are the differences between chemical and physical changes?	TE: 126, 128,130-131, 134- 137, 139-140, 143-145, 148-153, 168, 173, 175-177, 180-183, 218-219, 278- 280, 282, 284,287, 289, 290-291,294-296, 297, 298-299, 302-305, 338, 340-341, 362-365 *0807.T/E.2 TE18-19 Discovery streaming has a variety of movie clips on subject.	Physical / Chemical Changes Lab Ideas: Mini lab TE pg. 137 Comparing Changes or Inquiry Lab TE pg. 138	☐ 0807.9.6 Differentiate between physical and chemical changes. ☐ 0807.9.8 Determine the types of interactions between substances that result in a chemical change.	*GLE 0807.T/E.2 Know that the engineering design process involves an ongoing series of events that incorporate design constraints, model building, testing, evaluating, modifying, and retesting. *GLE0806.1.5 Math – Analyze data, solve problems and interpret solutions
GLE 0807.9.4 Distinguish among elements, compounds, and mixtures.	What are the differences between elements, compounds and mixtures? Determine 2 for each group (salt, water, copper, salad, etc.)	TE 190, 203, 209, 211-213, 236,238, 250,260-263, 265, 267-271, 274-275,306-309, 312-315, 317-321,334-337, 338 340, 342-344, 346-247,362-365		☐ 0807.9.5 Distinguish between elements and compounds by their symbols and formulas. ☐ 0807.9.7 Describe how the characteristics of a compound are	Greek Root: hydr- hydroelectric , hydrogen *GLE0801.5.3 ELA – Analyze the logical features of an argument, including inductive and deductive elements.

		<p>Make a chart comparing elements, compounds and mixtures. Students may illustrate, use computers or pictures from magazines. (Have students record in both chemical symbols as well as written form.)</p>		<p>different than the characteristics of their component parts.</p>	<p>*GLE0806.1.3 Math – communicate mathematical ideas develop independent reasoning</p>
<p>GLE 0807.9.5 Apply chemical properties of the atmosphere to illustrate a mixture of gases.</p>	<p>What are chemical properties of the atmosphere? Why is it considered a mixture? How can density be used to determine physical property of an object?</p>	<p>TE: 336-337, (test questions only) 130-131,168. 173 http://elsci.lansingschools.net/rtsmith/wind/n_gases.htm Use information in chart from link to make a graph of gases in atmosphere. Math practice TE pg. 173-density</p>	<p>Density Lab: Density= Mass/Volume (cubes and rectangles-LxW), use water displacement for volume of irregular objects</p>	<p><input type="checkbox"/> 0807.9.9 Explain how the chemical makeup of the atmosphere illustrates a mixture of gases. <input type="checkbox"/> 0807.9.4 Calculate the density of various objects</p>	<p>*GLE0806.4.4 Math – Understand metric and customary units of measurement.</p>

<p>GLE 0807.9.6 Use the periodic table to determine the characteristics of an element.</p>	<p>How can the arrangement of the periodic table be used to determine characteristics of an element? Math practice TE pg. 173 on density</p>	<p>TE: 188-190, 203-204, 206-207, 209, 211-213, 220, 222-223, 225, 227-229, 235-236, 240-243, 250, 252, 255-259, 260, 263 Illustrate or make a model of an atom. Example TE pg. 199 Mini Lab http://education.jlab.org/itselemental/</p>		<p><input type="checkbox"/> 0807.9.10 Identify the atomic number, atomic mass, number of protons, neutrons, and electrons in an atom of an element using the periodic table.</p>	
<p>GLE 0807.9.7 Explain the Law of Conservation of Mass.</p>	<p>How can the Law of Conservation of Mass be used to describe the mass after a chemical change?</p>	<p>TE: 126, 134, 143, 148-151, 278, 280, 282, 284, 286, 289, 297, 302-305 Illustrate or make a model of an atom. Example TE pg. 199 Mini Lab</p>	<p>Mini Lab TE pg. 284</p>	<p><input type="checkbox"/> 0807.9.11 Use investigations of chemical and physical changes to describe the Law of Conservation of Mass.</p>	
<p>GLE 0807.9.8 Interpret the events represented by a chemical equation.</p>	<p>What are the difference between the reactants and the products of a chemical change?</p>	<p>TE: 278, 280, 285, 302-305, 306, 322, 362-365 Make models of different equations. See example TE pg. 284 Make a Model http://www.chemtutor.com/react.htm#example</p>		<p><input type="checkbox"/> 0807.9.12 Differentiate between the reactants and products of a chemical equation.</p>	<p>*GLE0806.3.3 Math – Solve systems of linear equations</p>

<p>GLE 0807.9.9 Explain the basic difference between acids and bases.</p>	<p>How can an indicator be used to determine if a substance is an acid or a base?</p>	<p>TE: 306, 322-323, 325, 326, 328-331, 334-337 Mini Lab TE pg. 323 http://www.funsci.com/fun3_en/acids/acids.htm</p>	<p>Acid / Base Lab TE pg.330 or other comparable lab.</p>	<p><input type="checkbox"/> 0807.9.13 Determine whether a substance is an acid or a base by its reaction to an indicator.</p>	
--	---	---	---	--	--

Grade 8: Standard 10 Energy (not addressed at this level)

Grade 8: Standard 11 Motion (not addressed at this level)

Title: Standard 12 Forces in Nature			Time Frame: 3 rd 9 weeks		
Academic Vocabulary: Link to new list available fall '09 from TnDoE					
Grade Level Expectations (GLEs)	Sample Essential Questions	Resources TE-teacher edition	Common Experiences	Checks for Understanding (for Inq. and T/E, see state standards)	Integration Connections Including Inquiry, Technology and Engineering *used continually throughout the curriculum
GLE 0807.12.1 Investigate the relationship between magnetism and electricity.	How do electric charges produce a magnetic field? Describe at least two examples.	TE: 411-412, 414, 416, 421-433, http://hyperphysics.phy-astr.gsu.edu/hbase/magnetic/magfie.html	TE pg. 412- 414 Visual Learning have students illustrate path of electromagnet.	<input type="checkbox"/> 0807.12.1 Create a diagram to explain the relationship between electricity and magnetism.	*GLE0806.1.1 Math – using mathematical language and symbols.
GLE 0807.12.2 Design an investigation to change the strength of an electromagnet.	How is the overall strength of an electromagnet changed if more wire coils are added? What would happen if coils are removed? Explain why this occurs.	TE: 402, 404-406, 409-412, 417-419, 421, 422-423, 426-429 http://education.jlab.org/qa/electromagnet.html	Construct an electromagnetic See TE pg. 412 Mini Lab – Assembling an Electromagnet	<input type="checkbox"/> 0807.12.2 Produce an electromagnet using a bar magnet and a wire coil. <input type="checkbox"/> 0807.12.3 Experiment with an electromagnet to determine how to vary its strength.	<i>Planting The Seed Initiative Activity-</i> Invite a VEC representative to speak on how electricity is provided to our local area.
GLE 0807.12.3 Compare and contrast the earth's magnetic field to that of a	What are the differences between earth's magnetic field a magnet and an electromagnetic?	TE: 369-370, 402-405, 407-410, 411, 415, 421, 426-429		<input type="checkbox"/> 0807.12.4 Create a chart to distinguish among the earth's magnetic field, and fields that	*GLE8080.5.2 Math data analysis

magnet and an electromagnet.		Mini lab Magnetic Fields TE pg. 408		surrounds a magnet and an electromagnet.	
GLE 0807.12.4 Identify factors that influence the amount of gravitational force between objects.	How would the force of gravity change if the mass was to increase? Justify answer with an example.	TE: 372-374, 377, 379-381, 387-388, 390-392-393, 394-395, TE 111 good for mass/weight http://www.glenbrook.k12.il.us/GBSSCI/PHYS/Class/circles/u6l3c.html	Lab: Comparing Mass and Weight TE pg. 394-395 Teachers will need to determine materials used.	<input type="checkbox"/> 0807.12.5 Explain the difference between mass and weight. <input type="checkbox"/> 0807.12.6 Identify factors that influence the amount of gravitational force between objects.	*GLE 0806.1.7 Math – Connections between math and the real world.
GLE 0807.12.5 Recognize that gravity is the force that controls the motion of objects in the solar system.	What force holds the solar systems together predict the outcomes if this force weakened justify answer with specific examples?	TE 430, 432-435, 436, 437- 440,442, 443-444, 447-452, 454-457 TE pgs. 444, 451 explain force of gravity on other planets and galaxies. http://www.scienceinks.com/interactives/gravity.html		<input type="checkbox"/> 0807.12.7 Explain how the motion of objects in the solar system is affected by gravity.	

Title: Preview Biology Standard 1-Cells			Time Frame: 4 th 9 weeks after TCAP testing		
Academic Vocabulary: Link to new list available fall '09 from TnDoE					
Grade Level Expectations GLEs	Sample Essential Questions	Resources TE–Teacher Edition	Common Experiences	Checks for Understanding(for Inq. and T/E, see state standards)	Integrations/ Connections including Inquiry, Technology and Engineering *used continually throughout the curriculum
CLE 3210.1.1 Compare the structure and function of cellular organelles in both prokaryotic and eukaryotic cells.	How do plant and animal cells differ? Where is the genetic material found in an eukaryotic cell found?	Brain Pop: Cellular Structures http://www.biology4kids.com/files/cell_main.html Good site for help, many topics. Pictures of cells as well as other activities: http://www.kathimitchell.com/cells.html These sites have many topics on cells: http://www.wiley.com/legacy/college/boyer/0470003790/animations/cell_structure/cell_structure.html <a checkbox"="" href="http://jc-</td> <td><input type="> 3210.1.1 Investigate cells using a compound microscope.		*GLE0801.6.2 ELA – Analyze the organizational structure of informational texts. *GLE0806.5.2 Math - Select, create, and use appropriate graphical representation of data. <i>Planting the Seed Initiative Activity-</i> Invite a lab tech or nurse to discuss bacteria-prokaryotic cells. Students can create a poster explaining how they are different from plant and animal cells.	

		schools.net/PPTs-science.html 7 th grade textbook can be used as simple review for cells and cell organelle.			
CLE 3210.4.3 Predict the outcome of monohybrid and dihybrid crosses.	How are Punnett squares used in the study of genetics?	Brain Pop-Heredity and Genetics Jefferson County Schools-great topics for all science areas http://jc-schools.net/PPTs-science.html		<input type="checkbox"/> 3210.4.2 Complete and interpret genetic problems that illustrate sexlinkage, co-dominance, incomplete dominance, multiple alleles, and polygenic inheritance.	