

**Correlation to New Jersey Core Curriculum Content Standards for Science  
 Foundations of Physical Science with Earth and Space Science  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
08.5.1.A1 by end of grade 8	Scientific Processes	Habits of Mind	Evaluate the strengths and weaknesses of data, claims, and arguments.	110 142 448	study appliance labels and instructions create pamphlet on utility's energy saver programs study claims made by bottled water companies	76 162 181	analyze watch manufacturer's claims inferences from promotional materials for vehicles study water filtration device claims
08.5.1.A2 by end of grade 8	Scientific Processes	Habits of Mind	Communicate experimental findings to others.	20	explain your reasoning	9 9 37 39 47 145 145 151 179 181 183	present conclusions to the class reporting on an experiment describe the flow of energy based on experimental graph give a brief presentation to the class present and defend an explanation present findings and methods used present findings to the class present results to the class create water quality report write paragraph to explain results write summary of findings

**Correlation to New Jersey Core Curriculum Content Standards for Science**  
***Foundations of Physical Science with Earth and Space Science***  
**Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
08.5.1.A3 by end of grade 8	Scientific Processes	Habits of Mind	Recognize that the results of scientific investigations are seldom exactly the same and that replication is often necessary.	485	what percentage comes from this source? (problem 4)	11	calculate % error
				543	determining distance to an epicenter	76	calculate % error
				547	what explains the difference in density? (#5)	197	calculating error between your barometer and a commercial barometer
				605	how big is Earth?	199	importance of good record keeping in order to avoid error

**Correlation to New Jersey Core Curriculum Content Standards for Science**  
***Foundations of Physical Science with Earth and Space Science***  
**Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
08.5.1.A4 by end of grade 8	Scientific Processes	Habits of Mind	Recognize that curiosity, skepticism, open-mindedness, and honesty are attributes of scientists	45	Newton's Principia		
				55	Newton and the apple legend		
				73	Leonardo DaVinci		
				86	James Watt		
				110	research Franklin's electricity experiments		
				115	Volta's batteries		
				131	Georg Ohm's work with circuits		
				160	Faraday's contributions		
				312	Dalton's contributions		
				321	Mendeleev's periodic table		
				332	Linus Pauling and electronegativities		
				363	Antoine Lavoisier		
				370	research Lavoisier's contributions		
				393	Marie and Pierre Curie		
				393	accomplishments of Marie Curie		
				455	contributions of Joule		
				457	Joseph Black		

**Correlation to New Jersey Core Curriculum Content Standards for Science**  
***Foundations of Physical Science with Earth and Space Science***  
**Student Text and Investigation Manual**

Standard #: Grade level	Standard	Strand	Cumulative Progress	student text pg	detail	investigation pg	detail
08.5.1.B1 by end of grade 8	Scientific Processes	Inquiry and Problem Solving	Identify questions and make predictions that can be addressed by conducting investigations.	10	the research question and hypothesis	6	how do we ask questions and get answers from nature?
				20	how will speed change?	76	use data to predict best string length for a pendulum clock
				24	predicting speed from a graph		
				42	predict the speed of a car	121	use graph to predict mass of six objects
				429	why haven't we run out of water	156	make predictions about solubility
				434	what is in your tap water	170	which method will give fastest dissolving rate?
				437	what is acid rain	201	predicting areas with high ozone concentration based on your data
				441	why are oceans salty	204	predicting what would happen if you place your ice/water test tube into a hot cup or a cold cup
				451	what is temperature	239	estimating the number of meteor collisions on Earth during the last 3.5 billion years
				456	asking questions pertaining to specific heat and heat flow	242	predicting the results of the crystal-growing experiment
				472	why is Earth's atmosphere different from other planets		
				473	why do ears pop		
				492	why does Earth have seasons		
				501	how does rain form		
				509	how do animals survive in the desert		
				515	what is a carbon sink		
				534	why doesn't Earth get bigger and bigger		

**Correlation to New Jersey Core Curriculum Content Standards for Science**  
***Foundations of Physical Science with Earth and Space Science***  
**Student Text and Investigation Manual**

Standard #: Grade level	Standard	Strand	Cumulative Progress	student text pg	detail	investigation pg	detail
				588	what causes eclipses		
				621	is Pluto a planet		

**Correlation to New Jersey Core Curriculum Content Standards for Science  
 Foundations of Physical Science with Earth and Space Science  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
08.5.1.B2 by end of grade 8	Scientific Processes	Inquiry and Problem Solving	Design and conduct investigations incorporating the use of a control.	7	experimentation begins with a question	7	doing a controlled experiment
				11	control and experimental variables	7	perform your own experiment
				19	design your own experiment	7	design your own experiment
				26	independent and dependent variables	9	design three experiments using car and ramp
				42	devise an experiment	10	conduct car/ramp experiment
						16	decide how to vary the force on the car for this experiment
						16	investigate Newton's 2nd law
						21	choose independent and dependent variables for graph
						26	what variables can be changed?
						27	recognize variables
						34	investigate motion on a rollercoaster
						75	design pendulum experiment
						75	perform self-designed experiment
						93	decision trees and the advantage of doing multiple trials

**Correlation to New Jersey Core Curriculum Content Standards for Science**  
***Foundations of Physical Science with Earth and Space Science***  
**Student Text and Investigation Manual**

Standard #: Grade level	Standard	Strand	Cumulative Progress	student text pg	detail	investigation pg	detail
						151	design experiment to find out if mass is conserved
						170	what three factors influence dissolving rate?
						182	simulating the effect of acid rain on daphnia
						188	conducting investigation of efficiency of immersion heater
						190	effect of changing mass on collected data
						193	conducting experiments on heat transfer
						205	investigating how specific heat of water regulates Earth's temperature
						211	determining whether distance from light source or axial tilt plays a more significant role in causing the seasons
						233	identifying how the earthquake model represents an earthquake

**Correlation to New Jersey Core Curriculum Content Standards for Science**  
***Foundations of Physical Science with Earth and Space Science***  
**Student Text and Investigation Manual**

Standard #: Grade level	Standard	Strand	Cumulative Progress	student text pg	detail	investigation pg	detail
08.5.1.B3 by end of grade 8	Scientific Processes	Inquiry and Problem Solving	Collect, organize, and interpret the data that results from experiments.	5	measuring distance	4	difference between precise and accurate data
				12	importance of reliable and accurate data collection	5	measuring metric and english lengths
				24	making a graph	6	compare results with other groups
				24	interpretations of patterns in data	6	electronic timer and release technique
				26	creating graphs	6	measure time
				27	reading a graph	7	record time interval
				41	make a graph	9	collect speed data
				42	analyze a speed/distance graph	9	construct a data table
				78	analyze lever diagram	11	analyze speed change of car
				435	making observations and asking questions	11	graph speed vs. position
				476	atmospheric pressure at various altitudes graph	12	understand and use data table
				486	observing an aurora	13	graph distance vs. time
				630	use the data to answer the questions	14	record three different time intervals
				630	what evidence was used to predict the existence of the Kuiper Belt?	15	construct a quantitative graphical model
				645	apparent brightness vs. distance graph	15	interpret a speed vs. time graph
				651	arrange the items in the table (#3)	16	measure force
						17	record times

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

Standard #: Grade level	Standard	Strand	Cumulative Progress	student text pg	detail	investigation pg	detail
				651	use the diagram to answer the questions (#4)	17	record results in data table
				651	use the diagram to answer the questions (#2)	18	study data table for relationship between force and motion
				652	analysis with a spectrometer (#4)	18	organize different combinations of data
						24	use data table to record results
						24	collect weight data
						25	collect force data
						25	analyze block and tackle data
						27	use data table to record results
						27	analyze lever equilibrium data
						27	write down the number of weights you use
						30	record ropes and pulley data in table
						35	does data support hypothesis?
						36	organize data into a table
						36	collect precise speed and height data
						37	organize data into a graph of speed vs. height
						44	measure voltage

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

Standard #: Grade level	Standard	Strand	Cumulative Progress	student text pg	detail	investigation pg	detail
						45	did battery voltage change?
						46	measure current
						48	measure resistance
						51	graph voltage vs. current
						75	create data table for self-designed experiment
						75	collect mass and amplitude data
						76	analyze pendulum data
						87	measure wavelength
						116	measure mass
						117	measure volume
						121	graph mass vs. volume
						146	record detailed observations
						147	students analyze chemical change lab results
						147	organize observations into a category table
						150	record data as you perform experiment
						151	design a data table
						171	collect time data and record observations

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

Standard #: Grade level	Standard	Strand	Cumulative Progress	student text pg	detail	investigation pg	detail
						171	use data table for observations
						181	organize water quality data into a table
						182	making detailed observations
						182	observing daphnia and recording movements and behavior
						184	collecting pH readings while adding carbon dioxide
						185	constructing a graph of drops of acid vs pH
						186	measure temperature
						186	collecting temperature data
						187	construct a graphical model
						189	construct a temperature vs. time graph
						189	collecting time and temperature data
						193	collecting and recording time and temperature data
						197	constructing a graph from atmospheric pressure data

**Correlation to New Jersey Core Curriculum Content Standards for Science**  
***Foundations of Physical Science with Earth and Space Science***  
**Student Text and Investigation Manual**

Standard #: Grade level	Standard	Strand	Cumulative Progress	student text pg	detail	investigation pg	detail
						199	collecting Schönbein strips for detecting ozone
						202	collecting data of temperature and sensations
						203	graphing water and ice temperature readings
						206	collecting temperature and time data
						206	constructing a graph of time vs. temperature
						210	collecting qualitative data of light intensity at scale distance from the sun
						217	determining relationship between temperature of the atmosphere and relative humidity
						217	collecting wet and dry bulb temperature readings
						218	interpreting Doppler radar images
						237	finding a pattern of volcanoes on a bathymetric map
						243	recording observations of crystal growing
						249	using your sundial to collect accurate data

**Correlation to New Jersey Core Curriculum Content Standards for Science**  
***Foundations of Physical Science with Earth and Space Science***  
**Student Text and Investigation Manual**

Standard #: Grade level	Standard	Strand	Cumulative Progress	student text pg	detail	investigation pg	detail
						251	recording the changes in the moon over a month
						253	calibrating your telescope

**Correlation to New Jersey Core Curriculum Content Standards for Science**  
***Foundations of Physical Science with Earth and Space Science***  
**Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
08.5.1.C1 by end of grade 8	Scientific Processes	Safety	Know when and how to use appropriate safety equipment with all classroom materials.	452	safety caution on heating jar	20 24 26 40 44 56 58 146 150 158 168 172 180 182 186 188 192 202 210	safety tip for car/ramp setup ropes and pulley safety safety tip for hanging weights from lever electrical safety short circuit safety warning short circuit safety warning short circuit safety warning safety in the lab chemistry safety wear goggles and apron safety equipment hot water safety safety tip for water testing safety tips for observing Daphnia thermometer safety heat safety heat safety safety in greenhouse gas investigation safety using light bulbs

**Correlation to New Jersey Core Curriculum Content Standards for Science**  
***Foundations of Physical Science with Earth and Space Science***  
**Student Text and Investigation Manual**

Standard #: Grade level	Standard	Strand	Cumulative Progress	student text pg	detail	investigation pg	detail
						216 safety in swinging thermometers	
						256 safety in lab	

**Correlation to New Jersey Core Curriculum Content Standards for Science  
 Foundations of Physical Science with Earth and Space Science  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
08.5.1.C2 by end of grade 8	Scientific Processes	Safety	Understand and practice safety procedures for conducting science investigations.	452	safety caution on heating jar	20	safety tip for car/ramp setup
						24	ropes and pulley safety
						26	safety tip for hanging weights from lever
						40	electrical safety
						44	short circuit safety warning
						56	short circuit safety warning
						58	short circuit safety warning
						146	safety in the lab
						150	chemistry safety
						158	wear goggles and apron
						168	safety equipment
						172	hot water safety
						180	safety tip for water testing
						182	safety tips for observing Daphnia
						186	thermometer safety
						188	heat safety
						192	heat safety
						202	safety in greenhouse gas investigation
						210	safety using light bulbs

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

Standard #: Grade level	Standard	Strand	Cumulative Progress	student text pg	detail	investigation pg	detail
						216 safety in swinging thermometers 256 safety in lab	
08.5.2.A1 by end of grade 8	Science and Society	Cultural Contributions	Recognize that scientific theories: develop over time, depend on the contributions of many people, and reflect the social and political climate of their time.	73 313 320 324  391 583 585 586 589 594	impact of Da Vinci's work development of atomic theory the quests of alchemists research and create a poster to illustrate development of atomic model  scientific discovery and the atomic age history of calendars counting the days in a year the history of clocks and the division of time ancient beliefs about solar eclipses history of the telescope	130  198	investigate Rutherford's gold foil experiment  contributions of Schönbein

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
08.5.2.A2 by end of grade 8	Science and Society	Cultural Contributions	Know that scientists are men and women of many cultures who often work together to solve scientific and technological problems.	34	Aristotle vs. Newton		
				45	Newton's Laws of Motion		
				45	Newton's Principia		
				54	Newton and the force of gravity		
				55	Newton and the apple legend		
				73	Leonardo DaVinci		
				86	James Watt		
				105	Benjamin Franklin		
				107	Charles-Augustin Coulomb		
				110	research Franklin's electricity experiments		
				115	Volta's batteries		
				131	Georg Ohm's work with circuits		
				160	Faraday's contributions		
				312	Dalton's contributions		
				312	contributions of Fermi		
				321	Mendeleev's periodic table		
				321	contributions of Mendeleev		
				332	Linus Pauling and electronegativities		
				363	Antoine Lavoisier		

**Correlation to New Jersey Core Curriculum Content Standards for Science**  
***Foundations of Physical Science with Earth and Space Science***  
**Student Text and Investigation Manual**

Standard #: Grade level	Standard	Strand	Cumulative Progress	student text pg	detail	investigation pg	detail
				370	research Lavoisier's contributions		
				393	accomplishments of Marie Curie		
				393	contributions of Marie and Pierre Curie		
				393	Marie and Pierre Curie		
				455	contributions of Joule		
				457	Joseph Black		

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
08.5.2.A3 by end of grade 8	Science and Society	Cultural Contributions	Describe how different people in different cultures have made and continue to make contributions to science and technology.	45	Newton's Principia		
				55	Newton and the apple legend		
				73	Leonardo DaVinci		
				86	James Watt		
				110	research Franklin's electricity experiments		
				115	Volta's batteries		
				131	Georg Ohm's work with circuits		
				160	Faraday's contributions		
				312	Dalton's contributions		
				321	Mendeleev's periodic table		
				332	Linus Pauling and electronegativities		
				363	Antoine Lavoisier		
				370	research Lavoisier's contributions		
				393	Marie and Pierre Curie		
				393	accomplishments of Marie Curie		
				455	contributions of Joule		
				457	Joseph Black		

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
08.5.2.B1 by end of grade 8	Science and Society	Historical Perspectives	Describe the impact of major events and people in the history of science and technology, in conjunction with other world events.	320 391 583 585 586 589 594	the quests of alchemists scientific discovery and the atomic age history of calendars counting the days in a year the history of clocks and the division of time ancient beliefs about solar eclipses history of the telescope	198	contributions of Schönbein

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
08.5.2.B2 by end of grade 8	Science and Society	Historical Perspectives	Describe the development and exponential growth of scientific knowledge and technological innovations.	73 73 135 433 439 483 530 538 544 597 599	relationship between science and technology impact of Da Vinci's work circuit board explained the clean water act catalytic converters and scrubbing reduce acid rain hydrogen powered cars using echo sounders to map the sea floor what we can learn from seismographs understanding earthquakes allows engineers to design safer buildings using satellite technology space shuttle	70	using engineering design cycle
08.5.3.A1 by end of grade 8	Mathematical Applications	Numerical Operations	Express quantities using appropriate number formats, such as decimals, percents and scientific notation.	590 592 601 606	astronomic numbers expressed in scientific notation calculating light year using scientific notation converting numbers to scientific notation determining Earth's mass using scientific notation	21 271	think about percent change calculating solar brightness units (SBU) from kilometers in scientific notation

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
08.5.3.B1 by end of grade 8	Mathematical Applications	Geometry and Measurement	Perform mathematical computations using labeled quantities and express answers in correctly derived units.	18  592	perform dimensional analysis calculations  unit conversion in calculating light years	258	determining scale distances
08.5.3.C1 by end of grade 8	Mathematical Applications	Patterns and Algebra	Express physical relationships in terms of mathematical equations derived from collected data.	42  459 645	interpreting distance/time graph  heat equation  inverse square law	25  27  28 187 257 268	create a mathematical model  find math rule for lever equilibrium  derive a math formula  find equation for trend line  inverse square law  discovering the mathematical relationship between apparent brightness and distance

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
08.5.3.D1 by end of grade 8	Mathematical Applications	Data Analysis and Probability	Represent and describe mathematical relationships among variables using graphs and tables.	24 26 41	making a graph creating graphs make a graph	9 11 12 13 15 17 18 24 27 30 36 37 51 75 121 147 151	construct a data table use your graph to predict speed understand and use data table graph distance vs. time construct a quantitative graphical model record results in data table organize different combinations of data use data table to record results use data table to record results record ropes and pulley data in table organize data into a table organize data into a graph of speed vs. height graph voltage vs. current create data table for self- designed experiment graph mass vs. volume organize observations into a category table design a data table

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

Standard #: Grade level	Standard	Strand	Cumulative Progress	student text pg	detail	investigation pg	detail
						171 use data table for observations 181 organize water quality data into a table 185 constructing a graph of drops of acid vs pH 187 construct a graphical model 189 construct a temperature vs. time graph 197 constructing a graph from atmospheric pressure data 203 graphing water and ice temperature readings 206 constructing a graph of time vs. temperature	
08.5.3.D2 by end of grade 8	Mathematical Applications	Data Analysis and Probability	Analyze experimental data sets using measures of central tendency mean, mode, and median.	547 618	average density (#5) average distance from the sun	129 171	find average velocity average dissolving rate

**Correlation to New Jersey Core Curriculum Content Standards for Science  
 Foundations of Physical Science with Earth and Space Science  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
08.5.3.D3 by end of grade 8	Mathematical Applications	Data Analysis and Probability	Construct and use a graph of experimental data to draw a line of best fit and identify a linear relationship between variables when appropriate.	26	drawing a best fit curve	11 13 187 197	draw best fit curve draw best fit curve draw a line of best fit through temperature data points graphing and drawing a trend line for atmospheric pressure data
08.5.3.D4 by end of grade 8	Mathematical Applications	Data Analysis and Probability	Use computer spreadsheets, graphing and database applications to assist in quantitative analysis of data.		featured throughout CPO Science program		featured throughout CPO Science program  data tables and graphs can be created on computer or graphing calculator
08.5.4.A1 by end of grade 8	Nature and Process of Technology	Science and Technology	Compare and contrast science with technology, illustrating similarities and differences between these two human endeavors.	73 530 597 599	relationship between science and technology using echo sounders to map the sea floor using satellite technology space shuttle	70	using engineering design cycle

**Correlation to New Jersey Core Curriculum Content Standards for Science  
 Foundations of Physical Science with Earth and Space Science  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
08.5.4.B1 by end of grade 8	Nature and Process of Technology	Nature of technology	Analyze a product or system to determine the problem it was designed to solve, the design constraints, trade- offs and risks involved in using the product or system, how the product or system might fail, and how the product or system might be improved.	74	sample engineering problem	70 70 71 71 194	designing and testing different electric motors proposing and comparing different electric motor designs which motor gave the highest speed and why? did draining the batteries affect motor speed? design and construct an aneroid barometer
08.5.4.C1 by end of grade 8	Nature and Process of Technology	Technological Design	Recognize how feedback loops are used to control systems.	51 415 415 429 435 438 460	what is equilibrium? equilibrium and solubility solubility equilibrium the water cycle pond ecosystem and water quality acid rain formation system thermal equilibrium		
08.5.6.A1 by end of grade 8	Chemistry	Structure and Properties of Matter	Know that all matter is composed of atoms that may join together to form molecules.	311 311	all matter is formed from atoms all matter is formed from atoms	132	comparing atoms

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
08.5.6.A2 by end of grade 8	Chemistry	Structure and Properties of Matter	Recognize that the phase of matter is determined by the arrangement and motion of atoms and molecules and that the motion of these particles is related to the energy of the system.	284  284 405 406 498	states of matter and arrangement of molecules  changes of state molecular structure of ice hydrogen bonding and the gaseous state of water phases changes in the atmosphere	118 118 118 119 204	investigate melting molecules in a liquid think of melting process at molecular level energy and phase changes investigating latent heat and thermal buffering
08.5.6.A3 by end of grade 8	Chemistry	Structure and Properties of Matter	Know that there are groups of elements that have similar properties, including highly reactive metals, less reactive metals, highly reactive non- metals, and some almost completely non-reactive gases.	320 321 329 330 332 335	groups of elements groups of elements and valence shells periodic table columns and valence electrons bonding and periodic table position periodic table and electronegativities periodic table and oxidation numbers	133 141 142	using the periodic table build model of Na and Cl atoms and explain why they bond to form a molecule arrangement of electrons and groups of elements
08.5.6.A4 by end of grade 8	Chemistry	Structure and Properties of Matter	Recognize that a mixture often can be separated into the original substances using one of more of their characteristic physical properties.	278	mixtures can be separated by physical means	114	separating a homogeneous mixture

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
08.5.6.B1 by end of grade 8	Chemistry	Chemical Reactions	Show how substances can chemically react with each other to form new substances having properties different from those of the original substances.	354  357	new substances are formed when a chemical change occurs  chemical reactions involve rearrangement of atoms		
08.5.6.B2 by end of grade 8	Chemistry	Chemical Reactions	Show that in most chemical reactions energy is transferred into or out of a system.			158	measure energy changes in 3 different reactions
08.5.6.B3 by end of grade 8	Chemistry	Chemical Reactions	Demonstrate that regardless how substances within a simple closed system interact, the total mass of the system remains the same.	363	history of law of conservation of mass	150	investigate conservation of mass in effervescent tablet reaction
08.5.6.B4 by end of grade 8	Chemistry	Chemical Reactions	Illustrate how atoms are rearranged when substances react, but that the total number of atoms and the total mass of the products remain the same as the original substances.	357	chemical reactions involve rearrangement of atoms	150	investigate conservation of mass in effervescent tablet reaction

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
08.5.7.A1 by end of grade 8	Physics	Motions and Forces	Use quantitative data to show that when more than one force acts on an object at the same time, the forces can reinforce or cancel each other producing a net (unbalanced) force that will change speed and/or direction of the object.	46 49 51 64	force has potential to change motion force is related to acceleration balanced and unbalanced forces solving problems using $f=ma$	16 19 19	unbalanced forces and acceleration of car discover 2nd law of motion find correct relationship between force mass and acceleration
08.5.7.A2 by end of grade 8	Physics	Motions and Forces	Recognize that every object exerts a gravitational force on every other object, and that the force depends on how much mass the objects have and how far apart they are.	52 52 54 55 606	gravity depends on mass the effect of gravity Newton's law of universal gravitation calculating gravitational force between objects Newton's law of universal gravitation	20 257	investigate effect of gravity on motion relating the relationship between orbital speed and distance to the equation of universal gravitation

**Correlation to New Jersey Core Curriculum Content Standards for Science  
 Foundations of Physical Science with Earth and Space Science  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
08.5.7.B1 by end of grade 8	Physics	Energy Transformations	Recognize that the sun is a major source of the Earth's energy and that solar energy includes visible, infrared and ultraviolet radiation.	91 237 479 480 481 485 623 626	following an energy transformation visible light and the electromagnetic spectrum ultraviolet and infrared light distribution of incoming solar radiation Earth's "energy budget" Earth's internal energy energy from the sun harnessing the sun's energy	39 134	make an energy flow chart investigating visible light with a spectrometer
08.5.7.B2 by end of grade 8	Physics	Energy Transformations	Describe the nature of various forms of energy, including heat, light, sound, chemical, mechanical, and electrical and trace energy transformations from one form to another.	91 91 91 623 626	energy conversions following an energy transformation understand basic forms of energy energy from the sun harnessing the sun's energy	38 39 39	explore energy transformations make an energy flow chart identify type of energy involved

**Correlation to New Jersey Core Curriculum Content Standards for Science  
 Foundations of Physical Science with Earth and Space Science  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
08.5.7.B3 by end of grade 8	Physics	Energy Transformations	Describe how heat can be conducted through materials or transferred across space by radiation and know that if the material is a fluid, convection currents may aid the transfer of heat.	462	densely packed solids are good conductors of heat	192	investigate convection in liquids
				462	heat transfer through air		
				463	convection currents and weather		
				463	warming hands over candle		
				464	convection currents in water		
				465	transfer of heat by radiation		
				465	solid road surface emits radiation		
				482	global warming and heat transfer by radiation		
				493	apply knowledge of heat transfer to different situations		

**Correlation to New Jersey Core Curriculum Content Standards for Science  
 Foundations of Physical Science with Earth and Space Science  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
08.5.7.B4 by end of grade 8	Physics	Energy Transformations	Show that light is reflected, refracted, or absorbed when it interacts with matter and that colors may appear as a result of this interaction.	242	color and frequency of light waves	101	observing white light through diffraction grating
				245	we see color in terms of reflected light	105	explore relationship between color and wavelength
				258	refraction in optical systems	106	tracing incident and reflected rays
				258	forming images with lenses	107	investigate how light interacts with mirrors
				263	index of refraction	108	tracing incident and refracted rays
				263	index of refraction	108	explore refraction with lenses
				273	find the angle of reflection	108	investigate how light interacts with a prism
				480	absorption and emission	110	finding focal point and focal length of a lens
						111	plotting images formed when light is refracted by a lens
						253	using a retractive telescope
						265	an element's spectral lines correspond to specific wavelengths of light

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
08.5.8.A1 by end of grade 8	Earth Science	Earth's Properties and Materials	Observe that most rocks and soils are made of several substances or minerals.	533	activity of Earth's crust at plate boundaries	237	examining the magma chemistry of volcanoes and how it relates to a volcano's location
				534	balance of creating and consuming Earth's crust	242	understanding how igneous rocks are formed and growing crystals to investigate their formation
				554	properties of volcanically formed rock	244	understanding how sedimentary rocks are formed and creating sedimentary deposits to investigate them
				559	types of volcanic rock	246	understanding and investigating how metamorphic rocks are formed
				561	describing volcanic rock	247	interpreting how different rock formations were formed
				562	constructive and destructive processes		
				562	constructive and destructive processes		
				565	formation of soil		
				570	properties of minerals		
				571	common minerals		
				572	Mohs hardness scale		
				573	formation of igneous and sedimentary and metamorphic rocks		
				575	identifying igneous and sedimentary and metamorphic rocks		
				576	the rock cycle		
				576	the rock cycle		

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
08.5.8.A2 by end of grade 8	Earth Science	Earth's Properties and Materials	Observe that the properties of soil vary from place to place and will affect the soil's ability to support life.	533	activity of Earth's crust at plate boundaries	240	estimating the effects of meteor impacts on Earth
				534	balance of creating and consuming Earth's crust	241	identifying which geologic features on Earth were caused by meteors
				555	formation of Hawaiian Islands due to volcanic activity		
				558	volcanoes shape the Earth		
				562	constructive and destructive processes		
				562	constructive and destructive processes		
				563	constructive process of mountain building		
				564	the destructive process of erosion		
				565	wind erosion		
				565	formation of soil		
				576	the rock cycle		
				576	the rock cycle		

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
08.5.8.A3 by end of grade 8	Earth Science	Earth's Properties and Materials	Recognize that fossils provide evidence about the plants and animals that lived long ago and nature of the environment at the time.	521 522 523 523 569	origin of fossils relative dating faunal succession interpreting rock formations studying moon rocks on Earth	225 226	determining the relative ages of rock formations sequencing events in a geologic cross-section

**Correlation to New Jersey Core Curriculum Content Standards for Science**  
***Foundations of Physical Science with Earth and Space Science***  
**Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
08.5.8.B1 by end of grade 8	Earth Science	Atmosphere and Water	Describe conditions in the atmosphere that lead to weather systems and how these systems are represented on weather maps.	480	transfer of energy in and out of Earth's atmosphere	213	exploring how temperature-dependent layering creates currents
				493	convection currents in the atmosphere	217	finding relative humidity
				494	the Coriolis effect	219	use radar to detect a tornado
				495	global wind patterns	220	using radar to track a hurricane
				497	factors which influence the weather		
				497	water in the atmosphere affects weather patterns		
				498	phase changes in the atmosphere and dewpoint		
				499	cloud formation		
				501	forms of precipitation		
				502	cold fronts		
				502	effects of moving air masses		
				503	jet streams		
				503	warm fronts		
				504	rotation of air masses due to Coriolis effect		
				505	description of thunderstorms		
				506	description of hurricanes		
				507	description of tornadoes		

**Correlation to New Jersey Core Curriculum Content Standards for Science**  
***Foundations of Physical Science with Earth and Space Science***  
**Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
08.5.8.C1 by end of grade 8	Earth Science	Processes that Shape the Earth	Explain how Earth's landforms and materials are created through constructive and destructive processes.	528	definition of plate tectonics	228	listing which kind of plate boundary is associated with each geologic feature
				528	predicting what Earth might look like in 50 million years	229	identifying tectonic plates and plate boundaries
				530	sea-floor spreading and mid-ocean ridges	230	predicting plate movement over 50 million years and the resultant land features
				531	magnetic patterns on the sea floor	236	understanding the Volcanic Explosivity Index
				532	theory of plate tectonics	237	finding a pattern of volcanoes related to the locations of plate boundaries
				533	activity of Earth's crust at plate boundaries	237	examining the magma chemistry of volcanoes and how it relates to a volcano's location
				533	describing plate boundaries	240	estimating the effects of meteor impacts on Earth
				534	balance of creating and consuming Earth's crust	241	identifying which geologic features on Earth were caused by meteors
				534	land features resulting from divergent plate boundaries		
				534	divergent plate boundaries		
				535	resulting land features from subduction		
				535	convergent plate boundaries		
				536	land features resulting from transform plate boundaries		
				536	transform plate boundaries		

**Correlation to New Jersey Core Curriculum Content Standards for Science**  
***Foundations of Physical Science with Earth and Space Science***  
**Student Text and Investigation Manual**

Standard #: Grade level	Standard	Strand	Cumulative Progress	student text pg	detail	investigation pg	detail
				537	earthquakes and plate tectonics		
				547	predict separation of North America and Europe in 75 million years		
				548	predict effects of divergent plate boundaries on Great Rift Valley		
				552	formation of magma in Earth's mantle		
				552	geologic basis for volcanic eruptions		
				553	where volcanic activity occurs		
				554	types and shapes of volcanoes		
				554	properties of volcanically formed rock		
				555	shield volcanoes		
				555	formation of shield volcanoes due to hot spots		
				555	formation of Hawaiian Islands due to volcanic activity		
				555	geologic basis for shield volcanoes		

**Correlation to New Jersey Core Curriculum Content Standards for Science**  
***Foundations of Physical Science with Earth and Space Science***  
**Student Text and Investigation Manual**

Standard #: Grade level	Standard	Strand	Cumulative Progress	student text pg	detail	investigation pg	detail
				556	formation of stratovolcanoes due to subduction		
				556	stratovolcanoes		
				556	geologic basis for stratovolcanoes		
				557	geologic bases for cinder cone volcanoes		
				558	volcanoes shape the Earth		
				559	types of volcanic rock		
				561	describing volcanic rock		
				562	constructive and destructive processes		
				562	constructive and destructive processes		
				563	mountain-building		
				563	constructive process of mountain building		
				564	the destructive process of erosion		
				564	changes in land features due to erosion		
				564	landforms shaped by water		
				565	formation of soil		
				565	wind erosion		
				566	effect of glaciers on land		

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
				576	the rock cycle		
				576	the rock cycle		
08.5.8.C2 by end of grade 8	Earth Science	Processes that Shape the Earth	Show how successive layers of sedimentary rock and the fossils contained in them can be used to confirm the age, history, changing life forms, and geology of Earth.	522	relative dating	225	determining the relative ages of rock formations
				523	faunal succession	226	sequencing events in a geologic cross-section
				523	interpreting rock formations		
				569	studying moon rocks on Earth		

**Correlation to New Jersey Core Curriculum Content Standards for Science  
 Foundations of Physical Science with Earth and Space Science  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
08.5.8.D1 by end of grade 8	Earth Science	How We Study the Earth	Utilize data gathered from emerging technologies (i.e. geographic information systems (GIS) and global positioning systems (GPS) to create representations and describe processes of change on the Earth's surface.	24 26 41	making a graph creating graphs make a graph	13 15 37 51 121 147 185 187 189 197 203 206 237	graph distance vs. time construct a quantitative graphical model organize data into a graph of speed vs. height graph voltage vs. current graph mass vs. volume organize observations into a category table constructing a graph of drops of acid vs pH construct a graphical model construct a temperature vs. time graph constructing a graph from atmospheric pressure data graphing water and ice temperature readings constructing a graph of time vs. temperature plot locations of volcanoes using latitude and longitude

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
08.5.8.D2 by end of grade 8	Earth Science	How We Study the Earth	Explain how technology designed to investigate features of the Earth's surface impacts how scientists study the Earth.	395	impact of industrial revolution	186	accurately measuring temperature using thermometers
				443	impact of carbon dioxide on life in the oceans	194	construct and use an aneroid barometer
				451	thermometers	218	using Doppler radar images to detect and track storms
				452	thermometers		
				474	measuring atmospheric pressure with barometers		
				479	scientists detect loss of ozone in atmosphere		
				482	effects of global warming discovered		
				485	computer modeling to predict greenhouse effects		
				496	tracking ocean currents		
				497	sling psychrometer		
				511	trees and global climate		
				537	causes and descriptions of earthquakes		
				539	earthquakes rating scales		
				568	urban sprawl		

**Correlation to New Jersey Core Curriculum Content Standards for Science  
 Foundations of Physical Science with Earth and Space Science  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
08.5.9.A1 by end of grade 8	Astronomy and Space Science	Earth, Moon, Sun System	Investigate the Earth, moon, and sun as a system and explain how the motion of these bodies results in the phases of the moon and eclipses.	491	the effects of Earth's rotation on daytime heating and nighttime cooling	208	developing a hypothesis about why the seasons occur
				492	Earth's tilt causes seasons	210	investigating how the distance of Earth from the sun affects its intensity
				584	the lunar cycle		
				585	Earth's rotation and patterns of day and night	211	investigating how Earth's tilt affects the sun's intensity
				587	axial tilt causes the seasons		
				588	solar eclipses	238	why studying the moon's surface is useful for understanding Earth
				588	lunar eclipses		
				589	solar eclipses	248	building a sundial to keep track of daily time based on the cycles between Earth and the sun
				589	solar eclipses		
				601	identify seasons		
				607	properties of the moon	250	modeling the lunar cycle
				608	the moon as a satellite of Earth	251	constructing a lunar calendar
				609	the moon's effect on tides on Earth	256	simulate an object in orbit and investigate how orbital period varies within distance
				610	the Earth-moon system		
				611	giant impact theory	258	setting up a scale model of the solar system
				612	orbits of planets around the sun	259	determining scale distances for the planets
				613	explanation and illustration of the solar system	260	determining scale sizes of the planets

**Correlation to New Jersey Core Curriculum Content Standards for Science  
 Foundations of Physical Science with Earth and Space Science  
 Student Text and Investigation Manual**

Standard #: Grade level	Standard	Strand	Cumulative Progress	student text pg	detail	investigation pg	detail
				614	relative sizes and distances within the solar system		
				619	asteroids and comets		
				620	meteors and meteorites and the Kuiper Belt		
08.5.9.A2 by end of grade 8	Astronomy and Space Science	Earth, Moon, Sun System	Explain how the regular and predictable motions of the Earth and moon produce tides.	584	the lunar cycle	238	why studying the moon's surface is useful for understanding Earth
				588	lunar eclipses		
				589	solar eclipses	250	modeling the lunar cycle
				607	properties of the moon	251	constructing a lunar calendar
				608	the moon as a satellite of Earth		
				609	the moon's effect on tides on Earth		
				610	the Earth-moon system		
				611	giant impact theory		

**Correlation to New Jersey Core Curriculum Content Standards for Science**  
***Foundations of Physical Science with Earth and Space Science***  
**Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
08.5.9.A3 by end of grade 8	Astronomy and Space Science	Earth, Moon, Sun System	Explain how the tilt, rotation, and orbital pattern of the Earth relative to the sun produce seasons and weather patterns.	491	the effects of Earth's rotation on daytime heating and nighttime cooling	208	developing a hypothesis about why the seasons occur
				492	Earth's tilt causes seasons	210	investigating how the distance of Earth from the sun affects its intensity
				585	Earth's rotation and patterns of day and night	211	investigating how Earth's tilt affects the sun's intensity
				587	axial tilt causes the seasons	248	building a sundial to keep track of daily time based on the cycles between Earth and the sun
				588	solar eclipses		
				589	solar eclipses		
				601	identify seasons		
08.5.9.B1 by end of grade 8	Astronomy and Space Science	Solar System	Describe the physical characteristics of the planets and other objects within the solar system and compare Earth to the rest of the planets.	472	comparison of Earth's atmosphere to other planets	256	simulate an object in orbit and investigate how orbital period varies within distance
				612	orbits of planets around the sun	258	setting up a scale model of the solar system
				613	explanation and illustration of the solar system	259	determining scale distances for the planets
				614	relative sizes and distances within the solar system	260	determining scale sizes of the planets
				615	what makes Earth capable of supporting life		
				619	asteroids and comets		
				620	meteors and meteorites and the Kuiper Belt		

**Correlation to New Jersey Core Curriculum Content Standards for Science**  
***Foundations of Physical Science with Earth and Space Science***  
**Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
08.5.9.C1 by end of grade 8	Astronomy and Space Science	Stars	Understand that the sun is a star and that it shares characteristics with other stars.	622  635  637  638  639  640	descriptions of the sun and comparisons to other stars  size of the sun compare to other stars  H-R diagrams comparing temperature and brightness of stars  the life cycle of stars  description and illustration of the life cycle of stars  elements formed by nuclear fusion in stars	255	observe and describe the appearance of the moon and Jupiter and its moons
08.5.9.D1 by end of grade 8	Astronomy and Space Science	Galaxies and Universe	Know that the universe consists of many billions of galaxies, each including billions of stars.	591  633  642  643  652	characteristics of the universe  what is a star?  what is a galaxy?  the structure of the Milky Way Galaxy  research and describe astronomical objects		

**Correlation to New Jersey Core Curriculum Content Standards for Science**  
***Foundations of Physical Science with Earth and Space Science***  
**Student Text and Investigation Manual**

Standard #: Grade level	Standard	Strand	Cumulative Progress	student text pg	detail	investigation pg	detail
12.5.1.A1 by end of grade 12	Scientific Processes	Habits of Mind	When making decisions, evaluate conclusions, weigh evidence, and recognize that arguments may not have equal merit.	10	process of reviewing hypothesis explained	35	what evidence is there in support of your hypothesis?
				110	study appliance labels and instructions	39	critique group's explanation of energy transformations
				142	create pamphlet on utility's energy saver programs	39	review energy theory in context of everyday scenarios
				448	study claims made by bottled water companies	39	analyze energy transformations in different scenarios
				521	relative dating and modern geology based on Steno's theories	76	analyze watch manufacturer's claims
				524	Kelvin's calculations of Earth's age	77	show how energy loss data could be applied to designing a real clock
				528	theory of plate tectonics	77	compare law of conservation of energy to motion of pendulum
				529	critiquing Wegener's theories of continental drift	151	review your hypothesis
				563	Darwin's theories of the Andes formation	162	inferences from promotional materials for vehicles
				566	what causes ice ages	171	did you prove or disprove your hypothesis?
				611	theories of origin of the moon	181	study water filtration device claims
				612	early theories of the solar system		
				647	Big Bang theory		

**Correlation to New Jersey Core Curriculum Content Standards for Science**  
***Foundations of Physical Science with Earth and Space Science***  
**Student Text and Investigation Manual**

Standard #: Grade level	Standard	Strand	Cumulative Progress	student text pg	detail	investigation pg	detail
12.5.1.A2 by end of grade 12	Scientific Processes	Habits of Mind	Assess the risks and benefits associated with alternative solutions.	364	petroleum	163	economic impact of end-product of combustion reaction
				368	limiting reactants		
				379	research fuel cells	163	too much CO <sub>2</sub>
				379	research economic impact of fuel cells	163	consider a vehicle's fuel economy
				379	research environmental impact of fuel cells	163	research how trees offset accumulation of CO <sub>2</sub>
				379	hydrogen-powered cars and the environment	163	research how trees offset accumulation of CO <sub>2</sub>
				379	research fuel cells		
				395	fossil fuels	163	can trees compensate for manmade CO <sub>2</sub> from vehicles and industry?
				400	economic impact of reducing air pollution		
				400	economic impact of pollution	164	perform water quality tests
				400	problems caused by airborne pollutants	178	wise use of water supply
				432	water cycle and conservation	179	maintaining water supply quality
				433	wise use of water	180	save water for houseplants
				435	water usage and quality	180	perform water quality tests
				436	effect of excess nitrates on environment	182	investigate effect of acid rain on microorganisms
				437	acid rain explained		
				448	research the issue of acid rain	201	research the causes of ozone in the lower atmosphere

**Correlation to New Jersey Core Curriculum Content Standards for Science**  
***Foundations of Physical Science with Earth and Space Science***  
**Student Text and Investigation Manual**

Standard #: Grade level	Standard	Strand	Cumulative Progress	student text pg	detail	investigation pg	detail
				448	research economic impact of producing gases that cause acid rain		

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
12.5.1.A3 by end of grade 12	Scientific Processes	Habits of Mind	Engage in collaboration, peer review, and accurate reporting of findings.	20	explain your reasoning	9	reporting on an experiment
						9	present conclusions to the class
						15	discuss and test ideas with your group
						19	explain how you arrived at your answer
						29	discuss what you learned about gears
						37	describe the flow of energy based on experimental graph
						39	give a brief presentation to the class
						47	discuss an explanation with your group
						47	present and defend an explanation
						129	explain your answer and justify
						145	present findings to the class
						145	present findings and methods used
						151	present results to the class
						179	create water quality report

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
						181	write paragraph to explain results
						183	write summary of findings
12.5.1.A4 by end of grade 12	Scientific Processes	Habits of Mind	Explore cases that demonstrate the interdisciplinary nature of the scientific enterprise.	548	describe the work of a geologist and paleontologist and seismologist	177	chemistry and photography
						178	water quality testing

**Correlation to New Jersey Core Curriculum Content Standards for Science  
 Foundations of Physical Science with Earth and Space Science  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
12.5.1.B1 by end of grade 12	Scientific Processes	Inquiry and Problem Solving	Select and use appropriate instrumentation to design and conduct investigations.	5 288	measuring distance find the thickness of a single card	5 6 9 9 9 10 12 16 30 40 44 46 48 87 116 117 145	measuring metric and english lengths measure time conduct three experiments with appropriate equipment design three experiments and choose equipment design three experiments and choose equipment selecting ramp and photogates select equipment and set up experiment measure force rigging block and tackle choose circuit parts to light a bulb measure voltage measure current measure resistance measure wavelength measure mass measure volume plan a procedure and select necessary equipment

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

Standard #: Grade level	Standard	Strand	Cumulative Progress	student text pg	detail	investigation pg	detail
						145 carry out procedure and select equipment 151 plan procedures and select materials 151 select materials from list 186 measure temperature 194 design and construct an aneroid barometer 209 measuring the intensity of light using an electric meter and solar cell and light bulb 252 identifying the parts of a refracting telescope and making observations of the moon's surface	

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
12.5.1.B2 by end of grade 12	Scientific Processes	Inquiry and Problem Solving	Show that experimental results can lead to new questions and further investigations.	20 24 42	how will speed change? predicting speed from a graph predict the speed of a car	76 101 117 121 156 157 183 197 201 204	use data to predict best string length for a pendulum clock how could you extend the investigation to explore materials that give off light when heated? how could you find the volume of one drop of water? use graph to predict mass of six objects make predictions about solubility add new rules to list based on findings specifying how the daphnia experiment could be improved evaluating your aneroid barometer design predicting areas with high ozone concentration based on your data predicting what would happen if you place your ice/water test tube into a hot cup or a cold cup

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

Standard #: Grade level	Standard	Strand	Cumulative Progress	student text pg	detail	investigation pg	detail
						239 estimating the number of meteor collisions on Earth during the last 3.5 billion years  242 predicting the results of the crystal-growing experiment	

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
12.5.1.C1 by end of grade 12	Scientific Processes	Safety	Understand, evaluate and practice safe procedures for conducting science investigations.	452	featured throughout CPO Science program safety caution on heating jar	20 24 26 40 44 56 58 146 150 158 168 172 180 182 186 188 192 202	featured throughout CPO Science program safety tip for car/ramp setup ropes and pulley safety safety tip for hanging weights from lever electrical safety short circuit safety warning short circuit safety warning short circuit safety warning safety in the lab chemistry safety wear goggles and apron safety equipment hot water safety safety tip for water testing safety tips for observing Daphnia thermometer safety heat safety heat safety safety in greenhouse gas investigation

**Correlation to New Jersey Core Curriculum Content Standards for Science**  
***Foundations of Physical Science with Earth and Space Science***  
**Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
						210 safety using light bulbs 216 safety in swinging thermometers 256 safety in lab	

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
12.5.2.A1 by end of grade 12	Science and Society	Cultural Contributions	Recognize the role of the scientific community in responding to changing social and political conditions and how scientific and technological achievement affect historical events.	73 320 391 400 429 433 439 448 448 448 479 483 483 538	impact of Da Vinci's work the quests of alchemists scientific discovery and the atomic age clean air act of 1970 governments managing water resources the clean water act catalytic converters and scrubbing reduce acid rain what is the history of your community's water supply and treatment how is the government addressing the problem of acid rain? is acid rain a problem in your community? London Agreement of 1991 should governments enforce changes for lowering greenhouse gas levels hydrogen powered cars what we can learn from seismographs	198	contributions of Schönbein

**Correlation to New Jersey Core Curriculum Content Standards for Science**  
***Foundations of Physical Science with Earth and Space Science***  
**Student Text and Investigation Manual**

Standard #: Grade level	Standard	Strand	Cumulative Progress	student text pg	detail	investigation pg	detail
				544	understanding earthquakes allows engineers to design safer buildings		
				583	history of calendars		
				585	counting the days in a year		
				586	the history of clocks and the division of time		
				589	ancient beliefs about solar eclipses		
				594	history of the telescope		

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
12.5.2.B1 by end of grade 12	Science and Society	Historical Perspectives	Examine the lives and contributions of important scientists who effected major breakthroughs in our understanding of the natural and designed world.	34	Aristotle vs. Newton		
				45	Newton's Laws of Motion		
				45	Newton's Principia		
				54	Newton and the force of gravity		
				55	Newton and the apple legend		
				73	Leonardo DaVinci		
				86	James Watt		
				105	Benjamin Franklin		
				107	Charles-Augustin Coulomb		
				110	research Franklin's electricity experiments		
				115	Volta's batteries		
				131	Georg Ohm's work with circuits		
				160	Faraday's contributions		
				312	Dalton's contributions		
				312	contributions of Fermi		
				321	Mendeleev's periodic table		
				321	contributions of Mendeleev		
				332	Linus Pauling and electronegativities		
				363	Antoine Lavoisier		

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

Standard #: Grade level	Standard	Strand	Cumulative Progress	student text pg	detail	investigation pg	detail
				370	research Lavoisier's contributions		
				393	accomplishments of Marie Curie		
				393	contributions of Marie and Pierre Curie		
				393	Marie and Pierre Curie		
				455	contributions of Joule		
				457	Joseph Black		
12.5.2.B2 by end of grade 12	Science and Society	Historical Perspectives	Discuss significant technological achievements in which science has played an important part as well as technological advances that have contributed directly to the advancement of scientific knowledge.	73	relationship between science and technology	70	using engineering design cycle
				530	using echo sounders to map the sea floor		
				597	using satellite technology		
				599	space shuttle		

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
12.5.2.B3 by end of grade 12	Science and Society	Historical Perspectives	Describe the historical origin of important scientific developments such as atomic theory, plate tectonics, ect., showing how scientific theories develop, are tested, and can be replaced or modified in light of new information and improved techniques.	34	Aristotle vs. Newton	130	investigate Rutherford's gold foil experiment
				34	Newton and the history of physics		
				45	Newton's discovery of the 2nd law		
				45	Newton's Laws of Motion		
				46	oldest known standard weight		
				54	Newton and the force of gravity		
				105	Benjamin Franklin		
				107	Charles-Augustin Coulomb		
				134	history of superconductivity		
				161	history of magnetism		
				312	history of atomic theory		
				312	contributions of Fermi		
				313	development of atomic theory		
				321	contributions of Mendeleev		
				324	research and create a poster to illustrate development of atomic model		
				343	Avogadro's number		

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

Standard #: Grade level	Standard	Strand	Cumulative Progress	student text pg	detail	investigation pg	detail
				363	history of law of conservation of mass		
				393	history of nuclear chemistry		
				393	contributions of Marie and Pierre Curie		
				400	research the Clean Air Act of 1970 and 1990		
				448	research local water supply history		
				468	research the history of heat and temperature		

**Correlation to New Jersey Core Curriculum Content Standards for Science  
 Foundations of Physical Science with Earth and Space Science  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
12.5.3.B1 by end of grade 12	Mathematical Applications	Geometry and Measurement	When performing mathematical operations with measured quantities, express answers to reflect the degree of precision and accuracy of the print data.	12	importance of reliable and accurate data collection	4	difference between precise and accurate data
				280	measuring volume of liquids	6	electronic timer and release technique
				280	measuring volume of solids	7	record time interval
						9	collect speed data
						17	record times
						24	collect weight data
						36	collect precise speed and height data
						75	collect mass and amplitude data
						117	measuring volume
						171	collect time data and record observations
						182	making detailed observations
						184	collecting pH readings while adding carbon dioxide
						186	collecting temperature data
						189	collecting time and temperature data
						193	collecting and recording time and temperature data
						249	using your sundial to collect accurate data

**Correlation to New Jersey Core Curriculum Content Standards for Science**  
***Foundations of Physical Science with Earth and Space Science***  
**Student Text and Investigation Manual**

Standard #: Grade level	Standard	Strand	Cumulative Progress	student text pg	detail	investigation pg	detail
						253 calibrating your telescope	

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
12.5.3.C1 by end of grade 12	Mathematical Applications	Patterns and Algebra	Apply mathematical models that describe physical phenomena to predict real world events.	20	how will speed change?	13	graph distance vs. time
				24	predicting speed from a graph	15	construct a quantitative graphical model
				24	making a graph	25	create a mathematical model
				26	creating graphs	27	find math rule for lever equilibrium
				41	make a graph	28	derive a math formula
				42	predict the speed of a car	37	organize data into a graph of speed vs. height
				42	interpreting distance/time graph	51	graph voltage vs. current
				459	heat equation	76	use data to predict best string length for a pendulum clock
				645	inverse square law	121	use graph to predict mass of six objects
						121	graph mass vs. volume
						147	organize observations into a category table
						151	does your experiment agree with law of conservation of mass?
						156	make predictions about solubility
						185	constructing a graph of drops of acid vs pH
		187	find equation for trend line				
		187	construct a graphical model				

**Correlation to New Jersey Core Curriculum Content Standards for Science  
 Foundations of Physical Science with Earth and Space Science  
 Student Text and Investigation Manual**

Standard #: Grade level	Standard	Strand	Cumulative Progress	student text pg	detail	investigation pg	detail
						189	construct a temperature vs. time graph
						197	constructing a graph from atmospheric pressure data
						201	predicting areas with high ozone concentration based on your data
						203	graphing water and ice temperature readings
						204	predicting what would happen if you place your ice/water test tube into a hot cup or a cold cup
						206	constructing a graph of time vs. temperature
						231	evaluating your completed bathymetric map
						239	estimating the number of meteor collisions on Earth during the last 3.5 billion years
						242	predicting the results of the crystal-growing experiment
						247	evaluate your ability to interpret rock formations
						257	inverse square law

**Correlation to New Jersey Core Curriculum Content Standards for Science**  
***Foundations of Physical Science with Earth and Space Science***  
**Student Text and Investigation Manual**

Standard #: Grade level	Standard	Strand	Cumulative Progress	student text pg	detail	investigation pg	detail
						268 discovering the mathematical relationship between apparent brightness and distance	

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
12.5.3.D1 by end of grade 12	Mathematical Applications	Data Analysis and Probability	Construct and interpret graphs of data to represent inverse and non- linear relationships, and statistical distributions.	24 26 26 31 38 41	making a graph drawing a best fit curve creating graphs determining slope of a line determining slope of a line make a graph	11 11 13 13 15 15 37 51 121 147 185 187 187 187 189 189	draw best fit curve use your graph to predict speed draw best fit curve graph distance vs. time construct a quantitative graphical model calculating acceleration from the slope of the line organize data into a graph of speed vs. height graph voltage vs. current graph mass vs. volume organize observations into a category table constructing a graph of drops of acid vs pH find slope of a trend line draw a line of best fit through temperature data points construct a graphical model construct a temperature vs. time graph calculate slope of a graph

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

Standard #: Grade level	Standard	Strand	Cumulative Progress	student text pg	detail	investigation pg	detail
						197 graphing and drawing a trend line for atmospheric pressure data 197 constructing a graph from atmospheric pressure data 203 graphing water and ice temperature readings 206 constructing a graph of time vs. temperature	

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
12.5.4.A1 by end of grade 12	Nature and Process of Technology	Science and Technology	Know that scientific inquiry is driven by the desire to understand the natural world and seeks to answer questions that may or may not directly influence humans, while technology is driven by the need to meet human needs and solve human problems.	73	relationship between science and technology	6	asking questions and learning about natural world
				433	the clean water act	70	using engineering design cycle
				439	catalytic converters and scrubbing reduce acid rain	197	evaluating the relationship between atmospheric pressure and weather
				463	convection and sea breezes	215	the food paradox of the oceans
				473	why do ears pop		
				483	hydrogen powered cars		
				489	patterns of heating and cooling on Earth		
				504	meteorologists use atmospheric pressure data to understand movement of weather systems		
				508	patterns in storm activity across the globe		
				530	using echo sounders to map the sea floor		
				533	patterns of earthquakes and volcanoes		
				538	what we can learn from seismographs		
				540	boundaries of tectonic plates		
				544	understanding earthquakes allows engineers to design safer buildings		

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

Standard #: Grade level	Standard	Strand	Cumulative Progress	student text pg	detail	investigation pg	detail
				553	the Ring of Fire		
				584	lunar cycles		
				597	using satellite technology		
				599	space shuttle		
				609	tides		
				637	categorizing stars with H- R diagrams		
				648	evidence for Big Bang theory		

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
12.5.4.B1 by end of grade 12	Nature and Process of Technology	Nature of Technology	Assess the impacts of introducing a new technology in terms of alternative solutions, costs, tradeoffs, risks, benefits and environmental impact.	364	petroleum	163	economic impact of end- product of combustion reaction
				368	limiting reactants		
				379	research fuel cells	163	too much CO <sub>2</sub>
				379	research economic impact of fuel cells	163	consider a vehicle's fuel economy
				379	research environmental impact of fuel cells	163	research how trees offset accumulation of CO <sub>2</sub>
				379	hydrogen-powered cars and the environment	163	research how trees offset accumulation of CO <sub>2</sub>
				379	research fuel cells		
				395	fossil fuels	163	can trees compensate for manmade CO <sub>2</sub> from vehicles and industry?
				400	economic impact of reducing air pollution		
				400	economic impact of pollution	164	perform water quality tests
				400	problems caused by airborne pollutants	178	wise use of water supply
				414	effect of electrical generating facilities on dissolved oxygen in water	179	maintaining water supply quality
						180	save water for houseplants
				432	water cycle and conservation	180	perform water quality tests
				433	wise use of water	182	investigate effect of acid rain on microorganisms
				435	water usage and quality		
				436	effect of excess nitrates on environment	201	research the causes of ozone in the lower atmosphere
				437	acid rain explained		

**Correlation to New Jersey Core Curriculum Content Standards for Science  
 Foundations of Physical Science with Earth and Space Science  
 Student Text and Investigation Manual**

Standard #: Grade level	Standard	Strand	Cumulative Progress	student text pg	detail	investigation pg	detail
				448	research the issue of acid rain		
				448	research economic impact of producing gases that cause acid rain		
12.5.4.C1 by end of grade 12	Nature and Process of Technology	Technological Design	Plan, develop, and implement a proposal to solve an authentic technological problem.	74	sample engineering problem	70	designing and testing different electric motors
						70	proposing and comparing different electric motor designs
						71	which motor gave the highest speed and why?
						71	did draining the batteries affect motor speed?
						194	design and construct an aneroid barometer
12.5.6.A1 by end of grade 12	Chemistry	Structure and Properties of Matter	Know that atoms are made of a positive nucleus surrounded by negative electrons and that the nucleus, a tiny fraction of the volume of an atom, is composed of protons and neutrons, each almost 2,000 times more massive than an electron.	311	location/size/charge of subatomic particles	132	building atom models
				311	protons/neutrons/electrons	133	protons and neutrons
				318	proton/electron attraction	133	location of electrons in atom
						136	model stable and neutral atoms
						137	build atomic models
						140	review subatomic particles

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
12.5.6.A2 by end of grade 12	Chemistry	Structure and Properties of Matter	Know that the number of protons in the nucleus defines the elements.	315	atoms of same element have same atomic number	132  137	atomic number determines what element that atom is  importance of atomic number
12.5.6.A3 by end of grade 12	Chemistry	Structure and Properties of Matter	Know that an atom's electron arrangement, particularly the outermost electrons, determines how the atom can interact with other atoms.	324  324  335  388	which element is more likely to combine with other elements?  use the periodic table to predict chemical formulas  chemical bonding and the periodic table  showing valence electrons in a diagram	136  140  141  141	ions  find the number of electrons in outermost level  whan an atom ionizes  modeling a chemical bond
12.5.6.A4 by end of grade 12	Chemistry	Structure and Properties of Matter	Explain that atoms form bonds (ionic and covalent) with other atoms by transferring or sharing electrons.	324  324  335  388	which element is more likely to combine with other elements?  use the periodic table to predict chemical formulas  chemical bonding and the periodic table  showing valence electrons in a diagram	136  140  141  141  143	ions  find the number of electrons in outermost level  whan an atom ionizes  modeling a chemical bond  ionic compounds

**Correlation to New Jersey Core Curriculum Content Standards for Science  
 Foundations of Physical Science with Earth and Space Science  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
12.5.6.A5 by end of grade 12	Chemistry	Structure and Properties of Matter	Explain how the Periodic Table of Elements reflects the relationship between the properties of elements and their atomic structure.	315	atomic number discussed	133	using the periodic table
				316	isotopes explained	133	exploring isotopes
				316	mass number discussed	133	identify atomic number
				320	groups of elements	133	identify mass number
				321	groups of elements and valence shells	133	identify element symbol and name
				321	studying the periodic table	136	building and studying the periodic table
				322	atomic mass on the periodic table	136	understanding isotopes
				322	mass number on the periodic table	136	mass number
				322	atomic number on the periodic table	136	atomic number
				322	chemical symbols and element names	141	build model of Na and Cl atoms and explain why they bond to form a molecule
				329	periodic table columns and valence electrons	142	arrangement of electrons and groups of elements
				330	bonding and periodic table position		
				332	periodic table and electronegativities		
				335	periodic table and oxidation numbers		

**Correlation to New Jersey Core Curriculum Content Standards for Science**  
***Foundations of Physical Science with Earth and Space Science***  
**Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
12.5.6.A6 by end of grade 12	Chemistry	Structure and Properties of Matter	Know that many biological, chemical and physical phenomena can be explained by changes in the arrangement and motion of atoms and molecules.	353	physical and chemical changes and digestion	146	investigate and observe chemical and physical changes in the lab
				354	new substances are formed when a chemical change occurs	157	predict the products of double displacement reactions
				354	chemical reactions and digestion	162	investigating combustion reactions
				355	physical and chemical changes in tire recycling		
				357	chemical reactions involve rearrangement of atoms		
				357	combustion reaction		
				361	heartburn reaction		
				361	chemical reactions in living systems		
				372	determine if changes are chemical or physical		
				378	consumer chemistry		
				378	combustion reactions		
				381	MRE ration heater reaction		
				395	chemistry of the atmosphere		
				395	chemistry of the atmosphere		
				397	carbon reactions		
				438	chemical reactions and the formation of acid rain		

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
12.5.6.A7 by end of grade 12	Chemistry	Structure and Properties of Matter	Recognize that the properties of matter are related to the structure and arrangement of their molecules and atoms, such as in metallic and nonmetallic crystals and carbon compounds.	284	changes of state	118	investigate melting
				284	states of matter and arrangement of molecules	118	molecules in a liquid
				291	density is independent of amount of substance	119	energy and phase changes
				292	elasticity is a physical property of matter	162	carbon reactions and the environment
				292	hardness is a physical property of matter		
				293	brittleness is a physical property of matter		
				294	tensile strength is a physical property of matter		
				294	malleability is a physical property of matter		
				294	development of Kevlar brand fiber		
				364	carbon chains		
				405	molecular structure of ice		
				457	engineers use specific heat of substances to design better products		
				498	phases changes in the atmosphere		

**Correlation to New Jersey Core Curriculum Content Standards for Science  
 Foundations of Physical Science with Earth and Space Science  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
12.5.6.A8 by end of grade 12	Chemistry	Structure and Properties of Matter	Know that different levels of energy are associated with different arrangements of electrons.	388	showing valence electrons in a diagram	140	find the number of electrons in outermost level
12.5.6.B1 by end of grade 12	Chemistry	Chemical Reactions	Explain that the rate of reactions among atoms and molecules depends on how often they encounter one another and that the rate is affected by nature of reactants, concentration, pressure, temperature, and the presence of a catalyst.	364	formation of petroleum is a very slow chemical reaction	156	predict products in a double displacement reaction
12.5.6.B2 by end of grade 12	Chemistry	Chemical Reactions	Show that some changes in chemical bonds require a net input or net release of energy.	381 382	exothermic reactions and MREs endothermic reactions and cold packs	158 158	investigate energy changes in chemical reactions measure energy changes in 3 different reactions
12.5.7.A1 by end of grade 12	Physics	Motions and Forces	Apply the mathematical relationship between the mass of an object, the net force exerted on it, and the resulting acceleration.	45 49 64	Newton's second law summarized Newton's second law in detail solving problems using $f=ma$	16 19	thinking about force discover 2nd law of motion

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
12.5.7.A2 by end of grade 12	Physics	Motions and Forces	Explain that whenever one object exerts a force on another, an equal and opposite force is exerted on the first object.	45  59	Newton's third law summarized  Newton's third law in detail	22  23	car and ramp and Newton's 3rd law  using 3rd law to explain common phenomena
12.5.7.A3 by end of grade 12	Physics	Motions and Forces	Recognize gravity as a universal force of attraction between masses and that the force is proportional to the masses and inversely proportional to the square of the distance between them.	52 52 54 55 606	gravity depends on mass the effect of gravity Newton's law of universal gravitation calculating gravitational force between objects Newton's law of universal gravitation	20  257	investigate effect of gravity on motion  relating the relationship between orbital speed and distance to the equation of universal gravitation
12.5.7.A4 by end of grade 12	Physics	Motions and Forces	Recognize that electrically charged bodies can attract or repel each other with a force that depends upon the size and nature of the charges and the distance between them and know that electric forces play an important role in explaining the structure.	105 106 107 108 108 159 163	charge is a fundamental property of matter static charge discussed explanation of coulomb how an electroscope works electroscopes magnetism explained understanding magnetic fields	42 62 64 66	investigate electric charge describing forces that magnets exert on each other testing materials to see if they are affected by magnets compare electromagnets and permanent magnets

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
12.5.7.A5 by end of grade 12	Physics	Motions and Forces	Know that there are strong forces that hold the nucleus of an atom together and that significant amount of energy can be released in nuclear reactions(fission,fusion, and nuclear decay) when these binding forces are disrupted.	387 389 389 389 393 393 400 623	fusion and fission explained forces in the nucleus strong nuclear force electromagnetic force radioisotopes in science and medicine carbon dating research pros and cons of nuclear technology nuclear fusion and the sun	136 138 160 161	strong force fusion and fission radioactive decay research pros and cons of uses for radioactive elements
12.5.7.A6 by end of grade 12	Physics	Motions and Forces	Explain how electromagnetic, gravitational, and nuclear forces can be used to produce energy by causing chemical, physical, or nuclear changes and relate the amount of energy produced to the nature and relative strength of the force.	91	understand basic forms of energy	39	identify type of energy involved

**Correlation to New Jersey Core Curriculum Content Standards for Science  
 Foundations of Physical Science with Earth and Space Science  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
12.5.7.B1 by end of grade 12	Physics	Energy Transformations	Explain how the various forms of energy (heat, electricity, sound, light) move through materials and identify the factors that affect that movement.	91	following an energy transformation	38	explore energy transformations
				91	understand basic forms of energy	39	make an energy flow chart
				91	energy conversions	39	identify type of energy involved
				101	concept of electric current	46	investigate concept of electric current
				121	electrical conductivity explained	49	conductivity of aluminum vs. copper
				195	waves transmit energy	105	explore relationship between color and wavelength
				196	waves are all around us		
				237	visible light and the electromagnetic spectrum	119	investigate temperature and energy transfer in melting process
				237	light waves and the electromagnetic spectrum		
				237	microwave ovens	134	investigating visible light with a spectrometer
				237	radio and television signals	188	investigate heating water with an immersion heater
				242	color and frequency of light waves	188	investigate the increase of temperature of water as thermal energy is added
				250	identify uses of electromagnetic waves		
				272	identify uses of electromagnetic waves	192	investigate convection in liquids
				406	hydrogen bonding and the gaseous state of water	204	investigating latent heat and thermal buffering
				451	temperature is a measure of average kinetic energy		

**Correlation to New Jersey Core Curriculum Content Standards for Science**  
***Foundations of Physical Science with Earth and Space Science***  
**Student Text and Investigation Manual**

Standard #: Grade level	Standard	Strand	Cumulative Progress	student text pg	detail	investigation pg	detail
				454	changes in temperature are directly related to changes in energy	265	an element's spectral lines correspond to specific wavelengths of light
				455	examples of flow of heat		
				461	conduction and convection and radiation		
				462	heat transfer through air		
				462	densely packed solids are good conductors of heat		
				463	warming hands over candle		
				463	convection currents and weather		
				464	convection currents in water		
				465	solid road surface emits radiation		
				465	transfer of heat by radiation		
				480	energy and radiation relationships		
				480	electromagnetic radiation		
				482	global warming and heat transfer by radiation		
				493	apply knowledge of heat transfer to different situations		

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

Standard #: Grade level	Standard	Strand	Cumulative Progress	student text pg	detail	investigation pg	detail
				623	nuclear fusion on the sun produces energy from matter		
				623	energy from the sun		
				626	the sun's energy reaches Earth in the form of electromagnetic waves		
				626	harnessing the sun's energy		
				633	Einstein's equation		
12.5.7.B2 by end of grade 12	Physics	Energy Transformations	Explain that while energy can be transformed from one form to another, the total energy of a closed system is constant.	87	concept of energy as stored work	36	energy conservation and the roller coaster
				88	potential and kinetic energy explained	37	investigating conservation of energy with rollercoaster
				90	conservation of energy explained	38	explore energy transformations
				91	understand basic forms of energy	38	conservation of energy and energy transformations
				91	energy conversions		
				92	energy transformations and conservation	39	identify type of energy involved
				93	different forms of energy described		
				96	prove that energy is conserved		

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
12.5.7.B3 by end of grade 12	Physics	Energy Transformations	Recognize that whenever mechanical energy is transformed, some heat is dissipated and is therefore unavailable for use.	84 85 85 92 96 97	work input and output efficiency explained some input work is converted to heat where does "spent" energy go? explain the "lost" energy find the efficiency of a machine	31	work output vs. work input
12.5.7.B4 by end of grade 12	Physics	Energy Transformations	Explain the nature of electromagnetic radiation and compare the components of the electromagnetic spectrum from radio waves to gamma rays.	237 237 479 480	visible light and the electromagnetic spectrum light waves and the electromagnetic spectrum ultraviolet and infrared light electromagnetic radiation	134	investigating visible light with a spectrometer
12.5.8.A1 by end of grade 12	Earth Science	Earth's Properties and Materials	Explain the interrelationship of the geosphere, hydrosphere, and the atmosphere.	440 471 472 477 478	oceans as part of the hydrosphere description of Earth's atmosphere effect of life on Earth's atmosphere layers of the atmosphere layers of the atmosphere		

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
12.5.8.B1 by end of grade 12	Earth Science	Atmosphere and Water	Describe how weather (in the short term) and climate (in the long term) involve the transfer of energy in and out of the atmosphere.	480	transfer of energy in and out of Earth's atmosphere		

**Correlation to New Jersey Core Curriculum Content Standards for Science**  
***Foundations of Physical Science with Earth and Space Science***  
**Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
12.5.8.C1 by end of grade 12	Earth Science	Processes that Shape the Earth	Use the theory of plate tectonics to explain the relationship among earthquakes, volcanoes, mid- ocean ridges, and deep-sea trenches.	528	predicting what Earth might look like in 50 million years	228	listing which kind of plate boundary is associated with each geologic feature
				528	definition of plate tectonics	229	identifying tectonic plates and plate boundaries
				530	sea-floor spreading and mid-ocean ridges	230	predicting plate movement over 50 million years and the resultant land features
				531	magnetic patterns on the sea floor	236	understanding the Volcanic Explosivity Index
				532	theory of plate tectonics	237	finding a pattern of volcanoes related to the locations of plate boundaries
				533	describing plate boundaries	237	examining the magma chemistry of volcanoes and how it relates to a volcano's location
				534	land features resulting from divergent plate boundaries	240	estimating the effects of meteor impacts on Earth
				534	divergent plate boundaries	241	identifying which geologic features on Earth were caused by meteors
				535	resulting land features from subduction		
				535	convergent plate boundaries		
				536	land features resulting from transform plate boundaries		
				536	transform plate boundaries		
				537	causes and descriptions of earthquakes		
				537	earthquakes and plate tectonics		

**Correlation to New Jersey Core Curriculum Content Standards for Science**  
***Foundations of Physical Science with Earth and Space Science***  
**Student Text and Investigation Manual**

Standard #: Grade level	Standard	Strand	Cumulative Progress	student text pg	detail	investigation pg	detail
				539	earthquakes rating scales		
				547	predict separation of North America and Europe in 75 million years		
				548	predict effects of divergent plate boundaries on Great Rift Valley		
				551	structure of a volcano		
				552	geologic basis for volcanic eruptions		
				552	formation of magma in Earth's mantle		
				553	where volcanic activity occurs		
				554	properties of volcanically formed rock		
				554	types and shapes of volcanoes		
				554	figure showing structure of different types of volcanoes		
				555	geologic basis for shield volcanoes		
				555	shield volcanoes		
				555	formation of shield volcanoes due to hot spots		

**Correlation to New Jersey Core Curriculum Content Standards for Science**  
***Foundations of Physical Science with Earth and Space Science***  
**Student Text and Investigation Manual**

Standard #: Grade level	Standard	Strand	Cumulative Progress	student text pg	detail	investigation pg	detail
				555	formation of Hawaiian Islands due to volcanic activity		
				556	formation of stratovolcanoes due to subduction		
				556	geologic basis for stratovolcanoes		
				556	stratovolcanoes		
				557	geologic bases for cinder cone volcanoes		
				558	volcanoes shape the Earth		
				559	types of volcanic rock		
				561	describing volcanic rock		
				563	constructive process of mountain building		
				563	mountain-building		
				564	the destructive process of erosion		
				564	changes in land features due to erosion		
				565	wind erosion		
				566	effect of glaciers on land		

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
12.5.8.C2 by end of grade 12	Earth Science	Processes that Shape the Earth	Know that Earth is a system in which chemical elements exist in fixed amounts and move through the solid Earth, oceans, atmosphere, and living things as part of geochemical cycles.	437	effects of acid rain on natural environments	178	actions to take to improve water quality
				440	oceans in the water cycle	212	investigate how the ocean's salinity affects its density
				441	sources of salts in the ocean		
				442	composition of seawater		
				471	nitrogen cycle		
				533	activity of Earth's crust at plate boundaries		
				534	balance of creating and consuming Earth's crust		
				559	volcanoes and water vapor		
				562	constructive and destructive processes		
				564	landforms shaped by water		
				576	the rock cycle		

**Correlation to New Jersey Core Curriculum Content Standards for Science**  
***Foundations of Physical Science with Earth and Space Science***  
**Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
12.5.8.C3 by end of grade 12	Earth Science	Processes that Shape the Earth	Recognize that the evolution of life on Earth has changed the composition of Earth's atmosphere through time.	414	effect of electrical generating facilities on dissolved oxygen in water	178	predict the quality of surface water to be tested and justify your answer
				437	acid rain	182	the effects of acid rain on organisms in aquatic environments
				438	causes and health effects of acid rain	185	effect of ocean on carbon dioxide levels in the atmosphere
				439	illustration of acid rain formation	202	investigate the temperature effects of greenhouse gases
				443	impact of increased CO2 on oceans		
				443	impact of increased CO2 in oceans		
				479	effects of CFC's on the ozone layer		
				481	greenhouse conditions on Earth		
				481	greenhouse effect and greenhouse gasses		
				481	global warming		
				482	changes to the oceans due to increasing global temperatures		
				482	effects of burning fossil fuels		
				483	global temperature changing over time		
				485	research the density of Venus' and Mars' atmospheres		

**Correlation to New Jersey Core Curriculum Content Standards for Science**  
***Foundations of Physical Science with Earth and Space Science***  
**Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
				504	temperature inversion		
				515	permafrost		
				528	Earth's surface is changing		
				568	how urban sprawl changes local climate		
				615	greenhouse conditions on Venus		

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
12.5.8.D1 by end of grade 12	Earth Science	How We Study the Earth	Analyze the evidence produced by a variety of techniques that is used to understand changes in the Earth that have occurred over time (topography, fossils, rock stratification, ice cores, and radiometric data).	522	relative dating	225	determining the relative ages of rock formations
				523	interpreting rock formations	226	sequencing events in a geologic cross-section
				523	faunal succession	228	reading a bathymetric map
				528	predicting what Earth might look like in 50 million years	229	using a geologic hazard map of frequent earthquakes
				534	land features resulting from divergent plate boundaries	230	predicting plate movement over 50 million years and the resultant land features
				535	resulting land features from subduction	240	estimating the effects of meteor impacts on Earth
				536	land features resulting from transform plate boundaries	241	identifying which geologic features on Earth were caused by meteors
				540	where earthquakes occur		
				541	earthquake hazard map		
				547	predict separation of North America and Europe in 75 million years		
				548	predict effects of divergent plate boundaries on Great Rift Valley		
				555	formation of Hawaiian Islands due to volcanic activity		
				558	volcanoes shape the Earth		
				563	mountain-building		

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

Standard #: Grade level	Standard	Strand	Cumulative Progress	student text pg	detail	investigation pg	detail
				563	constructive process of mountain building		
				564	the destructive process of erosion		
				564	changes in land features due to erosion		
				565	wind erosion		
				566	effect of glaciers on land		
				567	geologic hazard maps		
				569	studying moon rocks on Earth		
				580	using a geologic hazard map		

**Correlation to New Jersey Core Curriculum Content Standards for Science  
 Foundations of Physical Science with Earth and Space Science  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
12.5.9.A1 by end of grade 12	Astronomy and Space Science	Earth, Moon, Sun System	Explain how the motions of the Earth, sun and moon, define units of time including: days,month, and years.	491	the effects of Earth's rotation on daytime heating and nighttime cooling	208	developing a hypothesis about why the seasons occur
				492	Earth's tilt causes seasons	210	investigating how the distance of Earth from the sun affects its intensity
				584	the lunar cycle		
				585	Earth's rotation and patterns of day and night	211	investigating how Earth's tilt affects the sun's intensity
				587	axial tilt causes the seasons		
				588	lunar eclipses	238	why studying the moon's surface is useful for understanding Earth
				588	solar eclipses		
				589	solar eclipses	248	building a sundial to keep track of daily time based on the cycles between Earth and the sun
				589	solar eclipses		
				601	identify seasons		
				607	properties of the moon	250	modeling the lunar cycle
				608	the moon as a satellite of Earth	251	constructing a lunar calendar
				609	the moon's effect on tides on Earth		
				610	the Earth-moon system		
				611	giant impact theory		

**Correlation to New Jersey Core Curriculum Content Standards for Science**  
***Foundations of Physical Science with Earth and Space Science***  
**Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
12.5.9.A2 by end of grade 12	Astronomy and Space Science	Earth, Moon, Sun System	Recognize that changes in the Earth's position relative to the sun produces differing amounts of daylight seasonally.	491 492 585 587 588 589 601	the effects of Earth's rotation on daytime heating and nighttime cooling Earth's tilt causes seasons Earth's rotation and patterns of day and night axial tilt causes the seasons solar eclipses solar eclipses identify seasons	208 210 211 248	developing a hypothesis about why the seasons occur investigating how the distance of Earth from the sun affects its intensity investigating how Earth's tilt affects the sun's intensity building a sundial to keep track of daily time based on the cycles between Earth and the sun
12.5.9.B1 by end of grade 12	Astronomy and Space Science	Solar System	Explain that our solar system coalesced from a nebular cloud of gas and dust left from exploding stars.	641	how the solar system was formed		

**Correlation to New Jersey Core Curriculum Content Standards for Science**  
***Foundations of Physical Science with Earth and Space Science***  
**Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
12.5.9.C1 by end of grade 12	Astronomy and Space Science	Stars	Describe the physical characteristics, stages of development, and the apparent motions of stars.	638 639 639 640 640	the life cycle of stars death of small to medium stars results in white dwarfs and planetary nebula and black dwarfs description and illustration of the life cycle of stars death of massive stars results in supernovas and neutron stars and black holes elements formed by nuclear fusion in stars	255 264	observe and describe the appearance of the moon and Jupiter and its moons using spectroscopy to analyze the light emitted by stars and identify most common elements
12.5.9.D1 by end of grade 12	Astronomy and Space Science	Galaxies and Universe	Describe data gathering and observation technologies and explain how they are used to explore the solar system and beyond.	594 595 596 597 598 634	history of the telescope types and uses of telescopes types and uses of telescopes satellites as tools of astronomy spacecraft as tools of astronomy the use of spectroscopy to analyze stars	264 268	understand why spectroscopy is an important tool of astronomers measuring apparent brightness to calculate the distance to stars and galaxies

**Correlation to New Jersey Core Curriculum Content Standards for Science  
*Foundations of Physical Science with Earth and Space Science*  
 Student Text and Investigation Manual**

<b>Standard #: Grade level</b>	<b>Standard</b>	<b>Strand</b>	<b>Cumulative Progress</b>	<b>student text pg</b>	<b>detail</b>	<b>investigation pg</b>	<b>detail</b>
12.5.9.D2 by end of grade 12	Astronomy and Space Science	Galaxies and Universe	Cite evidence to describe the scientific theory of the origin of the universe and the current explanations of its evolution.	611	historical theories of the origin of the moon		
				612	historical theories about the solar system		
				621	historical theories of which objects were planets		
				647	the Big Bang theory of the origin of the universe		
				648	evidence for the Big Bang theory		
				649	evidence for the Big Bang theory		