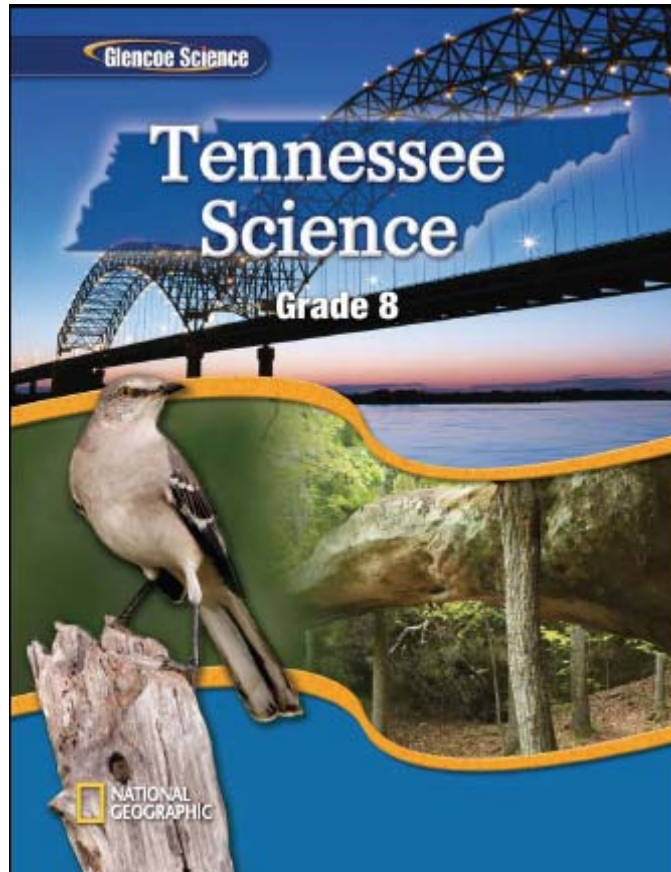


Correlation of  
*Glencoe Tennessee Science*  
*Grade 8*



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# Grade 8—Tennessee Science Standards correlated to Glencoe Tennessee Science Grade 8

Grade 8: Inquiry	
<b>Conceptual Strand</b> <i>Understandings about scientific inquiry and the ability to conduct inquiry are essential for living in the 21<sup>st</sup> century.</i>	
<b>Guiding Question</b> <i>What tools, skills, knowledge, and dispositions are needed to conduct scientific inquiry?</i>	
Grade Level Expectations	Page Numbers
<b>GLE 0807.Inq.1</b> Design and conduct open-ended scientific investigations.	422–423, 450, 464–465
<b>GLE 0807.Inq.2</b> Use appropriate tools and techniques to gather, organize, analyze, and interpret data.	98, 100–102, 107–110, 112–113, 190–191, 410
<b>GLE 0807.Inq.3</b> Synthesize information to determine cause and effect relationships between evidence and explanations.	6, 8, 13, 30–31, 338, 344
<b>GLE 0807.Inq.4</b> Recognize possible sources of bias and error, alternative explanations, and questions for further exploration.	126, 144–145
<b>GLE 0807.Inq.5</b> Communicate scientific understanding using descriptions, explanations, and models.	202, 212–213, 220–223, 430, 439, 448–449
Checks for Understanding	Page Numbers
✓ <b>0807.Inq.1</b> Design and conduct an open-ended scientific investigation to answer a question that includes a control and appropriate variables.	6, 8, 10–11, 13, 15, 29–31, 48, 56, 64–66, 73, 75, 77, 84–85, 98, 102, 108, 110, 118–119, 126, 128, 130, 144–145, 152, 159, 164, 167–168, 171, 176–177, 250–251, 278–279, 297–299, 306, 321–323, 330–331, 338–339, 341, 343, 366–367, 372–373, 380, 384, 387, 391, 393–395, 402, 404, 408
✓ <b>0807.Inq.2</b> Identify tools and techniques needed to gather, organize, analyze, and interpret data collected from a moderately complex scientific investigation.	6, 8, 15, 98–103, 105–107, 113, 184–185, 190, 203, 211
✓ <b>0807.Inq.3</b> Use evidence from a dataset to determine cause and effect relationships that explain a phenomenon.	6, 8, 13, 15, 30–31, 118–119, 338, 344
✓ <b>0807.Inq.4</b> Review an experimental design to determine possible sources of bias or error, state alternative explanations, and identify questions for further investigation.	126, 144–145
✓ <b>0807.Inq.5</b> Design a method to explain the results of an investigation using descriptions, explanations, or models.	98, 100, 105, 126–127, 133, 184–185, 202, 212–213, 220–223, 250, 258, 260, 263, 269–271, 338, 352, 356–359, 430, 439, 448–449
State Performance Indicators	Page Numbers

<b>SPI 0807.Inq.1</b> Design a simple experimental procedure with an identified control and appropriate variables.	34–37, 362–363
<b>SPI 0807.Inq.2</b> Select tools and procedures needed to conduct a moderately complex experiment.	34–37, 92–93, 98, 108–109, 122–125
<b>SPI 0807.Inq.3</b> Interpret and translate data into a table, graph, or diagram.	98, 114–117, 122–126, 128, 152–153, 159, 166, 190, 206, 220, 241, 347, 464–465
<b>SPI 0807.Inq.4</b> Draw a conclusion that establishes a cause and effect relationship supported by evidence.	34–35, 338, 344
<b>SPI 0807.Inq.5</b> Identify a faulty interpretation of data that is due to bias or experimental error.	126, 144–145

## Grade 8: Technology & Engineering

### Conceptual Strand

*Society benefits when engineers apply scientific discoveries to design materials and processes that develop into enabling technologies.*

### Guiding Question

*How do science concepts, engineering skills, and applications of technology improve the quality of life?*

### Grade Level Expectations

### Page Numbers

<b>GLE 0807.T/E.1</b> Explore how technology responds to social, political, and economic needs.	95–96, 338, 348–349, 351, 369–370, 372, 374–375, 377
<b>GLE 0807.T/E.2</b> Know that the engineering design process involves an ongoing series of events that incorporate design constraints, model building, testing, evaluating, modifying, and retesting.	366–367, 464–465, 362–363
<b>GLE 0807.T/E.3</b> Compare the intended benefits with the unintended consequences of a new technology.	338, 352–353, 357, 369–370
<b>GLE 0807.T/E.4</b> Describe and explain adaptive and assistive bioengineered products.	

### Checks for Understanding

### Page Numbers

<b>✓0807.T/E.1</b> Use appropriate tools to test for strength, hardness, and flexibility of materials.	338
<b>✓0807.T/E.2</b> Apply the engineering design process to construct a prototype that meets certain specifications.	338, 352, 357–359, 366–367, 464–465
<b>✓0807.T/E.3</b> Explore how the unintended consequences of new technologies can impact society.	4–5, 92–93, 220, 242–243, 338, 352–353, 355
<b>✓0807.T/E.4</b> Research bioengineering technologies that advance health and contribute to improvements in our daily lives.	4–5, 92–93, 188–190, 203, 211, 338, 348, 350–351
<b>✓0807.T/E.5</b> Develop an adaptive design and test its effectiveness.	

### State Performance Indicators

### Page Numbers

<b>SPI 0807.T/E.1</b> Identify the tools and procedures needed to test the design features of a prototype.	362–365
<b>SPI 0807.T/E.2</b> Evaluate a protocol to determine if the engineering design process was successfully applied.	362–363
<b>SPI 0807.T/E.3</b> Distinguish between the intended benefits and the unintended consequences of a new technology.	338, 352–353, 362–363, 369–370
<b>SPI 0807.T/E.4</b> Differentiate between adaptive and assistive bioengineered products (e.g., food, biofuels, medicines, integrated pest management).	338, 348, 351, 362–363

## Grade 8: Standard 5—Biodiversity and Change

### Conceptual Strand 5

*A rich variety of complex organisms have developed in response to a continually changing environment*

### Guiding Question 5

*How does natural selection explain how organisms have changed over time?*

Grade Level Expectations	Page Numbers
<b>GLE 0807.5.1</b> Identify various criteria used to classify organisms into groups.	6–7, 16–17, 20
<b>GLE 0807.5.2</b> Use a simple classification key to identify a specific organism.	6, 24, 26–28
<b>GLE 0807.5.3</b> Analyze how structural, behavioral, and physiological adaptations within a population enable it to survive in a given environment.	6, 21, 23, 38, 40, 43, 47
<b>GLE 0807.5.4</b> Explain why variation within a population can enhance the chances for group survival.	38, 40, 43–44, 47
<b>GLE 0807.5.5</b> Describe the importance of maintaining the earth’s biodiversity.	64, 78, 80–81, 83
<b>GLE 0807.5.6</b> Investigate fossils in sedimentary rock layers to gather evidence of changing life forms.	38, 40, 42, 49–51, 53, 55
<b>Checks for Understanding</b>	
✓ <b>0807.5.1</b> Select characteristics of plants and animals that serve as the basis for developing a classification key.	6–7, 29
✓ <b>0807.5.2</b> Create and apply a simple classification key to identify an organism.	6, 24, 27–28
✓ <b>0807.5.3</b> Compare and contrast the ability of an organism to survive under different environmental conditions.	6, 16, 19–20, 38, 40, 45
✓ <b>0807.5.4</b> Collect and analyze data relating to variation within a population of organisms.	p. 4–5, 38, 40, 47–48, 56
✓ <b>0807.5.5</b> Prepare a poster that illustrates the major factors responsible for reducing the amount of global biodiversity.	64–66, 70, 73, 75–77, 84–85, 188–190, 203, 208

✓ <b>0807.5.6</b> Prepare graphs that demonstrate how the amount of biodiversity has changed in a particular continent or biome.	64, 66, 69, 76, 78–79, 83–85
✓ <b>0807.5.7</b> Create a timeline that illustrates the relative ages of fossils in sedimentary rock layers.	4–5, 38, 49, 51, 55
<b>State Performance Indicators</b>	
<b>SPI 0807.5.1</b> Use a simple classification key to identify an unknown organism.	6, 24–25, 27–28, 34–37
<b>SPI 0807.5.2</b> Analyze structural, behavioral, and physiological adaptations to predict which populations are likely to survive in a particular environment.	34–37, 60–63
<b>SPI 0807.5.3</b> Analyze data on levels of variation within a population to make predictions about survival under particular environmental conditions.	38, 40, 45–46, 48, 56, 60–63
<b>SPI 0807.5.4</b> Identify several reasons for the importance of maintaining the earth's biodiversity.	64, 78, 80, 82–85, 88–91
<b>SPI 0807.5.5</b> Compare fossils found in sedimentary rock to determine their relative age.	38, 40, 49, 51, 55, 60–63
<b>Grade 8 : Standard 9—Matter</b>	
<b>Conceptual Strand 9</b> <i>The composition and structure of matter is known, and it behaves according to principles that are generally understood.</i>	
<b>Guiding Question 9</b> <i>How does the structure of matter influence its physical and chemical behavior?</i>	
<b>Grade Level Expectations</b>	
<b>GLE 0807.9.1</b> Understand that all matter is made up of atoms.	95–96, 126, 128, 132, 152, 159, 166, 190–192, 194, 201
<b>GLE 0807.9.2</b> Explain that matter has properties that are determined by the structure and arrangement of its atoms.	95–96, 126, 128, 132–133, 152, 154, 156, 158, 250, 252–254
<b>GLE 0807.9.3</b> Interpret data from an investigation to differentiate between physical and chemical changes.	126, 134, 137, 144–145, 278, 280, 284, 297
<b>GLE 0807.9.4</b> Distinguish among elements, compounds, and mixtures.	190, 203, 209, 211–213, 250, 260–261, 269–271, 306–309, 313–314, 317–321, 338, 340, 343–344, 346
<b>GLE 0807.9.5</b> Apply the chemical properties of the atmosphere to illustrate a mixture of gases.	336–337
<b>GLE 0807.9.6</b> Use the periodic table to determine the characteristics of an element.	188–189, 220, 222–223, 225, 227–229, 235–236, 240–243, 250, 252, 256–259
<b>GLE 0807.9.7</b> Explain the Law of Conservation of Mass.	126, 134, 143
<b>GLE 0807.9.8</b> Interpret the events represented by a chemical equation.	278, 280, 285

<b>GLE 0807.9.9</b> Explain the basic difference between acids and bases.	306, 322–323, 329
<b>Checks for Understanding</b>	
✓ <b>0807.9.1</b> Identify atoms as the fundamental particles that make up matter.	190, 192, 196, 199–201
✓ <b>0807.9.2</b> Illustrate the particle arrangement and type of motion associated with different states of matter.	152, 154, 157–160, 163–168, 172, 175
✓ <b>0807.9.3</b> Measure or calculate the mass, volume, and temperature of a given substance.	126, 128, 130, 132, 140, 152, 168, 173, 190, 192, 201
✓ <b>0807.9.4</b> Calculate the density of various objects.	126, 128, 130–131, 152, 168, 173
✓ <b>0807.9.5</b> Distinguish between elements and compounds by their symbols and formulas.	220, 222, 228, 250–251
✓ <b>0807.9.6</b> Differentiate between physical and chemical changes.	126, 128, 130–131, 134–136, 143
✓ <b>0807.9.7</b> Describe how the characteristics of a compound are different than the characteristics of their component parts.	220, 236, 238, 250, 260, 265, 267–269, 338, 340, 342, 346–347
✓ <b>0807.9.8</b> Determine the types of interactions between substances that result in a chemical change.	278, 280, 282, 290–291, 294–296, 298–299, 338, 340–341
✓ <b>0807.9.9</b> Explain how the chemical makeup of the atmosphere illustrates a mixture of gases.	336–337
✓ <b>0807.9.10</b> Identify the atomic number, atomic mass, number of protons, neutrons, and electrons in an atom of an element using the periodic table.	190, 203–204, 206–207, 209, 211–213, 220, 222, 228, 250, 252, 255–256, 260, 263
✓ <b>0807.9.11</b> Use investigations of chemical and physical changes to describe the Law of Conservation of Mass.	278, 280, 284
✓ <b>0807.9.12</b> Differentiate between the reactants and products of a chemical equation.	306, 322
✓ <b>0807.9.13</b> Determine whether a substance is an acid or a base by its reaction to an indicator.	306, 322, 326, 328–331
<b>State Performance Indicators</b>	
<b>SPI 0807.9.1</b> Recognize that all matter consists of atoms.	148–151, 169–170, 216–219, 274–275
<b>SPI 0807.9.2</b> Identify the common outcome of all chemical changes.	126, 134, 137, 139–140, 218–219, 278–279
<b>SPI 0807.9.3</b> Classify common substances as elements or compounds based on their symbols or formulas.	250, 260, 262–263, 274–275
<b>SPI 0807.9.4</b> Differentiate between a mixture and a compound.	306, 308, 312–315, 319–321, 334–337, 362–365

<b>SPI 0807.9.5</b> Describe the chemical makeup of the atmosphere.	336–337
<b>SPI 0807.9.6</b> Compare the particle arrangement and type of particle motion associated with different states of matter.	150–152, 160, 163–164, 166–167, 180–183
<b>SPI 0807.9.7</b> Apply an equation to determine the density of an object based on its mass and volume.	148–152, 168, 173, 175–177, 180–183, 362–365
<b>SPI 0807.9.8</b> Interpret the results of an investigation to determine whether a physical or chemical change has occurred.	126, 134, 137, 148–153, 180–181, 278, 280, 282, 284, 287, 289, 297, 302–305
<b>SPI 0807.9.9</b> Use the periodic table to determine the properties of an element.	216–223, 226–229, 232–233, 235–236, 240–243, 246–250, 252, 256–260, 268, 274–275, 339, 362–365
<b>SPI 0807.9.10</b> Identify the reactants and products of a chemical reaction.	302–305, 362–365
<b>SPI 0807.9.11</b> Recognize that in a chemical reaction the mass of the reactants is equal to the mass of the products (Law of Conservation of Mass).	p. 126, 134, 143, 148–151, 278, 280, 284, 286, 289, 302–305
<b>SPI 0807.9.12</b> Identify the basic properties of acids and bases.	306, 322–323, 325, 329–331, 334–337

## Grade 8: Standard 12—Forces in Nature

### Conceptual Strand 12

*Everything in the universe exerts a gravitational force on everything else; there is an interplay between magnetic fields and electrical currents.*

### Guiding Question 12

*What are the scientific principles that explain gravity and electromagnetism?*

### Grade Level Expectations

<b>GLE 0807.12.1</b> Investigate the relationship between magnetism and electricity.	411–412, 414, 416, 421–423
<b>GLE 0807.12.2</b> Design an investigation to change the strength of an electromagnet.	402, 404, 406
<b>GLE 0807.12.3</b> Compare and contrast the earth's magnetic field to that of a magnet and an electromagnet.	369–370, 402, 404, 407, 411, 415, 421
<b>GLE 0807.12.4</b> Identify factors that influence the amount of gravitational force between objects.	372–374, 377, 379–381, 387–388, 390, 392–393
<b>GLE 0807.12.5</b> Recognize that gravity is the force that controls the motion of objects in the solar system.	430, 432–433, 436, 438, 440, 443–444, 447–452, 454–457

### Checks for Understanding

✓ <b>0807.12.1</b> Create a diagram to explain the relationship between electricity and magnetism.	412, 422–423
✓ <b>0807.12.2</b> Produce an electromagnet using a bar magnet and a wire coil.	402, 411–412, 422–423
✓ <b>0807.12.3</b> Experiment with an electromagnet to determine how to vary its strength.	402–404, 406
✓ <b>0807.12.4</b> Create a chart to distinguish among the earth's magnetic field, and fields that surround a magnet and an electromagnet.	402, 404, 407–408
✓ <b>0807.12.5</b> Explain the difference between mass and weight.	372, 394–395
✓ <b>0807.12.6</b> Identify factors that influence the amount of gravitational force between objects.	372, 380–381, 387–388, 391–392
✓ <b>0807.12.7</b> Explain how the motion of objects in the solar system is affected by gravity.	430, 432–435, 437–440, 442, 447
<b>State Performance Indicators</b>	
<b>SPI 0807.12.1</b> Recognize that electricity can be produced using a magnet and wire coil.	422–423
<b>SPI 0807.12.2</b> Describe the basic principles of an electromagnet.	402, 404–405, 409–412, 417–419, 421, 426–429
<b>SPI 0807.12.3</b> Distinguish among the Earth's magnetic field, a magnet, and the fields that surround a magnet and an electromagnet.	402–405, 407–410, 426–429
<b>SPI 0807.12.4</b> Distinguish between mass and weight using appropriate measuring instruments and units.	
<b>SPI 0807.12.5</b> Determine the relationship among the mass of objects, the distance between these objects, and the amount of gravitational attraction.	372, 380, 383–384, 386, 398–401
<b>SPI 0807.12.6</b> Illustrate how gravity controls the motion of objects in the solar system.	400–401, 430, 432, 434, 436, 438, 440–441, 445, 447, 460–463

**Glencoe Tennessee Science Grade 8 correlated to  
Grade 8—Tennessee Science Standards**

Chapter-Section	Title	Pages	Grade Level Expectations	Checks for Understanding	State Performance Indicators
<b>Chapter 1</b>	<b>Exploring and Classifying Life</b>	<b>6–37</b>			
1–1	What is science?	8–15		✓0807.Inq.1, ✓0807.Inq.2, ✓0807.Inq.3	
1–2	Living Things	16–20	GLE 0807.5.1	✓0807.5.3	
1–3	Life Comes from Life	21–23	GLE 0807.5.3		
1-4	How are living things classified?	24–28	GLE 0807.5.2	✓0807.5.2	SPI 0807.5.1
<b>Chapter 2</b>	<b>Adaptations over Time</b>	<b>38–63</b>			
2–1	Ideas About Evolution	40–47	GLE 0807.5.3, GLE 0807.5.4, GLE 0807.5.6	✓0807.5.3, ✓0807.5.4	SPI 0807.5.3, SPI 0807.5.5
2–2	Clues About Evolution	49–55	GLE 0807.5.6,	✓0807.5.7	SPI 0807.5.5
<b>Chapter 3</b>	<b>Conserving Life</b>	<b>64–91</b>			
3–1	Biodiversity	66–76		✓0807.Inq.1, ✓0807.5.5 ✓0807.5.6,	
3–2	Conservation Biology	78–83	GLE 0807.5.5	✓0807.5.6	SPI 0807.5.4
<b>Chapter 4</b>	<b>Measurement</b>	<b>98–125</b>			
4–1	Description of Measurement	100–107	GLE 0807.Inq.2	✓0807.Inq.2, ✓0807.Inq.5	
4–2	SI Units	108–112	GLE 0807.Inq.2	✓0807.Inq.1	SPI 0807.Inq.2
4–3	Drawings, Tables, and Graphs	114–117			SPI 0807.Inq.3
<b>Chapter 5</b>	<b>Properties and Changes of Matter</b>	<b>126–151</b>			
5–1	Physical and Chemical Properties	128–132	GLE 0807.9.1, GLE 0807.9.2	✓0807.Inq.1, ✓0807.9.3, ✓0807.9.4, ✓0807.9.6	SPI 0807.Inq.3
5–2	Physical and Chemical Changes	134–143	GLE 0807.9.3, GLE 0807.9.7	✓0807.9.6	SPI 0807.9.2, SPI 0807.9.8, SPI 0807.9.11
<b>Chapter 6</b>	<b>States of Matter</b>	<b>152–183</b>			
6–1	Matter	154–158	GLE 0807.9.2	✓0807.9.2	
6–2	Changes of State	159–166	GLE 0807.9.1	✓0807.Inq.1, ✓0807.9.2	SPI 0807.Inq.3, SPI 0807.9.6
6–3	Behavior of Fluids	168–175		✓0807.Inq.1, ✓0807.9.2, ✓0807.9.3, ✓0807.9.4	SPI 0807.9.7
<b>Chapter 7</b>	<b>Inside the Atom</b>	<b>190–219</b>			

Chapter-Section	Title	Pages	Grade Level Expectations	Checks for Understanding	State Performance Indicators
7-1	Models of the Atom	192-201	GLE 0807.9.1	✓0807.9.1, ✓0807.9.3	
7-2	The Nucleus	203-211	GLE 0807.9.4	✓0807.Inq.2, ✓0807.T/E.4, ✓0807.5.5, ✓0807.9.10	
<b>Chapter 8</b>	<b>The Periodic Table</b>	<b>220-249</b>			
8-1	Introduction to the Periodic Table	222-228	GLE 0807.9.6	✓0807.Inq.5, ✓0807.9.5, ✓0807.9.10	SPI 0807.9.9
8-2	Representative Elements	229-235	GLE 0807.9.6		SPI 0807.9.9
8-3	Transition Elements	236-240	GLE 0807.9.6	✓0807.9.7	SPI 0807.9.9
<b>Chapter 9</b>	<b>Atomic Structure and Chemical Bonds</b>	<b>250-277</b>			
9-1	Why do atoms combine?	252-259	GLE 0807.9.2, GLE 0807.9.6	✓0807.9.10	
9-2	How Elements Bond	260-268	GLE 0807.9.4	✓0807.Inq.5, ✓0807.9.7, ✓0807.9.10	SPI 0807.9.3, SPI 0807.9.9
<b>Chapter 10</b>	<b>Chemical Reactions</b>	<b>278-305</b>			
10-1	Chemical Formulas and Equations	280-289	GLE 0807.9.3, GLE 0807.9.8,	✓0807.9.8, ✓0807.9.11,	SPI 0807.9.8, SPI 0807.9.11
10-2	Rates of Chemical Reactions	290-296		✓0807.9.8	
<b>Chapter 11</b>	<b>Substances, Mixtures, and Solubility</b>	<b>306-337</b>			
11-1	What is a solution?	308-313	GLE 0807.9.4		SPI 0807.9.4
11-2	Solubility	314-320	GLE 0807.9.4		SPI 0807.9.4
11-3	Acidic and Basic Solutions	322-329	GLE 0807.9.9	✓0807.Inq.1, ✓0807.9.12, ✓0807.9.13	SPI 0807.9.12
<b>Chapter 12</b>	<b>Chemistry and Technology</b>	<b>338-365</b>			
12-1	Introduction to Materials Science	340-346	GLE 0807.9.4	✓0807.9.7, ✓0807.9.8	
12-2	Science, Technology, and Engineering	348-351	GLE 0807.T/E.1	✓0807.T/E.4	SPI 0807.T/E.4
12-3	Using Science to Solve Problems	352-357	GLE 0807.T/E.3	✓0807.Inq.5, ✓0807.T/E.2, ✓0807.T/E.3	SPI 0807.T/E.3
<b>Chapter 13</b>	<b>Force and Newton's Laws</b>	<b>372-401</b>			
13-1	Newton's First Law	374-379	GLE 0807.T/E.1, GLE 0807.12.4		
13-2	Newton's Second Law	380-386	GLE 0807.12.4	✓0807.Inq.1, ✓0807.12.6	SPI 0807.12.5
13-3	Newton's Third Law	387-392	GLE 0807.12.4	✓0807..Inq.1, ✓0807.12.6	
<b>Chapter 14</b>	<b>Magnetism</b>	<b>402-429</b>			

Chapter-Section	Title	Pages	Grade Level Expectations	Checks for Understanding	State Performance Indicators
14-1	What is magnetism?	404-409	GLE 0807.12.2, GLE 0807.12.3	✓0807.Inq.1, ✓0807.12.3, ✓0807.12.4,	SPI 0807.12.2, SPI 0807.12.3
14-2	Electricity and Magnetism	411-421	GLE 0807.12.3	✓0807.12.2	SPI 0807.12.2
<b>Chapter 15</b>	<b>The Solar System and Beyond</b>	<b>430-463</b>			
15-1	Earth's Place in Space	432-438	GLE 0807.12.5	✓0807.12.7	SPI 0807.12.6
15-2	The Solar System	440-447	GLE 0807.12.5	✓0807.12.7	SPI 0807.12.6
15-3	Stars and Galaxies	448-455	GLE 0807.12.5	✓0807.Inq.5	