

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
I.1.1.01 Scientific Thinking and Practice	Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.	Use accepted scientific methods to collect, analyze, and interpret data and observations and to design and conduct scientific investigations and communicate results.	Describe the essential components of an investigation, including appropriate methodologies, proper equipment, and safety precautions.	9	steps in the scientific method	6	how do we ask questions and get answers from nature?
				10	the research question and hypothesis	7	doing a controlled experiment
				10	forming a hypothesis	7	variables in an experiment
				11	control and experimental variables	7	compare results with hypothesis
				12	writing lab procedures	9	conduct three experiments with appropriate equipment
				19	design your own experiment	9	design three experiments and choose equipment
				26	independent and dependent variables	9	design three experiments and choose equipment
				28	identifying cause and effect relationships	10	selecting ramp and photogates
				41	identify cause and effect	12	select equipment and set up experiment
				288	find the thickness of a single card	20	safety tip for car/ramp setup
				429	why haven't we run out of water	21	determine effect of increasing mass
				434	what is in your tap water	21	choose independent and dependent variables for graph
				437	what is acid rain	24	ropes and pulley safety
				438	what causes acid rain	26	safety tip for hanging weights from lever
				441	why are oceans salty	27	recognize variables
				448	describe steps you would take to determine whether pH affects frog population		

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
				448	forming a hypothesis and testing through experimentation (#5)	30	rigging block and tackle
						40	electrical safety
				452	safety caution on heating jar	44	short circuit safety warning
						56	short circuit safety warning
				456	determining effect of changing mass on temperature changes	58	short circuit safety warning
						75	plan three experiments to determine which variable affects the period of a pendulum
				456	asking questions pertaining to specific heat and heat flow		
				460	thermal equilibrium	145	carry out procedure and select equipment
				472	why is Earth's atmosphere different from other planets	145	plan a procedure and select necessary equipment
				473	why do ears pop	146	safety in the lab
				492	why does Earth have seasons	150	chemistry safety
				497	factors that shape the weather	151	plan procedures and select materials
				501	how does rain form	151	select materials from list
				509	how do animals survive in the desert	158	wear goggles and apron
						168	safety equipment
				515	what is a carbon sink	170	write a procedure
				534	why doesn't Earth get bigger and bigger	170	which factor will produce fastest dissolving rate?
				588	what causes eclipses	172	hot water safety
				602	identify question, hypothesis, procedure, and results (#1)	179	safety tip for testing local surface water

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
				608	relationship between orbital speed and distance between two objects	180	safety tip for water testing
						182	safety tips for observing Daphnia
				621	is Pluto a planet	186	thermometer safety
						188	heat safety
						190	effect of changing mass on collected data
						190	effect of changing mass on data
						192	heat safety
						194	design and construct an aneroid barometer
						196	writing a procedure for constructing a pointer for an aneroid barometer
						197	identifying relationships between air pressure and weather
						202	safety in greenhouse gas investigation
						206	identifying relationship between percent of Earth covered in water and temperature range
						209	measuring the intensity of light using an electric meter and solar cell and light bulb
						210	safety using light bulbs

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
						211	determining whether distance from light source or axial tilt plays a more significant role in causing the seasons
						214	develop a procedure to create an underwater spring
						216	safety in swinging thermometers
						224	sequencing events
						235	concluding which conditions affect the timing and duration and intensity of an earthquake based on observation
						237	develop a research plan for studying volcanoes
						241	justify which scenario was most likely
						252	identifying the parts of a refracting telescope and making observations of the moon's surface
						256	safety in lab
						256	investigation discovering relationship between orbital speed and distance

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
I.1.1.02 Scientific Thinking and Practice	Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.	Use accepted scientific methods to collect, analyze, and interpret data and observations and to design and conduct scientific investigations and communicate results.	Design and conduct scientific investigations.	7	experimentation begins with a question	7	perform your own experiment
				9	steps in the scientific method	7	compare results with hypothesis
				10	forming a hypothesis	7	design your own experiment
				19	design your own experiment	9	design three experiments and choose equipment
				19	design your own experiment	9	conduct three experiments with appropriate equipment
				42	devise an experiment	9	design three experiments using car and ramp
				288	find the thickness of a single card	9	design three experiments and choose equipment
				448	describe steps you would take to determine whether pH affects frog population	9	design three experiments and choose technology
						10	selecting ramp and photogates
						10	conduct car/ramp experiment
						12	select equipment and set up experiment
						16	decide how to vary the force on the car for this experiment
						16	investigate Newton's 2nd law
						26	what variables can be changed?

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
						30	rigging block and tackle
						34	investigate motion on a rollercoaster
						40	choose circuit parts to light a bulb
						75	perform self-designed experiment
						75	design pendulum experiment
						75	plan three experiments to determine which variable affects the period of a pendulum
						93	decision trees and the advantage of doing multiple trials
						145	carry out procedure and select equipment
						145	plan a procedure and select necessary equipment
						151	design experiment to find out if mass is conserved
						151	plan procedures and select materials
						151	select materials from list
						170	which factor will produce fastest dissolving rate?
						170	what three factors influence dissolving rate?

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
						178	visit local water supply and perform testing
						182	simulating the effect of acid rain on daphnia
						188	conducting investigation of efficiency of immersion heater
						193	conducting experiments on heat transfer
						194	design and construct an aneroid barometer
						198	making qualitative observations of the amount of ozone present in the school environment
						205	investigating how specific heat of water regulates Earth's temperature
						209	measuring the intensity of light using an electric meter and solar cell and light bulb
						233	identifying how the earthquake model represents an earthquake
						237	develop a research plan for studying volcanoes
						252	identifying the parts of a refracting telescope and making observations of the moon's surface

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
I.1.1.03 Scientific Thinking and Practice	Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.	Use accepted scientific methods to collect, analyze, and interpret data and observations and to design and conduct scientific investigations and communicate results.	Use appropriate technologies to collect, analyze, and communicate scientific data (e.g., computers, calculators, balances, and microscopes).	5 24 288 497 594	measuring distance using an electronic timer find the thickness of a single card sling psychrometer telescopes		data tables and graphs can be created on computer or graphing calculator 5 measuring metric and english lengths 6 measure time 9 conduct three experiments with appropriate equipment 9 design three experiments and choose equipment 9 design three experiments and choose equipment 9 design three experiments and choose technology 10 selecting ramp and photogates 12 select equipment and set up experiment 12 using photogates 14 using photogates 16 use a force scale 16 measure force 17 use photogates to study car on ramp 18 use a balance to find mass of car 30 use force scale

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
						30	rigging block and tackle
						40	choose circuit parts to light a bulb
						44	measure voltage
						44	using electrical meter
						46	using electrical meter
						46	measure current
						48	using electrical meter
						48	measure resistance
						50	using electrical meter
						87	measure wavelength
						116	measure mass
						117	measure volume
						145	plan a procedure and select necessary equipment
						145	carry out procedure and select equipment
						151	plan procedures and select materials
						151	select materials from list
						158	use a thermometer
						186	measure temperature
						194	design and construct an aneroid barometer

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
						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 Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
I.1.1.04 Scientific Thinking and Practice	Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.	Use accepted scientific methods to collect, analyze, and interpret data and observations and to design and conduct scientific investigations and communicate results.	Convey results of investigations using scientific concepts, methodologies, and expressions.	12	writing lab procedures	6	compare results with other groups
				19	which group did the best experiment?	7	perform your own experiment
				20	finding variability in data	9	present conclusions to the class
				20	explain your reasoning	9	reporting on an experiment
				24	interpretations of patterns in data	10	conduct car/ramp experiment
				24	making a graph	11	graph speed vs. position
				26	creating graphs	11	analyze speed change of car
				27	reading a graph	13	graph distance vs. time
				28	identifying cause and effect relationships	15	interpret a speed vs. time graph
				41	identify cause and effect	15	construct a quantitative graphical model
				41	make a graph	16	investigate Newton's 2nd law
				42	interpreting distance/time graph	18	study data table for relationship between force and motion
				42	analyze a speed/distance graph	18	evaluate graphs as to whether or not they show relationships between variables
				78	analyze lever diagram	18	use data to describe relationship between force and motion
				79	look at force data and decide the usefulness of a machine		
				438	what causes acid rain		
				456	determining effect of changing mass on temperature changes		
				459	heat equation		

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
				460	thermal equilibrium	19	use data to infer correct relationship between variables
				476	atmospheric pressure at various altitudes graph	21	construct reasonable explanation based on data
				497	factors that shape the weather	21	determine effect of increasing mass
				608	relationship between orbital speed and distance between two objects	21	evaluate percent change for data collected
				645	apparent brightness vs. distance graph	25	create a mathematical model
				645	inverse square law	25	analyze block and tackle data
				651	arrange the items in the table (#3)	27	analyze lever equilibrium data
				651	use the diagram to answer the questions (#2)	27	find math rule for lever equilibrium
				651	use the diagram to answer the questions (#4)	28	derive a math formula
						30	interpret block and tackle data
						34	investigate motion on a rollercoaster
						35	study data and determine importance of height on speed of marble
						35	does data support hypothesis?
						37	describe the flow of energy based on experimental graph

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
						37	organize data into a graph of speed vs. height
						39	give a brief presentation to the class
						45	analyze data and explain a rule
						45	did battery voltage change?
						47	present and defend an explanation
						51	graph voltage vs. current
						75	perform self-designed experiment
						75	evaluate statistical significance
						76	analyze pendulum data
						101	how could you extend the investigation to explore materials that give off light when heated?
						117	how could you find the volume of one drop of water?
						121	graph mass vs. volume
						141	build models of Na and Cl and use them to explain bonding
						145	present findings and methods used

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
						147	organize observations into a category table
						147	students analyze chemical change lab results
						151	present results to the class
						157	add new rules to list based on findings
						170	write a procedure
						171	evaluate method based on data
						179	create water quality report
						181	write paragraph to explain results
						182	making hypotheses and testing them against observations
						182	simulating the effect of acid rain on daphnia
						183	write summary of findings
						183	specifying how the daphnia experiment could be improved
						185	analyzing the results of the buffered acid experiment
						185	constructing a graph of drops of acid vs pH

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
						187	construct a graphical model
						187	find equation for trend line
						188	conducting investigation of efficiency of immersion heater
						189	construct a temperature vs. time graph
						190	effect of changing mass on data
						193	explaining efficiency of heat transfer based on data
						193	conducting experiments on heat transfer
						196	writing a procedure for constructing a pointer for an aneroid barometer
						197	constructing a graph from atmospheric pressure data
						197	evaluating your aneroid barometer design
						197	identifying relationships between air pressure and weather
						200	evaluating your qualitative ozone strips
						203	graphing water and ice temperature readings

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
						205	investigating how specific heat of water regulates Earth's temperature
						206	constructing a graph of time vs. temperature
						206	identifying relationship between percent of Earth covered in water and temperature range
						214	develop a procedure to create an underwater spring
						217	determining relationship between temperature of the atmosphere and relative humidity
						218	interpreting Doppler radar images
						224	reconstruct a series of events from clues
						224	sequencing events
						235	interpreting how the drumming affects the intensity of the earthquake in the model
						235	concluding which conditions affect the timing and duration and intensity of an earthquake based on observation

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
						237	finding a pattern of volcanoes on a bathymetric map
						241	justify which scenario was most likely
						256	investigation discovering relationship between orbital speed and distance
						257	inverse square law
						268	discovering the mathematical relationship between apparent brightness and distance

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
I.1.1.05 Scientific Thinking and Practice	Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.	Use accepted scientific methods to collect, analyze, and interpret data and observations and to design and conduct scientific investigations and communicate results.	Understand how scientific theories are used to explain and predict natural phenomena (e.g., plate tectonics, ocean currents, structure of atom).	20	how will speed change?	6	asking questions and learning about natural world
				23	why make models?		
				24	predicting speed from a graph	76	use data to predict best string length for a pendulum clock
				24	scientific models		
				24	what is a scientific model?	121	use graph to predict mass of six objects
				42	predict the speed of a car		
				313	development of atomic theory	130	investigate Rutherford's gold foil experiment
				324	research and create a poster to illustrate development of atomic model	156	make predictions about solubility
						201	predicting areas with high ozone concentration based on your data
				473	why do ears pop		
				485	computer modeling to predict greenhouse effects	202	modeling the effect of greenhouse gases on Earth's temperature
				493	convection currents in the atmosphere	204	predicting what would happen if you place your ice/water test tube into a hot cup or a cold cup
				494	modeling air currents		
				504	meteorologists use atmospheric pressure data to understand movement of weather systems	212	modeling underwater rivers and waterfalls and springs
				518	create a model (#1)	213	exploring how temperature-dependent layering creates currents
				524	model of Earth's history		
				528	definition of plate tectonics	215	the food paradox of the oceans
				532	theory of plate tectonics		

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
				533	modeling plate boundaries	232	construct a model that simulates an earthquake
				576	rock cycle model		
				614	solar system modeling	239	estimating the number of meteor collisions on Earth during the last 3.5 billion years
				624	model of the sun's anatomy		
				648	evidence for Big Bang theory	242	predicting the results of the crystal-growing experiment
						258	setting up a scale model of the solar system

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
I.I.II.01 Scientific Thinking and Practice	Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.	Understand that scientific processes produce scientific knowledge that is continually evaluated, validated, revised, or rejected.	Understand how scientific process produce valid, reliable results.	19	which group did the best experiment?	6	asking questions and learning about natural world
				20	explain your reasoning	7	variables in an experiment
				448	forming a hypothesis and testing through experimentation (#5)	9	present conclusions to the class
				473	why do ears pop	18	evaluate graphs as to whether or not they show relationships between variables
				504	meteorologists use atmospheric pressure data to understand movement of weather systems	21	evaluate percent change for data collected
				602	identify question, hypothesis, procedure, and results (#1)	37	describe the flow of energy based on experimental graph
				648	evidence for Big Bang theory	39	give a brief presentation to the class
						47	present and defend an explanation
						75	evaluate statistical significance
						145	present findings and methods used
						151	present results to the class
						171	evaluate method based on data
						200	evaluating your qualitative ozone strips

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
						215 the food paradox of the oceans	

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
I.I.II.02 Scientific Thinking and Practice	Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.	Understand that scientific processes produce scientific knowledge that is continually evaluated, validated, revised, or rejected.	Use scientific reasoning and valid logic.	10	the research question and hypothesis	6	how do we ask questions and get answers from nature?
				19	which group did the best experiment?	6	predict which car will move fastest
				20	finding variability in data	7	test the effect of one other variable
				28	identifying cause and effect relationships	7	perform your own experiment
				41	identify cause and effect	9	devise a hypothesis
				79	look at force data and decide the usefulness of a machine	10	conduct car/ramp experiment
				429	why haven't we run out of water	16	investigate Newton's 2nd law
				434	what is in your tap water	18	evaluate graphs as to whether or not they show relationships between variables
				437	what is acid rain	18	use data to describe relationship between force and motion
				438	what causes acid rain	19	use data to infer correct relationship between variables
				441	why are oceans salty	21	determine effect of increasing mass
				451	what is temperature	21	evaluate percent change for data collected
				456	determining effect of changing mass on temperature changes	27	think about the variables
				456	asking questions pertaining to specific heat and heat flow		
				460	thermal equilibrium		
				472	why is Earth's atmosphere different from other planets		

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
				473	why do ears pop	30	interpret block and tackle data
				492	why does Earth have seasons	34	investigate motion on a rollercoaster
				497	factors that shape the weather	34	where does the marble move the fastest?
				501	how does rain form	43	how did A and B tapes acquire different charge?
				509	how do animals survive in the desert	75	evaluate statistical significance
				515	what is a carbon sink	75	investigate variables that affect the period of a pendulum
				530	proving hypotheses for sea-floor spreading	75	perform self-designed experiment
				534	why doesn't Earth get bigger and bigger	141	build models of Na and Cl and use them to explain bonding
				580	form a hypothesis (#7)	151	explain how hypothesis compares to results
				588	what causes eclipses	151	perform the experiment you designed
				608	relationship between orbital speed and distance between two objects	157	add new rules to list based on findings
				621	is Pluto a planet	170	which method will give fastest dissolving rate?
						170	devise hypothesis and explain
						170	devise hypothesis and explain

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
						171	evaluate method based on data
						182	formulate hypothesis
						182	simulating the effect of acid rain on daphnia
						182	making hypotheses and testing them against observations
						185	analyzing the results of the buffered acid experiment
						188	conducting investigation of efficiency of immersion heater
						190	effect of changing mass on data
						193	explaining efficiency of heat transfer based on data
						193	conducting experiments on heat transfer
						197	identifying relationships between air pressure and weather
						197	evaluating your aneroid barometer design
						200	evaluating your qualitative ozone strips
						205	investigating how specific heat of water regulates Earth's temperature

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
						206	identifying relationship between percent of Earth covered in water and temperature range
						208	formulate a hypothesis about why the seasons occur
						208	testing hypothesis of why seasons occur against your observations in the investigation
						224	sequencing events
						224	reconstruct a series of events from clues
						235	interpreting how the drumming affects the intensity of the earthquake in the model
						235	concluding which conditions affect the timing and duration and intensity of an earthquake based on observation
						241	justify which scenario was most likely
						256	investigation discovering relationship between orbital speed and distance

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
I.I.II.03 Scientific Thinking and Practice	Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.	Understand that scientific processes produce scientific knowledge that is continually evaluated, validated, revised, or rejected.	Understand how new data and observations can result in new scientific knowledge.	19 73	which group did the best experiment? impact of Da Vinci's work	18 21 75 157 171 197 200	evaluate graphs as to whether or not they show relationships between variables evaluate percent change for data collected evaluate statistical significance add new rules to list based on findings evaluate method based on data evaluating your aneroid barometer design evaluating your qualitative ozone strips

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
I.I.II.04 Scientific Thinking and Practice	Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.	Understand that scientific processes produce scientific knowledge that is continually evaluated, validated, revised, or rejected.	Critically analyze an accepted explanation by reviewing current scientific knowledge.	10	process of reviewing hypothesis explained	35	what evidence is there in support of your hypothesis?
				521	relative dating and modern geology based on Steno's theories	39	critique group's explanation of energy transformations
				524	Kelvin's calculations of Earth's age	39	review energy theory in context of everyday scenarios
				528	theory of plate tectonics	39	analyze energy transformations in different scenarios
				529	critiquing Wegener's theories of continental drift	77	show how energy loss data could be applied to designing a real clock
				563	Darwin's theories of the Andes formation	77	compare law of conservation of energy to motion of pendulum
				566	what causes ice ages	151	review your hypothesis
				611	theories of origin of the moon	151	do the data support the hypothesis
				612	early theories of the solar system	171	did you prove or disprove your hypothesis?
				647	Big Bang theory	171	what was happening at molecular level?

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
I.I.II.05 Scientific Thinking and Practice	Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.	Understand that scientific processes produce scientific knowledge that is continually evaluated, validated, revised, or rejected.	Examine investigations of current interest in science (e.g., superconductivity, molecular machines, age of the universe).	73 648 649	impact of Da Vinci's work evidence for the Big Bang theory evidence for the Big Bang theory		

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
I.I.II.06 Scientific Thinking and Practice	Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.	Understand that scientific processes produce scientific knowledge that is continually evaluated, validated, revised, or rejected.	Examine the scientific processes and logic used in investigations of past events, investigations that can be planned in advance but are only done once, and investigations of phenomena that can be repeated easily and frequently.	7	experimentation begins with a question	6	asking questions and learning about natural world
				9	steps in the scientific method	7	compare results with hypothesis
				10	forming a hypothesis	7	perform your own experiment
				19	design your own experiment	7	design your own experiment
				19	design your own experiment	9	design three experiments and choose equipment
				42	devise an experiment	9	design three experiments using car and ramp
				73	impact of Da Vinci's work	9	design three experiments and choose equipment
				288	find the thickness of a single card	10	conduct car/ramp experiment
				448	describe steps you would take to determine whether pH affects frog population	16	decide how to vary the force on the car for this experiment
				473	why do ears pop	16	investigate Newton's 2nd law
				504	meteorologists use atmospheric pressure data to understand movement of weather systems	26	what variables can be changed?
				648	evidence for Big Bang theory	34	investigate motion on a rollercoaster
						75	plan three experiments to determine which variable affects the period of a pendulum

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
						75	perform self-designed experiment
						75	design pendulum experiment
						93	decision trees and the advantage of doing multiple trials
						145	plan a procedure and select necessary equipment
						151	plan procedures and select materials
						151	design experiment to find out if mass is conserved
						170	which factor will produce fastest dissolving rate?
						170	what three factors influence dissolving rate?
						178	visit local water supply and perform testing
						182	simulating the effect of acid rain on daphnia
						188	conducting investigation of efficiency of immersion heater
						193	conducting experiments on heat transfer
						194	design and construct an aneroid barometer

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
						198	making qualitative observations of the amount of ozone present in the school environment
						205	investigating how specific heat of water regulates Earth's temperature
						215	the food paradox of the oceans
						233	identifying how the earthquake model represents an earthquake
						237	develop a research plan for studying volcanoes

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
I.1.III.01 Scientific Thinking and Practice	Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.	Use mathematical concepts, principles, and expressions to analyze data, develop models, understand patterns and relationships, evaluate findings, and draw conclusions.	Create multiple displays of data to analyze and explain the relationships in scientific investigations.	24 26 41 42 459 645	making a graph creating graphs make a graph interpreting distance/time graph heat equation inverse square law	9 12 13 15 17 18 24 25 27 27 28 30 36 37 51	data tables and graphs can be created on computer or graphing calculator construct a data table 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 create a mathematical model use data table to record results find math rule for lever equilibrium derive a math formula 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

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
						75	create data table for self-designed experiment
						121	graph mass vs. volume
						147	organize observations into a category table
						151	design a data table
						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
						187	find equation for trend line
						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
						257	inverse square law
						268	discovering the mathematical relationship between apparent brightness and distance

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
I.1.III.02 Scientific Thinking and Practice	Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.	Use mathematical concepts, principles, and expressions to analyze data, develop models, understand patterns and relationships, evaluate findings, and draw conclusions.	Use mathematical models to describe, explain, and predict natural phenomena.	24	interpretations of patterns in data	15	interpret a speed vs. time graph
				27	reading a graph	25	create a mathematical model
				42	interpreting distance/time graph	27	find math rule for lever equilibrium
				78	analyze lever diagram	28	derive a math formula
				459	heat equation	151	does your experiment agree with law of conservation of mass?
				476	atmospheric pressure at various altitudes graph	187	find equation for trend line
				645	inverse square law	217	determining relationship between temperature of the atmosphere and relative humidity
				645	apparent brightness vs. distance graph	218	interpreting Doppler radar images
				651	use the diagram to answer the questions (#2)	231	evaluating your completed bathymetric map
				651	arrange the items in the table (#3)	237	finding a pattern of volcanoes on a bathymetric map
				651	use the diagram to answer the questions (#4)	247	evaluate your ability to interpret rock formations
						257	inverse square law
						268	discovering the mathematical relationship between apparent brightness and distance

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
I.1.III.03 Scientific Thinking and Practice	Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.	Use mathematical concepts, principles, and expressions to analyze data, develop models, understand patterns and relationships, evaluate findings, and draw conclusions.	Use technologies to quantify relationships in scientific hypotheses.	5	measuring distance	5	measuring metric and english lengths
						6	measure time
						7	perform your own experiment
						9	design three experiments and choose technology
						10	conduct car/ramp experiment
						16	measure force
						16	investigate Newton's 2nd law
						34	investigate motion on a rollercoaster
						40	choose circuit parts to light a bulb
						44	measure voltage
						46	measure current
						48	measure resistance
						75	perform self-designed experiment
						87	measure wavelength
						116	measure mass
						117	measure volume
						182	simulating the effect of acid rain on daphnia
						186	measure temperature

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
						188 conducting investigation of efficiency of immersion heater 193 conducting experiments on heat transfer 205 investigating how specific heat of water regulates Earth's temperature	

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
I.1.III.04 Scientific Thinking and Practice	Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.	Use mathematical concepts, principles, and expressions to analyze data, develop models, understand patterns and relationships, evaluate findings, and draw conclusions.	Identify and apply measurement techniques and consider possible effects of measurement errors.	5	measuring distance	4	difference between precise and accurate data
				11	controlling variables in experiments	5	measuring metric and english lengths
				12	importance of reliable and accurate data collection	6	measure time
				19	did you run a controlled experiment?	6	electronic timer and release technique
				20	what factors could explain the variability in their data?	7	what variables should be controlled?
				485	what percentage comes from this source? (problem 4)	7	record time interval
				543	determining distance to an epicenter	9	collect speed data
				547	what explains the difference in density? (#5)	11	calculate % error
				605	how big is Earth?	16	measure force
						17	record times
						24	collect weight data
						36	collect precise speed and height data
						44	measure voltage
						46	measure current
						48	measure resistance
						75	collect mass and amplitude data
						76	calculate % error
						87	measure wavelength
						116	measure mass
						117	measure volume

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
						129	control the height of the liquid
						169	why was plain water tested?
						169	what does the word control mean?
						171	collect time data and record observations
						182	making detailed observations
						184	collecting pH readings while adding carbon dioxide
						186	collecting temperature data
						186	measure temperature
						189	collecting time and temperature data
						193	collecting and recording time and temperature data
						197	calculating error between your barometer and a commercial barometer
						199	importance of good record keeping in order to avoid error
						249	using your sundial to collect accurate data
						253	calibrating your telescope

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
I.1.III.05 Scientific Thinking and Practice	Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.	Use mathematical concepts, principles, and expressions to analyze data, develop models, understand patterns and relationships, evaluate findings, and draw conclusions.	Use mathematics to express and establish scientific relationships.	24	interpretations of patterns in data	15	interpret a speed vs. time graph
				27	reading a graph	25	create a mathematical model
				42	interpreting distance/time graph	27	find math rule for lever equilibrium
				78	analyze lever diagram	28	derive a math formula
				459	heat equation	187	find equation for trend line
				476	atmospheric pressure at various altitudes graph	217	determining relationship between temperature of the atmosphere and relative humidity
				645	inverse square law	218	interpreting Doppler radar images
				645	apparent brightness vs. distance graph	237	finding a pattern of volcanoes on a bathymetric map
				651	use the diagram to answer the questions (#2)	257	inverse square law
				651	arrange the items in the table (#3)	268	discovering the mathematical relationship between apparent brightness and distance
				651	use the diagram to answer the questions (#4)		

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
II.1.1.01 The Content of Science	Physical Science: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.	Understand the properties, underlying structure, and reactions of matter.	Classify matter in a variety of ways (e.g., element, compound, mixture; solid liquid, gas; acidic, basic, neutral).	180	harmonic motion in natural systems	114	investigate a homogeneous mixture
				258	optical systems	119	energy and phase changes
				278	system of classifying matter	141	compare and contrast elements and compounds
				279	summary of matter classification	169	investigate solutions and colloids and suspensions
				283	atoms and molecules	176	investigate acids and bases
				284	changes of state		
				288	create a poster of matter classification		
				407	a solute and a solvent make up a system		
				417	acids and bases compared/contrasted		
				417	define and compare acids and bases		
				429	the water cycle		
				435	pond ecosystem and water quality		
				438	acid rain formation system		
				498	phases changes in the atmosphere		

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
II.1.1.02 The Content of Science	Physical Science: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.	Understand the properties, underlying structure, and reactions of matter.	Identify, measure, and use a variety of physical and chemical properties.	278	mixtures can be separated by physical means	114	separating a homogeneous mixture
				284	melting and boiling points	116	mass and volume measurements
				284	melting and boiling point explained	118	observe melting process and study quantitatively
				285	characteristics of matter related to its state	119	melting point of ice
				285	table of melting and boiling points	124	build a density column
				291	density is independent of amount of substance	126	investigating buoyancy with clay boats
				291	density explained	128	use CPO viscometer to study viscosity
				292	hardness is a physical property of matter	132	building atom models
				292	elasticity is a physical property of matter	136	model stable and neutral atoms
				293	brittleness is a physical property of matter	141	build model of Na and Cl atoms and explain why they bond to form a molecule
				294	malleability is a physical property of matter	142	arrangement of electrons and groups of elements
				294	tensile strength is a physical property of matter	146	investigate and observe chemical and physical changes in the lab
				295	relationship between mass volume and density	170	design experiments to explore dissolving rate
				296	density of liquid water vs. ice	170	solubility and temperature
				297	buoyancy explained	172	investigate solubility of sugar
				298	sinking and floating		

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
				302	viscosity of motor oils	175	solubility and pressure
				305	viscosity of glue mixtures	181	water quality testing
				318	proton/electron attraction	181	water quality testing
				321	groups of elements and valence shells	212	investigate density changes in the oceans as the cause of ocean layering
				329	periodic table columns and valence electrons		
				330	bonding and periodic table position		
				332	periodic table and electronegativities		
				335	periodic table and oxidation numbers		
				353	physical and chemical changes and digestion		
				355	physical and chemical changes in tire recycling		
				372	determine if changes are chemical or physical		
				403	why water is a nearly universal solvent		
				407	solute and solvent defined		
				407	definitions of solution and solute and solvent		
				409	polar solutes		
				412	effect of nature of solvent on solubility		
				412	effect of temperature on solubility		

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
				412	solubility value		
				413	temperature-solubility graphs		
				414	effect of pressure on solubility of gasses		
				414	effect of temperature on solubility of gasses		
				414	pressure and the solubility of gases		
				415	saturated and supersaturated solutions		
				416	SCUBA diving and effects of pressure on gasses in the bloodstream		

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
II.1.1.03 The Content of Science	Physical Science: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.	Understand the properties, underlying structure, and reactions of matter.	Know how to use properties to separate mixtures into pure substances.	278	pure substances cannot be separated by physical means	114	investigating a mixture
				278	mixtures can be separated by physical means	114	separating a homogeneous mixture
				291	density is independent of amount of substance		
				292	elasticity is a physical property of matter		
				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		
				407	solutions are mixtures		
				408	colloids and suspensions		
426	mixtures and emulsifying agents						

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
II.1.1.04 The Content of Science	Physical Science: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.	Understand the properties, underlying structure, and reactions of matter.	Describe trends in properties.	284	melting and boiling point explained	116	mass and volume measurements
				284	melting and boiling points	119	melting point of ice
				285	table of melting and boiling points	141	build model of Na and Cl atoms and explain why they bond to form a molecule
				291	density is independent of amount of substance	142	arrangement of electrons and groups of elements
				292	hardness is a physical property of matter	170	design experiments to explore dissolving rate
				292	elasticity is a physical property of matter	170	solubility and temperature
				293	brittleness is a physical property of matter	172	investigate solubility of sugar
				294	malleability is a physical property of matter	175	solubility and pressure
				294	tensile strength is a physical property of matter	176	measure pH of everyday solutions
				294	development of Kevlar brand fiber	181	water quality testing
				295	relationship between mass volume and density	181	water quality testing
				321	groups of elements and valence shells		
				329	periodic table columns and valence electrons		
				330	bonding and periodic table position		
				332	periodic table and electronegativities		

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
				335	periodic table and oxidation numbers		
				403	why water is a nearly universal solvent		
				407	solute and solvent defined		
				407	definitions of solution and solute and solvent		
				409	polar solutes		
				412	effect of temperature on solubility		
				412	solubility value		
				412	effect of nature of solvent on solubility		
				413	temperature-solubility graphs		
				414	effect of temperature on solubility of gasses		
				414	effect of pressure on solubility of gasses		
				414	pressure and the solubility of gases		
				415	saturated and supersaturated solutions		
				416	SCUBA diving and effects of pressure on gasses in the bloodstream		
				418	formulas and reactions of acids and bases		

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
				420	concentration of hydronium ions determines pH and strength of acids and bases		
				422	pH and blood		
				422	examples of acid and base chemistry		
				437	concentration of ions and pH		
				437	pH of acid rain		
				457	engineers use specific heat of substances to design better products		

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
II.1.1.05 The Content of Science	Physical Science: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.	Understand the properties, underlying structure, and reactions of matter.	Understand that matter is made of atoms and that atoms are made of subatomic particles.	278	compounds are composed of elements	132	building atom models
				311	all matter is formed from atoms	132	comparing atoms
				311	all matter is formed from atoms	133	identify mass number
				311	protons/neutrons/electrons	133	protons and neutrons
				311	location/size/charge of subatomic particles	133	location of electrons in atom
				315	atomic number discussed	133	identify element symbol and name
				316	atomic number discussed	133	identify atomic number
				316	isotopes explained	133	exploring isotopes
				316	mass number discussed	136	mass number
				318	proton/electron attraction	136	understanding isotopes
				322	atomic number on the periodic table	136	model stable and neutral atoms
				322	chemical symbols and element names	136	atomic number
				322	atomic mass on the periodic table	137	build atomic models
				322	atomic mass on the periodic table	140	review subatomic particles
322	mass number on the periodic table	140	why do atoms form chemical bonds?				
		142	why do atoms combine in certain ratios?				

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
II.1.1.06 The Content of Science	Physical Science: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.	Understand the properties, underlying structure, and reactions of matter.	Understand atomic structure.	311	protons/neutrons/electrons	132	atomic number determines what element that atom is
				311	location/size/charge of subatomic particles	132	building atom models
				315	atoms of same element have same atomic number	133	protons and neutrons
				318	proton/electron attraction	133	location of electrons in atom
				388	showing valence electrons in a diagram	136	model stable and neutral atoms
						137	importance of atomic number
						137	build atomic models
						140	find the number of electrons in outermost level
						140	review subatomic particles

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
II.I.I.07 The Content of Science	Physical Science: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.	Understand the properties, underlying structure, and reactions of matter.	Explain how electrons determine the properties of substances.	315	atoms of same element have same atomic number	132	atomic number determines what element that atom is
				321	groups of elements and valence shells	137	importance of atomic number
				324	use the periodic table to predict chemical formulas	141	build model of Na and Cl atoms and explain why they bond to form a molecule
				324	which element is more likely to combine with other elements?	141	modeling a chemical bond
				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		
				335	chemical bonding and the periodic table		

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
II.1.1.08 The Content of Science	Physical Science: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.	Understand the properties, underlying structure, and reactions of matter.	Make predictions about elements using the periodic table.	320	groups of elements	133	using the periodic table
				321	studying the periodic table	136	building and studying the periodic table
				321	groups of elements and valence shells	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	metals nonmetals and metalloids		
				332	periodic table and electronegativities		
				335	periodic table and oxidation numbers		

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
II.1.1.09 The Content of Science	Physical Science: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.	Understand the properties, underlying structure, and reactions of matter.	Understand how the type and arrangement of atoms and their bonds determine macroscopic properties.	330	Lewis dot diagrams	136	ions
				330	ionic bonds	141	when an atom ionizes
				331	covalent bonds	143	classify ionic compounds
				332	distinguishing between ionic and covalent bonds	143	ionic compounds
				357	chemical reactions involve rearrangement of atoms	162	carbon reactions and the environment
				364	carbon chains	176	measure pH of everyday solutions
				403	a water molecule is v-shaped		
				403	water structure and its function as a solvent		
				404	water is a polar molecule		
				405	hydrogen bonding in water		
				406	hydrogen bonding and properties of water		
				409	dissolving an ionic compound		
				409	why water is called the universal solvent		
				410	solute dissolution depends on chemical bonds		
				418	formulas and reactions of acids and bases		

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
				420	concentration of hydronium ions determines pH and strength of acids and bases		
				422	examples of acid and base chemistry		
				422	pH and blood		
				437	pH of acid rain		
				437	concentration of ions and pH		
II.1.1.10 The Content of Science	Physical Science: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.	Understand the properties, underlying structure, and reactions of matter.	Know that states of matter depend on the arrangement of atoms and molecules and on their freedom of motion.	284	states of matter and arrangement of molecules	118	investigate melting
				405	molecular structure of ice	118	molecules in a liquid
				451	increasing temperature means increasing motion of molecules	119	adding heat energy to melt an ice cube
				452	molecular motion increases when temperature increases		

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
II.I.I.11 The Content of Science	Physical Science: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.	Understand the properties, underlying structure, and reactions of matter.	Know that some atomic nuclei can change.	387 388 623	fusion and fission explained nuclear vs chemical reactions nuclear fusion and the sun	138 138 160 160	fusion and fission nuclear reactions radioactive decay how do you simulate nuclear decay?
II.I.I.12 The Content of Science	Physical Science: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.	Understand the properties, underlying structure, and reactions of matter.	Know that chemical reactions involve the rearrangement of atoms, and that they occur on many timescales.	357	chemical reactions involve rearrangement of atoms	157	predict the products of double displacement reactions

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
II.I.I.13 The Content of Science	Physical Science: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.	Understand the properties, underlying structure, and reactions of matter.	Understand types of chemical reactions and identify them as exothermic or endothermic.	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
II.I.I.14 The Content of Science	Physical Science: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.	Understand the properties, underlying structure, and reactions of matter.	Know how to express chemical reactions with balanced equations.	336 368 371	writing chemical formulas predicting amount of product which of the equations is balanced?	149 155	balance these equations calculating product yield

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
II.I.I.15 The Content of Science	Physical Science: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.	Understand the properties, underlying structure, and reactions of matter.	Describe how the rate of chemical reactions depends on many factors that include temperature, concentration, and the presence of catalysts.	364	formation of petroleum is a very slow chemical reaction	156	predict products in a double displacement reaction
				418	formulas and reactions of acids and bases	176	measure pH of everyday solutions
				420	concentration of hydronium ions determines pH and strength of acids and bases		
				422	acids and bases and enzymes in digestion		
				422	pH and blood		
				422	examples of acid and base chemistry		
				437	concentration of ions and pH		
				437	pH of acid rain		
II.I.II.01 The Content of Science	Physical Science: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.	Understand the transformation and transmission of energy and how energy and matter interact.	Identify different forms of energy, including kinetic, gravitational, chemical, thermal, nuclear, and electromagnetic.	91	following an energy transformation	38	identify potential/kinetic energy conversions
				91	understand basic forms of energy	39	identify type of energy involved
				537	potential energy transformed to kinetic energy causes earthquakes		

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
II.1.II.02 The Content of Science	Physical Science: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.	Understand the transformation and transmission of energy and how energy and matter interact.	Explain how thermal energy (heat) consists of the random motion and vibrations of atoms and molecules and is measured by temperature.	406 451	hydrogen bonding and the gaseous state of water temperature is a measure of average kinetic energy	204	investigating latent heat and thermal buffering
II.1.II.03 The Content of Science	Physical Science: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.	Understand the transformation and transmission of energy and how energy and matter interact.	Understand that energy can change from one form to another and know that energy is conserved in these changes.	88 90 91 91 91 92 93 96 623 626	potential and kinetic energy explained conservation of energy explained following an energy transformation understand basic forms of energy energy conversions energy transformations and conservation different forms of energy described prove that energy is conserved energy from the sun harnessing the sun's energy	36 37 38 38 39 39	energy conservation and the roller coaster investigating conservation of energy with rollercoaster explore energy transformations conservation of energy and energy transformations make an energy flow chart identify type of energy involved

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
II.I.II.04 The Content of Science	Physical Science: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.	Understand the transformation and transmission of energy and how energy and matter interact.	Understand how heat can be transferred by conduction, convection, and radiation, and how heat conduction differs in conductors and insulators.	462	densely packed solids are good conductors of heat	192	investigate convection in liquids
				462	heat transfer through air	192	investigate heat transfer through a liquid by natural convection
				463	warming hands over candle	193	investigate heat transfer through a liquid by forced convection
				463	convection currents and weather		
				464	convection currents in water		
				465	solid road surface emits radiation		
				465	transfer of heat by radiation		
				482	global warming and heat transfer by radiation		
				493	apply knowledge of heat transfer to different situations		
525	convection inside Earth						
II.I.II.05 The Content of Science	Physical Science: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.	Understand the transformation and transmission of energy and how energy and matter interact.	Explain how heat flows in terms of the transfer of vibrational motion of atoms and molecules from hotter to colder regions.	454	temperature and thermal energy and heat	119	investigate temperature and energy transfer in melting process
				454	changes in temperature are directly related to changes in energy	188	relationship between heat and temperature
				460	thermal equilibrium	188	investigate the increase of temperature of water as thermal energy is added

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
II.1.II.06 The Content of Science	Physical Science: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.	Understand the transformation and transmission of energy and how energy and matter interact.	Understand that the ability of energy to do something useful (work) tends to decrease as energy is converted from one form to another.	85 91 92 96	some input work is converted to heat energy conversions where does "spent" energy go? explain the "lost" energy	38	explore energy transformations
II.1.II.07 The Content of Science	Physical Science: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.	Understand the transformation and transmission of energy and how energy and matter interact.	Understand that electromagnetic waves carry energy that can be transferred when they interact with matter.	195 480 626	waves transmit energy energy and radiation relationships the sun's energy reaches Earth in the form of electromagnetic waves		

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
II.1.II.08 The Content of Science	Physical Science: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.	Understand the transformation and transmission of energy and how energy and matter interact.	Describe the characteristics of electromagnetic waves and other waves.	198	frequency and wavelength and amplitude	83	measure speed of a wave pulse
				215	properties of sound waves	83	find speed of a wave
				219	frequency of sound and pitch	86	investigate frequency and wavelength
				221	importance of wavelength of sound waves	86	adjust frequency of a standing wave
				237	visible light and the electromagnetic spectrum	90	what is sound and how do we hear it?
				237	light waves and the electromagnetic spectrum	134	investigating visible light with a spectrometer
				242	properties of light waves		
				479	ultraviolet and infrared light		
538	body waves						
II.1.II.09 The Content of Science	Physical Science: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.	Understand the transformation and transmission of energy and how energy and matter interact.	Know that each kind of atom or molecule can gain or lose energy only in discrete amounts.	245	we see color in terms of reflected light		

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
II.I.II.10 The Content of Science	Physical Science: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.	Understand the transformation and transmission of energy and how energy and matter interact.	Explain how wavelengths of electromagnetic radiation can be used to identify atoms, molecules, and the composition of stars.	234 319 388 640 640	electrons and energy levels and light emission fireworks displays and electron excitation showing valence electrons in a diagram birth of elements death of massive stars	134 134 135 140 265	using a spectrometer what does atomic structure have to do with light and color? observing different light sources with a spectrometer find the number of electrons in outermost level an element's spectral lines correspond to specific wavelengths of light
II.I.II.11 The Content of Science	Physical Science: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.	Understand the transformation and transmission of energy and how energy and matter interact.	Understand the concept of equilibrium.	51 415 415 460	what is equilibrium? solubility equilibrium equilibrium and solubility thermal equilibrium		

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
II.1.III.01 The Content of Science	Physical Science: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.	Understand the motion of objects and waves, and the forces that cause them.	Know that there are four fundamental forces in nature: gravitation, electromagnetism, weak nuclear force, and strong nuclear force.	52 389 389 389	the effect of gravity strong nuclear force forces in the nucleus electromagnetic force	20 136	investigate effect of gravity on motion strong force
II.1.III.02 The Content of Science	Physical Science: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.	Understand the motion of objects and waves, and the forces that cause them.	Know that every object exerts gravitational force on every other object, and how this force depends on the masses of the objects and 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

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
II.1.III.03 The Content of Science	Physical Science: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.	Understand the motion of objects and waves, and the forces that cause them.	Know that materials containing equal amounts of positive and negative charges are electrically neutral, but that a small excess or deficit of negative charges produces significant electrical forces.	105 106 107 108 108 318	charge is a fundamental property of matter static charge discussed explanation of coulomb electroscopes how an electroscope works proton/electron attraction	42 132 136	investigate electric charge building atom models model stable and neutral atoms
II.1.III.04 The Content of Science	Physical Science: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.	Understand the motion of objects and waves, and the forces that cause them.	Understand the relationship between force and pressure, and how the pressure of a volume of gas depends on the temperature and amount of gas.	299 300	Charles' law Boyle's law		

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
II.1.III.05 The Content of Science	Physical Science: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.	Understand the motion of objects and waves, and the forces that cause them.	Explain how electric currents cause magnetism and how changing magnetic fields produce electricity.	164 166 166 171	what is an electromagnet? building an electromagnet increased current vs. strength of magnetic field electromagnetic induction explained	66 67 73 73	build an electromagnet find out what happens to strength of electromagnet when current is increased exploring electric generators use magnetic induction to create an electric field
II.1.III.07 The Content of Science	Physical Science: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.	Understand the motion of objects and waves, and the forces that cause them.	Know that when one object exerts a force on a second object, the second object exerts a force of equal magnitude and in the opposite direction 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

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
II.I.III.08 The Content of Science	Physical Science: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.	Understand the motion of objects and waves, and the forces that cause them.	Apply Newton's Laws to describe and analyze the behavior of moving objects.	45	Newton's third law summarized	16	2nd law
				45	Newton's second law summarized	16	thinking about force
				45	Newton's first law summarized	20	force and motion with car and ramp
				48	Newton's laws explained and applied	23	using 3rd law to explain common phenomena
				48	Newton's first law in detail		
				49	Newton's second law in detail		
				50	Newton's second law applied		
				59	Newton's third law in detail		
II.I.III.09 The Content of Science	Physical Science: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.	Understand the motion of objects and waves, and the forces that cause them.	Describe relative motion using frames of reference.	13	speed is relative		
				18	what is the speed of an object that is standing still?		
				25	conceptual models of motion		

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
II.1.III.10 The Content of Science	Physical Science: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.	Understand the motion of objects and waves, and the forces that cause them.	Describe wave propagation using amplitude, wavelength, frequency, and speed.	179	what is a cycle?	83	measure speed of a wave pulse
				182	concept of frequency explained	83	find speed of a wave
				182	concept of period explained	86	investigate frequency and wavelength
				192	analyze systems to find cycle/period/frequency	86	adjust frequency of a standing wave
				198	frequency and wavelength and amplitude	90	what is sound and how do we hear it?
				215	properties of sound waves	105	explore relationship between color and wavelength
				219	frequency of sound and pitch		
				221	importance of wavelength of sound waves	265	an element's spectral lines correspond to specific wavelengths of light
				237	light waves and the electromagnetic spectrum		
				242	color and frequency of light waves		
				242	properties of light waves		
				480	electromagnetic radiation		
				538	body waves		

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
II.I.III.11 The Content of Science	Physical Science: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.	Understand the motion of objects and waves, and the forces that cause them.	Explain how the interactions of waves can result in interference, reflection, and refraction.	201	waves and refraction	85	observing reflection in water waves
				201	reflection in water waves and light waves	95	interference and sound waves
				201	waves and reflection	95	investigate interference with sound waves
				201	waves and absorption	101	examine light through diffraction grating
				202	refraction and eyeglasses	106	investigate reflection of light
				206	constructive and destructive interference	107	plot reflected rays from a mirror
				210	can wave interference sink a ship?	108	tracing incident and refracted rays
				223	interference of sound waves	108	explore refraction with a prism
				225	consonance and dissonance and beats		
				245	we see color in terms of reflected light		
				258	refraction in optical systems		
				260	reflection and mirrors		
				261	refraction and lenses		
				263	index of refraction		
				263	index of refraction		
480	absorption and emission						

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
II.I.III.12 The Content of Science	Physical Science: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.	Understand the motion of objects and waves, and the forces that cause them.	Describe how waves are used for practical purposes.	196	waves are all around us	82	study wave pulses on elastic cord
				197	transverse and longitudinal waves	84	make different types of waves in a ripple tank
				205	standing waves on a string	90	investigate human perception of sound
				220	white noise	94	does sound behave like other waves?
				220	voice recognition programs	98	investigate sound and music
				220	sonograms	107	investigate how light interacts with mirrors
				222	effect of temperature on speed of sound wave	108	explore refraction with lenses
				222	effect of medium on speed of sound wave	108	investigate how light interacts with a prism
				226	musical instruments	110	finding focal point and focal length of a lens
				237	radio and television signals	111	plotting images formed when light is refracted by a lens
				237	visible light and the electromagnetic spectrum	113	observe internal reflection and relate to fiber optics
				237	microwave ovens	134	investigating visible light with a spectrometer
				237	light waves and the electromagnetic spectrum	253	using a retractive telescope
				245	we see color in terms of reflected light	254	calculate the magnification of a telescope
				250	identify uses of electromagnetic waves		
				258	forming images with lenses		
				264	human eye as an optical instrument		

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
				268	total internal reflection and fiber optics		
				270	what is a laser?		
				272	identify uses of electromagnetic waves		
				479	ultraviolet and infrared light		
II.III.I.01 The Content of Science	Earth and Space Science: Understand the structure of Earth, the solar system, and the universe, the interconnections among them, and the processes and interactions of Earth's systems.	Examine the scientific theories of the origin, structure, contents, and evolution of the solar system and the universe, and their interconnections.	Understand the scale and contents of the universe.	591	characteristics of the universe	268	calculating the distance to stars and galaxies using apparent brightness and absolute brightness
				592	calculating and using light years		
				593	light years and time		
				622	descriptions of the sun and comparisons to other stars		
				633	what is a star?		
				635	size of the sun compare to other stars		
				637	H-R diagrams comparing temperature and brightness of stars		
				642	what is a galaxy?		
				643	the structure of the Milky Way Galaxy		
				652	research and describe astronomical objects		

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
II.III.I.02 The Content of Science	Earth and Space Science: Understand the structure of Earth, the solar system, and the universe, the interconnectio ns among them, and the processes and interactions of Earth's systems.	Examine the scientific theories of the origin, structure, contents, and evolution of the solar system and the universe, and their interconnections.	Predict changes in the positions and appearances of objects in the sky based on the knowledge of current positions and patterns of movements.	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	211	investigating how Earth's tilt affects the sun's intensity
				585	Earth's rotation and patterns of day and night	238	why studying the moon's surface is useful for understanding Earth
				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	250	modeling the lunar cycle
				588	lunar eclipses	251	constructing a lunar calendar
				589	solar eclipses	251	tracking the moon's phases in the night sky
				589	solar eclipses	256	simulate an object in orbit and investigate how orbital period varies within distance
				601	identify seasons		
				607	properties of the moon		
				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		
				612	Johannes Kepler		
				612	orbits of planets around the sun		
613	Kepler's elliptically shaped orbits						

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
				619	asteroids and comets		
				620	meteors and meteorites and the Kuiper Belt		
				633	the appearance of constellations in the night sky		
				635	differences in colors of stars is related to their temperatures		
				636	brightness of stars' appearance		
				643	the appearance of the disk of the Milky Way in the night sky		
II.III.I.03 The Content of Science	Earth and Space Science: Understand the structure of Earth, the solar system, and the universe, the interconnectio ns among them, and the processes and interactions of Earth's systems.	Examine the scientific theories of the origin, structure, contents, and evolution of the solar system and the universe, and their interconnections.	Understand how knowledge about the universe comes from evidence collected from advanced technology.	594	history of the telescope	264	understand why spectroscopy is an important tool of astronomers
				595	types and uses of telescopes		
				596	types and uses of telescopes	268	measuring apparent brightness to calculate the distance to stars and galaxies
				597	satellites as tools of astronomy		
				598	spacecraft as tools of astronomy		
				634	the use of spectroscopy to analyze stars		

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
II.III.I.04 The Content of Science	Earth and Space Science: Understand the structure of Earth, the solar system, and the universe, the interconnectio ns among them, and the processes and interactions of Earth's systems.	Examine the scientific theories of the origin, structure, contents, and evolution of the solar system and the universe, and their interconnections.	Describe the key observations that led to the acceptance of the Big Bang theory and that the age of the universe is over 10 billion years.	648 649	evidence for the Big Bang theory evidence for the Big Bang theory		

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
II.III.I.05 The Content of Science	Earth and Space Science: Understand the structure of Earth, the solar system, and the universe, the interconnectio ns among them, and the processes and interactions of Earth's systems.	Examine the scientific theories of the origin, structure, contents, and evolution of the solar system and the universe, and their interconnections.	Explain how objects in the universe emit different electromagnetic radiation and how this information is used.	195 196 234 237 237 237 242 250 272 319 480 480 481 485 626 638	waves transmit energy waves are all around us electrons and energy levels and light emission radio and television signals microwave ovens light waves and the electromagnetic spectrum color and frequency of light waves identify uses of electromagnetic waves identify uses of electromagnetic waves fireworks displays and electron excitation energy and radiation relationships distribution of incoming solar radiation Earth's "energy budget" Earth's internal energy the sun's energy reaches Earth in the form of electromagnetic waves the life cycle of stars	105 134 134 135 255 265 265	explore relationship between color and wavelength using a spectrometer what does atomic structure have to do with light and color? observing different light sources with a spectrometer observe and describe the appearance of the moon and Jupiter and its moons an element's spectral lines correspond to specific wavelengths of light an element's spectral lines correspond to specific wavelengths of light

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
				639	description and illustration of the life cycle of stars		
				640	birth of elements		
				640	death of massive stars		
				640	elements formed by nuclear fusion in stars		
II.III.I.06 The Content of Science	Earth and Space Science: Understand the structure of Earth, the solar system, and the universe, the interconnections among them, and the processes and interactions of Earth's systems.	Examine the scientific theories of the origin, structure, contents, and evolution of the solar system and the universe, and their interconnections.	Describe how stars are powered by nuclear fusion, how luminosity and temperature indicate their age, and how stellar processes create heavier and stable elements that are found throughout the universe.	622	descriptions of the sun and comparisons to other stars	255	observe and describe the appearance of the moon and Jupiter and its moons
				635	size of the sun compare to other stars	264	using spectroscopy to analyze the light emitted by stars and identify most common elements
				637	H-R diagrams comparing temperature and brightness of stars	268	calculating the distance to stars and galaxies using apparent brightness and absolute brightness
				638	the life cycle of stars		
				639	death of small to medium stars results in white dwarfs and planetary nebula and black dwarfs		
				639	description and illustration of the life cycle of stars		
				640	death of massive stars results in supernovas and neutron stars and black holes		
				640	birth of elements		
				640	death of massive stars		
				640	elements formed by nuclear fusion in stars		

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
II.III.I.07 The Content of Science	Earth and Space Science: Understand the structure of Earth, the solar system, and the universe, the interconnectio ns among them, and the processes and interactions of Earth's systems.	Examine the scientific theories of the origin, structure, contents, and evolution of the solar system and the universe, and their interconnections.	Examine the role that New Mexico research facilities play in current space exploration.		featured in ancillary component		featured in ancillary component

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
II.III.II.01 The Content of Science	Earth and Space Science: Understand the structure of Earth, the solar system, and the universe, the interconnectio ns among them, and the processes and interactions of Earth's systems.	Examine the scientific theories of the origin, structure, energy and evolution of Earth and its atmosphere, and their interconnections.	Describe the characteristics and the evolution of Earth in terms of the geosphere, the hydrosphere, the atmosphere, and the biosphere.	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
				440	oceans as part of the hydrosphere	228	reading a bathymetric map
				441	the five major oceans	229	using a geologic hazard map of frequent earthquakes
				443	impact of increased CO2 in oceans		
				447	name the five big oceans on Earth		
				471	description of Earth's atmosphere		
				472	effect of life on Earth's atmosphere		
				477	layers of the atmosphere		
				478	layers of the atmosphere		
				479	effects of CFC's on the ozone layer		
				481	global warming		
				482	effects of burning fossil fuels		
				483	global temperature changing over time		
				515	permafrost		
				524	table and description of the geologic time scale		
				528	Earth's surface is changing		

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
				540 541 566 567 580	where earthquakes occur earthquake hazard map ice ages geologic hazard maps using a geologic hazard map		
II.III.II.02 The Content of Science	Earth and Space Science: Understand the structure of Earth, the solar system, and the universe, the interconnectio ns among them, and the processes and interactions of Earth's systems.	Examine the scientific theories of the origin, structure, energy and evolution of Earth and its atmosphere, and their interconnections.	Recognize that radiometric data indicate that Earth is at least 4 billion years old and that Earth had changed during that period.	641	how the solar system was formed		

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
II.III.II.03 The Content of Science	Earth and Space Science: Understand the structure of Earth, the solar system, and the universe, the interconnections among them, and the processes and interactions of Earth's systems.	Examine the scientific theories of the origin, structure, energy and evolution of Earth and its atmosphere, and their interconnections.	Describe the internal structure of Earth (e.g., core, mantle, crust) and the structure of Earth's plates.	525 526 533 534 535 536 552	formation of Earth's layers description of Earth's layers describing plate boundaries divergent plate boundaries convergent plate boundaries transform plate boundaries formation of magma in Earth's mantle	229	identifying tectonic plates and plate boundaries
II.III.II.04 The Content of Science	Earth and Space Science: Understand the structure of Earth, the solar system, and the universe, the interconnections among them, and the processes and interactions of Earth's systems.	Examine the scientific theories of the origin, structure, energy and evolution of Earth and its atmosphere, and their interconnections.	Understand the changes in Earth's past and the investigative methods used to determine geologic time.	522 523 523 524 540 541 566 567 569 580	relative dating interpreting rock formations faunal succession table and description of the geologic time scale where earthquakes occur earthquake hazard map ice ages geologic hazard maps studying moon rocks on Earth using a geologic hazard map	225 226 228 229	determining the relative ages of rock formations sequencing events in a geologic cross-section reading a bathymetric map using a geologic hazard map of frequent earthquakes

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
II.III.II.05 The Content of Science	Earth and Space Science: Understand the structure of Earth, the solar system, and the universe, the interconnections among them, and the processes and interactions of Earth's systems.	Examine the scientific theories of the origin, structure, energy and evolution of Earth and its atmosphere, and their interconnections.	Explain plate tectonic theory and understand the evidence that supports it.	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	230	predicting plate movement over 50 million years and the resultant land features
				530	sea-floor spreading and mid-ocean ridges	236	understanding the Volcanic Explosivity Index
				531	magnetic patterns on the sea floor	237	finding a pattern of volcanoes related to the locations of plate boundaries
				532	theory of plate tectonics	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
				535	resulting land features from subduction	241	identifying which geologic features on Earth were caused by meteors
				536	land features resulting from transform plate boundaries		
				537	earthquakes and plate tectonics		
				537	causes and descriptions of earthquakes		
				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		

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
				552	formation of magma in Earth's mantle		
				552	geologic basis for volcanic eruptions		
				553	where volcanic activity occurs		
				554	properties of volcanically formed rock		
				554	figure showing structure of different types of volcanoes		
				554	types and shapes of volcanoes		
				555	formation of Hawaiian Islands due to volcanic activity		
				555	geologic basis for shield volcanoes		
				555	formation of shield volcanoes due to hot spots		
				555	shield volcanoes		
				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		

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
				559	types of volcanic rock		
				561	describing volcanic rock		
				563	mountain-building		
				563	constructive process of mountain building		
				564	changes in land features due to erosion		
				564	the destructive process of erosion		
				565	wind erosion		
				566	effect of glaciers on land		
II.III.II.06 The Content of Science	Earth and Space Science: Understand the structure of Earth, the solar system, and the universe, the interconnections among them, and the processes and interactions of Earth's systems.	Examine the scientific theories of the origin, structure, energy and evolution of Earth and its atmosphere, and their interconnections.	Know that Earth's systems are driven by internal and external sources of energy.	480	distribution of incoming solar radiation	213	exploring how temperature-dependent layering creates currents
				481	greenhouse conditions on Earth		
				481	Earth's "energy budget"		
				485	research the density of Venus' and Mars' atmospheres		
				485	Earth's internal energy		
				493	convection currents in the atmosphere		
				615	greenhouse conditions on Venus		

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
II.III.II.07 The Content of Science	Earth and Space Science: Understand the structure of Earth, the solar system, and the universe, the interconnections among them, and the processes and interactions of Earth's systems.	Examine the scientific theories of the origin, structure, energy and evolution of Earth and its atmosphere, and their interconnections.	Describe convection as the mechanism for moving heat energy from deep within Earth to the surface and discuss how this process results in plate tectonics.	462	densely packed solids are good conductors of heat	192	investigate convection in liquids
				462	heat transfer through air	192	investigate heat transfer through a liquid by natural convection
				463	warming hands over candle	193	investigate heat transfer through a liquid by forced convection
				463	convection currents and weather		
				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		
				525	formation of Earth's layers		
				525	convection inside Earth		
				526	description of Earth's layers		
				528	definition of plate tectonics		
				532	theory of plate tectonics		
				537	causes and descriptions of earthquakes		
				539	earthquakes rating scales		
551	structure of a volcano						

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
				552	formation of magma in Earth's mantle		
				554	figure showing structure of different types of volcanoes		
II.III.II.08 The Content of Science	Earth and Space Science: Understand the structure of Earth, the solar system, and the universe, the interconnections among them, and the processes and interactions of Earth's systems.	Examine the scientific theories of the origin, structure, energy and evolution of Earth and its atmosphere, and their interconnections.	Describe the patterns and relationships in the circulation of air and water driven by the sun's radiant energy.	480	transfer of energy in and out of Earth's atmosphere	185	effect of ocean on carbon dioxide levels in the atmosphere
				481	greenhouse effect and greenhouse gasses	202	investigate the temperature effects of greenhouse gases
				493	convection currents in the atmosphere	213	exploring how temperature-dependent layering creates currents
				495	global wind patterns		
				497	water in the atmosphere affects weather patterns		
				502	effects of moving air masses		
				502	cold fronts		
				503	warm fronts		
				503	jet streams		

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
II.III.II.09 The Content of Science	Earth and Space Science: Understand the structure of Earth, the solar system, and the universe, the interconnectio ns among them, and the processes and interactions of Earth's systems.	Examine the scientific theories of the origin, structure, energy and evolution of Earth and its atmosphere, and their interconnections.	Know that Earth's system contains a fixed amount of natural resources that cycle among land, water, the atmosphere, and living things.	414	effect of electrical generating facilities on dissolved oxygen in water	178	actions to take to improve water quality
				437	effects of acid rain on natural environments	178	predict the quality of surface water to be tested and justify your answer
				439	illustration of acid rain formation		
				440	oceans in the water cycle		
				443	impact of increased CO2 in oceans		
				471	nitrogen cycle		
				479	effects of CFC's on the ozone layer		
				482	effects of burning fossil fuels		
				482	changes to the oceans due to increasing global temperatures		
				515	permafrost		
				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		
562	constructive and destructive processes						

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
				565	formation of soil		
				568	how urban sprawl changes local climate		
				576	the rock cycle		
				576	the rock cycle		
II.III.II.10 The Content of Science	Earth and Space Science: Understand the structure of Earth, the solar system, and the universe, the interconnectio ns among them, and the processes and interactions of Earth's systems.	Examine the scientific theories of the origin, structure, energy and evolution of Earth and its atmosphere, and their interconnections.	Describe the composition and structure of Earth's materials.	440	oceans in the water cycle	237	examining the magma chemistry of volcanoes and how it relates to a volcano's location
				521	origin of fossils	242	understanding how igneous rocks are formed and growing crystals to investigate their formation
				542	using seismic waves for oil and gas exploration		
				554	properties of volcanically formed rock	244	understanding how sedimentary rocks are formed and creating sedimentary deposits to investigate them
				559	volcanoes and water vapor		
				559	types of volcanic rock	246	understanding and investigating how metamorphic rocks are formed
				560	mineral deposits and diamonds		
				561	describing volcanic rock	247	interpreting how different rock formations were formed
				562	constructive and destructive processes		
				565	formation of soil		
				573	formation of igneous and sedimentary and metamorphic rocks		
				575	identifying igneous and sedimentary and metamorphic rocks		
				576	the rock cycle		

Correlation to New Mexico Science Content Standards, 9th - 12th grade
Foundations of Physical Science with Earth and Space Science
Student Text and Investigation Manual

Standard #: Strand	Standard	Benchmark	Performance Standard	student text pg	detail	investigation pg	detail
II.III.II.11 The Content of Science	Earth and Space Science: Understand the structure of Earth, the solar system, and the universe, the interconnectio ns among them, and the processes and interactions of Earth's systems.	Examine the scientific theories of the origin, structure, energy and evolution of Earth and its atmosphere, and their interconnections.	Explain how layers of the atmosphere change naturally and artificially.	440 471 472 477 478 498 501	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 phase changes in the atmosphere and dewpoint forms of precipitation	217	finding relative humidity
II.III.II.12 The Content of Science	Earth and Space Science: Understand the structure of Earth, the solar system, and the universe, the interconnectio ns among them, and the processes and interactions of Earth's systems.	Examine the scientific theories of the origin, structure, energy and evolution of Earth and its atmosphere, and their interconnections.	Explain how the availability of ground water through aquifers can fluctuate based on multiple factors.	437	effects of acid rain on the soil		