

7th Grade Science Nine Week Curriculum Guide
Developed Summer 2009

Title: Life Science, Standard 1-Cells			Time Frame: 1 st 9weeks, weeks 1-6		
Academic Vocabulary: cytoplasm, organelle, nucleus, chloroplast, mitochondrion, ribosome, volume, tissue, organ, organ system, element, compound, organic/inorganic compound, diffusion, osmosis, cellular respiration, product. (Link to new list available fall '09 from Tn DoE)					
Grade Level Expectation (GLE)	Sample Essential Questions	Resources (TE-teacher's 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)	Integrations/Connections including Inquiry (Inq.) & Technology and Engineering (T/E) *Used continually throughout the curriculum.
GLE 0707.1.1 -Make observations and describe the structure and function of organelles found in plant/animal cells.	How are plant and animal cells organized to carry on the processes of life.	Science Safety Information TE: 42, 44-49, 51-53, 66-70, 80, 83-85, 96, 98-100, 102, 104, 130, 132, 134 169, 172, 181, 198 *0707.Inq.5-TE: TN 16-17 *0707.T/E.1, 3-TE: TN18-19 Biology4kids.com Brain Pop-cell parts Discovery Streaming- "Cells" grades 6-8 (9:10)	What is a system? Activity-matchbox cars/trucks or other items (computers, microscopes), describe which parts are essential and nonessential to the system as a whole-small groups, explain why (graphic organizer-essential, nonessential to system)	<input type="checkbox"/> 0707.1.1 Examine and describe plant and animal cells using compound microscopes. <input type="checkbox"/> 0707.1.2 Identify the function of the major plant and animal cellular organelles. <input type="checkbox"/> 0707.1.3 Make a Venn diagram to compare the structures and functions of an animal cell with a city or school. <input type="checkbox"/> 0707.1.4 Build a 3-D model of a cell.	*GLE 0707.Inq.5 Communicate scientific understanding using descriptions, explanations, and models. GLE *0707.T/E.1 Explore how technology responds to social, political, and economic needs *GLE 0707.T/E.3 Compare the intended benefits with the unintended consequences of a new technology.

					<p>*E/LA- GLE 0701.8.1 Read and comprehend a variety of works from various forms of literature.</p> <p>* Math-GLE 0706.2.3 Develop an understanding of and apply proportionality.</p> <p>*Math-GLE 0706.5.1 Collect, organize, and analyze both single- and two-variable data.</p> <p>*Math-GLE 0706.5.2 Select, create, and use appropriate graphical representations of data.</p>
<p>GLE 0707.1.2 Summarize how the different levels of organization are integrated within living systems.</p>	<p>How do different levels of organization in the human body become more complex.</p>	<p>TE: 42, 44, 47, 49, 51, 66-70, 99-100, 102, 107-108, 111, 113-114, 116-118, 122, 128-132, 134, 137, 144-154, 156, 169, 202, 208, 230</p>	<p>Sequence by picture, description and title the levels of organization of the human body.</p>	<p><input type="checkbox"/> 0707.1.5 Construct a poster that illustrates the hierarchy among cells, tissues, organs, organ systems, and organisms.</p>	<p>*E/LA-GLE 0701.1.1 Demonstrate control of Standard English through the use of grammar, usage, and mechanics (punctuation, capitalization, and spelling).</p> <p>*E/LA-GLE 0701.4.2 Gather relevant information from a variety of print and electronic sources, as well as from direct observation, interviews, and surveys.</p>

<p>GLE 0707.1.3 Describe the function of different organ systems & how collectively they enable complex multi-cellular organisms to survive.</p>	<p>Is there a system your body can live without?</p>	<p>TE: 6, 8, 11, 40, 42, 44, 69, 100, 114, 117, 132, 137, 142-145, 156, 162-165, 392, 424, 432, 445 *Inq. 3, TE: TN 16-17 Additional activity- Compare and contrast two body systems and explain how each is dependent and independent of the other.</p>		<p><input type="checkbox"/> 0707.1.6 Describe the function of different organ systems. <input type="checkbox"/> 0707.1.7 Explain how different organ systems interact to enable complex multi-cellular organisms to survive. <input type="checkbox"/> 0707.1.8 Apply the idea of the division of labor to explain why living things are organized into cells, tissues, organs, and organ systems.</p>	<p>*GLE 0707.Inq.3 Synthesize information to determine cause and effect relationships between evidence and explanations. *GLE 0701.2.4 Analyze the organizational structure of a speech. *E/LA- GLE 0701.6.1 Comprehend and summarize the main ideas and supporting details of informational texts. *E/LA-GLE 0701.6.2 Analyze the organizational structures of informational texts. *E/LA-GLE 0701.6.3 Read, interpret, and analyze text features that support inform. texts.</p>
<p>GLE 0707.1.4 Illustrate how cell division occurs in sequential stages to maintain the chromosome number of a species.</p>	<p>What stage does the cell begin/end with, and what happens in between?</p>	<p>TE: 67, 166-167, 169, 172, 174-176, 179-180, 181-187, 198-200-201 Sample activity- Graphic Organizer- compare and contrast or Venn diagram</p>	<p>Name and explain sequentially the stages of the cell cycle and determine which stage insures that the new cell will have the correct number of chromosomes (drawings, pictures, note cards, flipbook, matching, etc.)</p>	<p><input type="checkbox"/> 0707.1.9 Model the movement of chromosomes during plant cell division.</p>	<p>* E/LA-GLE 0701.2.5 Understand strategies for expressing ideas clearly and effectively in a variety of oral contexts. (TE pg. TN 30-Participate in work teams and group discussions)</p>

		Brainpop-mitosis United Streaming- “Cell Division”, 6-8, (3:44)			*Math- GLE 0706.3.1 Recognize and generate equivalent forms for simple algebraic expressions.
GLE 0707.1.5 Observe and explain how materials move through simple diffusion.	Why is diffusion necessary for cells to maintain chemical balances necessary for life?	TE: 67, 70-71, 80-82, 84-86, 96-98, 196 *Inq. 1, 2 TE: TN 16- 17 Brainpop-diffusion	Compare and contrast active and passive transport and when they happen within the cell.	<input type="checkbox"/> 0707.1.10 Design a demonstration that illustrates how materials move across a semi-permeable membrane by simple diffusion.	* GLE 0707.Inq.1 Design and conduct open-ended scientific investigations. * GLE 0707.Inq.2 Use appropriate tools and techniques to gather, organize, analyze, and interpret data. *Math- GLE 0706.2.4 Use ratios, rates and percents to solve single- and multi-step problems in various contexts.

Grade 7, Standard 2-Interdependence (not addressed at this level)

Title: Standard 3-Flow of Matter and Energy				Time Frame: 1 st 9 weeks, weeks 7-9	
Academic Vocabulary: cellular respiration, diffusion, compound, organic compound, inorganic compound, osmosis, product, element. Link to new list available fall 09 from Tn DoE					
Grade Level Equivalent (GLE)	Sample Essential Questions	Resources (TE-Teacher's Edition)	Common Experiences	Checks for Understanding (for Inq. and T/E, see state standards)	Integrations/Connections including Inquiry (Inq.) & Technology and Engineering (T/E) *Used continually throughout the curriculum.
GLE 0707.3.1 Distinguish between the basic features of photosynthesis and respiration.	How are the molecules arranged differently in photosynthesis than in respiration?	TE: 70, 87-88, 91-92, 96-99 *7707.T/E.2-TE: TN18-19 Brainpop-Photosynthesis, Cellular Respiration	Differentiate between the components of photosynthesis and respiration and their position in the respective equations (note cards-or computer paper, each student is a part of the equation, word or formulas)	<input type="checkbox"/> 0707.3.1 Associate the fundamental processes of photosynthesis and respiration with appropriate cell structures. <input type="checkbox"/> 0707.3.2 Examine and identify the chloroplasts in a leaf cell. <input type="checkbox"/> 0707.3.3 Identify the materials used by plants to make food. <input type="checkbox"/> 0707.3.4 Create a chart that compares reactants and products of photosynthesis and respiration.	*GLE 0707.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. *Math- GLE 0706.1.1 Use mathematical language, symbols, and definitions while developing mathematical reasoning. GLE 0706.1.2 Apply and adapt a variety of appropriate strategies to problem solving, including estimation, and reasonableness of the solution.

<p>GLE 0707.3.2 Investigate the exchange of oxygen and carbon dioxide between living things and the environment.</p>	<p>How does the CO₂/O₂ cycle allow for a symbiotic relationship between plants and animals.</p>	<p>TE: 91 (cycle), 70, 87, 92, 97, 99, 128 Sample activity-draw the cycle and trace the correct path of O₂ and CO₂ exchange.</p>		<p>☐ 0707.3.5 Model the pathways of water, oxygen, and carbon dioxide through a plant. ☐ 0707.3.6 Describe the movement of oxygen and carbon dioxide between living things and the environment. ☐ 0707.3.7 Describe structures that animals use to obtain oxygen.</p>	<p>*Math-GLE 0706.3.5 Understand and graph proportional relationships. <i>Plant the Seed Initiative</i> Activity-Research which types of plants produce the most/least oxygen (example-coniferous trees vs. deciduous trees) present in some form-paragraph, power point, poster, graph, or illustration</p>
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Title: Standard 4-Hereditry				Time Frame: 2 nd 9 weeks	
Academic Vocabulary: mitosis, chromosome, asexual reproduction, sexual reproduction, gene. Link to new list available fall 09 from Tn DoE					
Grade Level Equivalent (GLE)	Sample Essential Questions	Resources (TE-Teacher's Edition)	Common Experiences	Checks for Understanding (for Inq. and T/E, see state standards)	Integrations/Connections including Inquiry (Inq.) & Technology and Engineering (T/E) *Used continually throughout the curriculum.
GLE 0707.4.1 Compare and contrast the fundamental features of sexual and asexual reproduction.	Why is it important for most multi-cellular organisms to reproduce sexually rather than asexually?	TE: 132, 137-138, 169, 172, 174, 182, 187, 198, 200-202, 204-205, 208, 211, 213-214, 228, 230 Biology4kids.com (search asexual reproduction)	Venn diagram-sexual vs. asexual	<input type="checkbox"/> 0707.4.1 Classify organisms according to whether they reproduce sexually or asexually.	
GLE 0707.4.2 Demonstrate an understanding of sexual reproduction in flowering plants.	What parts of a flower must be present in order for the flower to reproduce?	TE: 102, 114, 122, 128, 131-132, 137, 169, 172-174, 180, 198, 200-202, 204, 206-208, 213, 223, 217, 220-221, 223-225, 228-229, 230-231, TN25 *Inq. 4, TE: TN 16-17	Illustrate parts of a flower including complete male and female reproductive parts.	<input type="checkbox"/> 0707.4.2 Label and explain the function of the reproductive parts of a flower. <input type="checkbox"/> 0707.4.3 Describe various methods of plant pollination.	*GLE 0707.Inq.4 Recognize possible sources of bias and error, alternative explanations, and questions for further exploration.
GLE 0707.4.3 Explain the relationship among genes, chromosomes, and inherited traits.	What word order and sentences best explain the relationship between genes, DNA, and chromosomes (simplest to most complex)?	TE: 169, 172, 174, 178, 188, 193, 198-201, 232, 234, 242, 246, 248, 256-259 Student needs to understand order of complexity and how each is related to the other-student made		<input type="checkbox"/> 0707.4.4 Investigate the relationship among DNA, genes, and chromosomes.	* E/LA-GLE 0701.3.1 Write in a variety of modes for a variety of audiences and purposes. * E/LA-GLE 0701.3.3 Organize ideas into an essay with an introduction, developing paragraphs, conclusion,

		bookmarkers work well Brainpop-DNA, Heredity			and appropriate transitions.
GLE 0707.4.4 Predict the probable appearance of offspring based on the genetic characteristics of the parents.	If a white rabbit is crossed with a black rabbit, what color will the offspring be? Defend your answer. If you know the recessive phenotype, what else can be determined?	TE: 169, 172, 188, 194-195, 232, 234, 237, 240, 241-242, 247-248, 256-259 *0707.T/E.4-TE: TN 18-19 http://serendip.brynmawr.edu/sci_edu/waldron/pdf/DragonGenetics2Protocol.doc Sample lab activity- http://www.uga.edu/srel/kidsdoscience/kidsdoscience-genetics-puppets.htm Brainpop-Punnett Squares	Lab crossing traits to model the traits of an organism	<input type="checkbox"/> 0707.4.5 Explain the differences between dominant and recessive traits. <input type="checkbox"/> 0707.4.6 Use a Punnett square to predict genotypes of offspring from a monohybrid cross. <input type="checkbox"/> 0707.4.7 Draw a phenotypically accurate picture of an individual whose traits are modeled by the role of a die.	*GLE 0707.T/E.4 Describe and explain adaptive and assistive bioengineered products. <i>Plant the Seed Initiative</i> Activity-invite a speaker from the co-op or a farmer to discuss how certain characteristics are important to their farming activities (plants or animals).

Grade 7, Standard 5-Biodiversity and Change (not addressed at this level)

Grade 7, Standard 6-The Universe (not addressed at this level)

Title: Standard 7-The Earth				Time Frame: 3 rd 9weeks, weeks 1-6	
Academic Vocabulary: density, runoff. Link to new list available fall 09 from Tn DoE					
Grade Level Equivalent (GLE)	Sample Essential Questions	Resources (TE-Teacher's Edition)	Common Experiences	Checks for Understanding (for Inq. and T/E, see state standards)	Integrations/Connections including Inquiry (Inq.) & Technology and Engineering (T/E) *Used continually throughout the curriculum.
GLE 0707.7.1 Describe the physical properties of minerals.	Is color a good identifying characteristic for minerals? Why or why not? What are three ways minerals are used in your everyday life?	TE: 266-271, 273-276, 290-292, 294-297 *0707.T/E.1: TN 18-19 Rock identification quiz- fi.edu or google rockhound, Franklin Institute Yuprocks.com -gives pictures of rocks and minerals	Mineral identification lab, example TE pg. 290-291	<input type="checkbox"/> 0707.7.1 Organize and explain information about the properties of minerals and their uses.	*GLE 0707.T/E.1 Explore how technology responds to social, political, and economic needs.
GLE 0707.7.2 Summarize the basic events that occur during the rock cycle.	Can a metamorphic rock be changed into a sedimentary rock in the rock cycle? Why or why not? Explain. Would you want to live near a working gold mine? Give 3 reasons for your answer.	TE: 266-267, 277-284, 286-289, 292, 294-297 Sample lab-Pancake rocks to demonstrate 3 rock types and the rock cycle. Google "Rock Cycle Animation" choose classzone site	Illustrate the rock cycle and the path of a specific rock type-TE pg. 287	<input type="checkbox"/> 0707.7.2 Label a diagram that depicts the major processes of the rock cycle. <input type="checkbox"/> 0707.7.3 Distinguish among sedimentary, igneous, and metamorphic rocks and relate these to a simple diagram of the rock cycle.	

<p>GLE 0707.7.3 Analyze the characteristics of the earth's layers and the location of the major plates.</p>	<p>Which of Earth's layers is the least dense and why? Name the plate you live on and all the plates it touches.</p>	<p>TE: 298, 308, 311, 314, 318-319, 322, 324-325</p>		<p><input type="checkbox"/> 0707.7.4 Recognize that the earth's layers have different thickness, states of matter, densities, and chemical makeup.</p>	<p>*E/LA-GLE 0701.7.4 Apply and adapt the principles of written composition to create coherent media productions.</p>
<p>GLE 0707.7.4 Explain how earthquakes, mountain building, volcanoes, and sea floor spreading are associated with movements of the earth's major plates.</p>	<p>How does the movement of tectonic plates cause earthquakes? Volcanoes? Sea-floor spreading? Mountain building? Explain how?</p>	<p>TE: 263-265, 298, 300-308, 310-311, 313, 315-330, 333-339, 342-344, 346-352, 354-357, 392, 396, 410, 413 www.k12science.org (activity-Musical Plates-enrichment lesson 4, and 5 Enchanted Learning-Plate Tectonics Puzzle</p>	<p>Compare and contrast the type of movement and activities involved in convergent, divergent, and transform boundaries.</p>	<p><input type="checkbox"/> 0707.7.5 Analyze the relationship between plate movements and areas of earthquake activity. <input type="checkbox"/> 0707.7.6 Analyze the relationship between plate movements and mountain building. <input type="checkbox"/> 0707.7.7 Analyze the relationship between plate movements, volcanoes, and sea floor spreading.</p>	<p>*Math-GLE 0706.4.3 Understand and use scale factor to describe the relationships between length, area, and volume.</p>
<p>GLE 0707.7.5 Differentiate between renewable and nonrenewable resources in terms of their use by man.</p>	<p>What makes the distinction between renewable and nonrenewable resources?</p>	<p>TE: 358, 360-364, 366-367, 378-383, 390-391, 394 Organize a group of resources into two groups-renewable and nonrenewable, explain how each group is affected by humans</p>	<p>.</p>	<p><input type="checkbox"/> 0707.7.8 Determine the impact of man's use of renewable and nonrenewable resources on future supplies.</p>	

<p>GLE 0707.7.6 Evaluate how human activities affect the earth's land, oceans, and atmosphere.</p>	<p>What are 3 human activities that negatively affect the land, ocean, and atmosphere? Develop a plan to correct these issues.</p>	<p>TE: 42, 50, 70, 72, 76, 94, 100, 108, 110, 114, 121, 158-159, 171, 216, 264, 358, 368-372, 375-377, 384-394 Students may research their carbon footprint to share in presentation format.</p>		<p><input type="checkbox"/> 0707.7.9 Evaluate how human activities affect the condition of the earth's land, water, and atmosphere.</p>	<p>GLE 0707.24 Oral presentations. <i>Plant the Seed Initiative</i> Activity-Invite Solid Waste Department to discuss local pollution-land, water, and air.</p>
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*Grade 7, Standard 8-The Atmosphere (not addressed at this level)

*Grade 7, Standard 9-Matter (not addressed at this level)

*Grade 7, Standard 10-Energy (not addressed at this level)

Title: Standard 11-Motion				Time Frame: 3 rd 9 weeks, weeks 7-9 and 4 th 9 weeks, weeks 1-3	
Academic Vocabulary: Link to list available fall 09 from Tn DoE					
Grade Level Equivalent (GLE)	Sample Essential Questions	Resources (TE-Teacher's Edition)	Common Experiences	Checks for Understanding (for Inq. and T/E, see state standards)	Integrations/Connections including Inquiry (Inq.) & Technology and Engineering (T/E) *Used continually throughout the curriculum.
GLE 0707.11.1 Identify six types of simple machines.	Name the 6 simple machines and 2 ways each is used daily.	TE: 392, 424, 432-433, 436-437, 441-443, 448-49, 451 Discovery Streaming: Simple Machines-Greeks (3:45) 6-8 gr.		<input type="checkbox"/> 0707.11.1 Compare the six types of simple machines.	
GLE 0707.11.2 Apply the equation for work in experiments with simple machines to determine the amount of force needed to do work.	Write the formula for work and explain the parts.	TE: 392, 424-426, 428-430, 432-437, 440, 442-443, 444, 448-451, 480-481, TN 29 Sample lab TE 444-445 Design an experiment on paper involving at least one simple machine.	Apply the equation for work. TE pg. 427-Quick Demo can be used as a mini lab.	<input type="checkbox"/> 0707.11.2 Compete an investigation to determine how machines reduce the amount of force needed to do work.	*Math-GLE 0706.1.3 Develop independent reasoning to communicate mathematical ideas and derive algorithms and/or formulas. *Math-GLE 0706.1.4 Move flexibly between concrete and abstract representations of mathematical ideas in order to solve problems, model mathematical ideas, and communicate solution strategies.
GLE 0707.11.3 Distinguish between speed and velocity.	What does velocity involve that speed does not, what do the two have in common?	TE: 392, 396, 398, 400-402, 420-423, 430, 432-433	Lab demonstrating speed ($S=d/t$)-matchbox cars, build paper air planes, rocket launches, etc.	<input type="checkbox"/> 0707.11.3 Summarize the difference between the speed and velocity	*Math- GLE 0706.1.5 Use mathematical ideas and processes in different settings to formulate patterns, analyze graphs,

				based on the distance and amount of time traveled.	set up and solve problems and interpret solutions. *Math-GLE 0706.1.6 Read and interpret the language of mathematics and use written/oral communication to express mathematical ideas precisely.
GLE 0707.11.4 Investigate how Newton's laws of motion explain an object's movement.	Illustrate and explain how winter weather sometimes influences Newton's 1 st law? Mathematically determine which would impact a tree with the most force, a four-wheeler with one rider or an empty log truck? Describe a scenario using Newton's third law.	TE: 392, 396-397, 410, 414-417, 420-424, 432-433 $F=ma$ (force= mass times acceleration) make up your own numbers for the acceleration and mass of the 4-wheeler and log truck. Explain how a magician removing the tablecloth without removing the dishes is an example of Newton's 1 st law.		<input type="checkbox"/> 0707.11.4 Recognize how a net force impacts an objects motion.	<i>Plant the Seed</i> Initiative Activity-Invite Police or Resque Squad to share information on seatbelts, size and speed of automobiles and the effect each has on a collision.
GLE 0707.11.5 Compare and contrast the basic parts of a wave.	What are the three main parts of a wave? Illustrate your answer.	TE: 392, 452, 454, 457, 459, 463, 475-479		<input type="checkbox"/> 0707.11.5 Create a graphic organizer to illustrate and describe the basic parts of a wave.	
GLE 0707.11.6 Investigate the types and fundamental properties of waves.	How are waves, energy, and matter related?	TE: 392, 410, 452, 454, 458-459, 461, 464-465, 471-474, 476-479	Diagram/Illustrate parts of a wave.	<input type="checkbox"/> 0707.11.6 Compare how transverse and longitudinal waves are produced and transmitted.	

		TE: 457 *Another name for longitudinal is compressional. Sample lab-TE pg. 464-465			
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Title: Preview 8th grade standard 12-Forces in Nature			Time Frame: 4 th nine weeks, after 7 th grade GLE's have been taught and after TCAP		
Academic Vocabulary: Currently being updated by Tn DoE, link to come later					
Grade Level Expectation (GLE)	Sample Essential Questions	Resources (TE-teacher's edition)	Common Experiences	Checks for Understanding (for Inq. and T/E, see state standards)	Integrations/Connections including Inquiry (Inq.) & Technology and Engineering (T/E) *Used continually throughout the curriculum.
GLE 0807.12.4 Identify factors that influence the amount of gravitational force between objects.	Why are we able to have liquid water on earth? Gravity keeps the sun and earth just far enough apart for us to have water in liquid form.	Brainpop-Gravity Discovery Streaming- "Forces and Gravity", video segment, (3:31) http://www.sciencenetlinks.com/interactives/gravity.html glencoe.com *See 8 th grade teacher for sample activities.		<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.	LA-GLE 0801.2.7 Participate in work teams and group discussions. MATH-GLE 0806.4.3 Understand the necessary levels of accuracy and precision in measurement. MATH-GLE 0806.4.4 Understand both metric and customary units of measurement.
GLE 0807.12.5 Recognize that gravity is the force that controls the motion of objects in the solar system.	Thanks to _____, the entire solar system can be held together in position. Explain how this works.	Brainpop-Newton's 3 Laws Discovery Streaming- "Examining Gravity and It's Pull", video segment (2:35) Discovery Streaming- "The Sun, Solar System, Planetary Orbits and Gravity", video segment, (2:25) *glencoe.com See 8 th grade teacher for sample activities.		<input type="checkbox"/> 0807.12.7 Explain how motion of objects in the solar system is affected by gravity.	LA-GLE 0801.6.1 Comprehend and summarize the main ideas and supporting details of informational texts. MATH-GLE 0806.2.2 Solve problems involving exponents and scientific notation using technology appropriately.

