

**Correlation to Colorado Grade 10 Science CSAP Framework
Foundations of Physical Science with Earth and Space Science
 Student Text and Investigation Manual**

Standard #: Grade	Standard	Objective	Benchmark	Volume 1 Student Text Page		Volume 2 Investigation Manual Page
ES.4.1.a 9 - 12	Earth and Space Science: Students know and understand the processes and interactions of Earth's systems and the structure and dynamics of Earth and other objects in space.	Students know and understand the composition of Earth, its history, and the natural processes that shape it.	describing the composition and structure of Earth's interior;	525	formation of Earth's layers	
				526	description of Earth's layers	
				552	formation of magma in Earth's mantle	

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ES.4.1.b 9 - 12	Earth and Space Science: Students know and understand the processes and interactions of Earth's systems and the structure and dynamics of Earth and other objects in space.	Students know and understand the composition of Earth, its history, and the natural processes that shape it.	using the theory of plate tectonics to explain relationships among earthquakes, volcanoes, mid-ocean ridges, and deep-sea trenches;	528	predicting what Earth might look like in 50 million years	229	identifying tectonic plates and plate boundaries
				528	definition of plate tectonics	230	predicting plate movement over 50 million years and the resultant land features
				532	theory of plate tectonics		
				533	describing plate boundaries		
				534	land features resulting from divergent plate boundaries		
				534	divergent plate boundaries		
				535	resulting land features from subduction		
				535	convergent plate boundaries		
				536	transform plate boundaries		
				536	land features resulting from transform plate boundaries		
537	earthquakes and plate tectonics						
547	predict separation of North America and Europe in 75 million years						

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ES.4.1.c 9 - 12	Earth and Space Science: Students know and understand the processes and interactions of Earth's systems and the structure and dynamics of Earth and other objects in space.	Students know and understand the composition of Earth, its history, and the natural processes that shape it.	using evidence (for example, fossils, rock layers, ice cores, radiometric dating) to investigate how Earth has changed or remained constant over short and long periods of time (for example, Mount St. Helens' eruption);	481	global warming	225	determining the relative ages of rock formations
				522	relative dating		
				523	interpreting rock formations	226	sequencing events in a geologic cross-section
				523	faunal succession		
				524	table and description of the geologic time scale		
				566	ice ages		
				569	studying moon rocks on Earth		

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ES.4.1.d 9 - 12	Earth and Space Science: Students know and understand the processes and interactions of Earth's systems and the structure and dynamics of Earth and other objects in space. (Focus: Geology, Meteorology, Astronomy, Oceanography)	Students know and understand the composition of Earth, its history, and the natural processes that shape it.	evaluating the feasibility of predicting and controlling natural events (for example, earthquakes, floods, landslides); and	537	causes and descriptions of earthquakes	228	reading a bathymetric map
				539	earthquakes rating scales	229	using a geologic hazard map of frequent earthquakes
				540	where earthquakes occur		
				541	earthquake hazard map	236	understanding the Volcanic Explosivity Index
				554	types and shapes of volcanoes	237	finding a pattern of volcanoes related to the locations of plate boundaries
				555	shield volcanoes		
				555	formation of shield volcanoes due to hot spots		
				556	stratovolcanoes		
				556	formation of stratovolcanoes due to subduction		
				567	geologic hazard maps		
580	using a geologic hazard map						

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ES.4.1.e 9 - 12	Earth and Space Science: Students know and understand the processes and interactions of Earth's systems and the structure and dynamics of Earth and other objects in space.	Students know and understand the composition of Earth, its history, and the natural processes that shape it.	analyzing the costs, benefits, and consequences of natural resource exploration, development, and consumption.	391	impact of nuclear energy	52	the cost of using electrical appliances
				400	reducing pollution	178	actions to take to improve water quality
				411	effects of PCB's in Great Lakes	178	predict the quality of surface water to be tested and justify your answer
				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
				433	The Clean Water Act	178	predict the quality of surface water to be tested and justify your answer
				435	water quality testing	179	address what you can do to maintain or improve the water quality at the test site
				436	nitrates and the nitrogen cycle	182	the effects of acid rain on organisms in aquatic environments
				436	water quality testing		
				437	acid rain		
				437	effects of acid rain on natural environments		
				437	effects of acid rain on the soil		
				443	impact of increased CO2 in oceans		
				444	pollution and the ocean food chain		
				445	pollution and the ocean food chain		
				471	nitrogen cycle		
				471	nitrogen cycle diagrammed		
				472	the carbon cycle explained		

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				479 effects of CFC's on the ozone layer	
				482 effects of burning fossil fuels	
				515 permafrost	
				542 using seismic waves for oil and gas exploration	
				560 mineral deposits and diamonds	

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ES.4.2.a 9 - 12	Earth and Space Science: Students know and understand the processes and interactions of Earth's systems and the structure and dynamics of Earth and other objects in space.	Students know and understand the general characteristics of the atmosphere and fundamental processes of weather.	analyzing the structure of, and changes in, the atmosphere, and its significance for life on Earth;	437	acid rain	182	the effects of acid rain on organisms in aquatic environments
				438	causes and health effects of acid rain	185	effect of ocean on carbon dioxide levels in the atmosphere
				439	illustration of acid rain formation	186	accurately measuring temperature using thermometers
				440	oceans as part of the hydrosphere	194	construct and use an aneroid barometer
				451	thermometers	198	detecting ozone which is a protective atmosphere gas against high energy radiation
				452	thermometers	202	investigate the temperature effects of greenhouse gases
				471	description of Earth's atmosphere	213	exploring how temperature-dependent layering creates currents
				471	composition of Earth's atmosphere	218	using Doppler radar images to detect and track storms
				472	effect of life on Earth's atmosphere		
				473	definition of atmospheric pressure		
				474	measuring atmospheric pressure with barometers		
				475	how atmospheric pressure changes with altitude		
				476	graph showing atmospheric pressure vs. altitude		
				477	ozone layer		
				477	layers of the atmosphere		
				478	layers of the atmosphere		

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ES.4.2.b 9 - 12	Earth and Space Science: Students know and understand the processes and interactions of Earth's systems and the structure and dynamics of Earth and other objects in space. (Focus: Geology, Meteorology, Astronomy, Oceanography)	Students know and understand the general characteristics of the atmosphere and fundamental processes of weather.	explaining and analyzing general weather patterns by collecting, plotting, and interpreting data;	451	thermometers	186	accurately measuring temperature using thermometers
				452	thermometers	194	construct and use an aneroid barometer
				474	measuring atmospheric pressure with barometers	209	investigating factors which cause the seasons
				485	computer modeling to predict greenhouse effects	217	finding relative humidity
				492	Earth's tilt causes seasons	218	using Doppler radar images to detect and track storms
				497	slings psychrometer	219	use radar to detect a tornado
				497	factors which influence the weather	220	using radar to track a hurricane
				498	phase changes in the atmosphere and dewpoint		
				499	cloud formation		
				501	forms of precipitation		
				505	description of thunderstorms		
				506	description of hurricanes		
				507	description of tornadoes		
				518	create a model to explain why Earth has seasons		

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ES.4.2.c 9 - 12	Earth and Space Science: Students know and understand the processes and interactions of Earth's systems and the structure and dynamics of Earth and other objects in space. (Focus: Geology, Meteorology, Astronomy, Oceanography)	Students know and understand the general characteristics of the atmosphere and fundamental processes of weather.	describing how energy transfer within the atmosphere influences weather (for example, the role of conduction, radiation, convection, and heat of condensation in clouds, precipitation, winds, storms);	480	distribution of incoming solar radiation	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
				481	Earth's "energy budget"		
				485	Earth's internal energy	207	research how large bodies of water affect climate
				491	Earth's temperature varies with latitude		
				493	convection currents in the atmosphere	207	research how large bodies of water affect climate
				494	the Coriolis effect		
				495	global wind patterns	213	exploring how temperature-dependent layering creates currents
				496	effects of the Gulf Stream on climate of Great Britain	215	understanding the Atlantic gyre
				496	descriptions of ocean currents and their effects on climate	223	research a particular biome
				497	water in the atmosphere affects weather patterns		
				502	effects of moving air masses		
				502	cold fronts		
				503	jet streams		
				503	warm fronts		
				504	rotation of air masses due to Coriolis effect		

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				508 causes and effects of the El Nino Southern Oscillation	
				510 effect of cold ocean currents on formation of fog deserts	
				510 different types of deserts and how they are formed	
				511 effect of warm ocean currents on formation of tropical rainforest	
				511 how tropical rainforests are formed	
				513 effect of large bodies of water on climate	
				515 alpine tundra occurs at high altitudes	

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ES.4.2.d 9 - 12	Earth and Space Science: Students know and understand the processes and interactions of Earth's systems and the structure and dynamics of Earth and other objects in space. (Focus: Geology, Meteorology, Astronomy, Oceanography)	Students know and understand the general characteristics of the atmosphere and fundamental processes of weather.	investigating and explaining the occurrence and effects of storms on human populations and the environment; and	497	factors which influence the weather	219	use radar to detect a tornado
				499	cloud formation	219	describe what safety precautions the National Weather Service recommends for tornado conditions
				505	description of thunderstorms		
				506	description of hurricanes		
				507	description of tornadoes	220	using radar to track a hurricane
			518	write an action plan to stay safe during a tornado			

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ES.4.2.e 9 - 12	Earth and Space Science: Students know and understand the processes and interactions of Earth's systems and the structure and dynamics of Earth and other objects in space. (Focus: Geology, Meteorology, Astronomy, Oceanography)	Students know and understand the general characteristics of the atmosphere and fundamental processes of weather.	describing and explaining factors that may influence weather and climate (for example, proximity to oceans, prevailing winds, fossil fuel burning, volcanic eruptions).	481	greenhouse effect and greenhouse gasses	185	effect of ocean on carbon dioxide levels in the atmosphere
				493	convection currents in the atmosphere	202	investigate the temperature effects of greenhouse gases
				494	the Coriolis effect	207	research how large bodies of water affect climate
				495	global wind patterns	213	exploring how temperature-dependent layering creates currents
				496	descriptions of ocean currents and their effects on climate	215	understanding the Atlantic gyre
				497	water in the atmosphere affects weather patterns	223	research a particular biome
				502	effects of moving air masses		
				502	cold fronts		
				503	warm fronts		
				503	jet streams		
				504	rotation of air masses due to Coriolis effect		
				508	causes and effects of the El Nino Southern Oscillation		
				510	different types of deserts and how they are formed		
				511	how tropical rainforests are formed		

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ES.4.3.a 9 - 12	Earth and Space Science: Students know and understand the processes and interactions of Earth's systems and the structure and dynamics of Earth and other objects in space. (Focus: Geology, Meteorology, Astronomy, Oceanography)	Students know major sources of water, its uses, importance, and cyclic patterns of movement through the environment.	identifying and explaining factors that influence the quality of water needed to sustain life;	411	effects of PCB's in Great Lakes	178	predict the quality of surface water to be tested and justify your answer
				433	The Clean Water Act		
				433	water quality standards	179	address what you can do to maintain or improve the water quality at the test site
				434	importance of water analysis		
				435	water quality testing		
				436	water quality testing	182	the effects of acid rain on organisms in aquatic environments
				437	acid rain		
				440	oceans in the water cycle		
				444	pollution and the ocean food chain		
				445	pollution and the ocean food chain		
				559	volcanoes and water vapor		

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ES.4.3.b 9 - 12	Earth and Space Science: Students know and understand the processes and interactions of Earth's systems and the structure and dynamics of Earth and other objects in space. (Focus: Geology, Meteorology, Astronomy, Oceanography)	Students know major sources of water, its uses, importance, and cyclic patterns of movement through the environment.	identifying and analyzing the costs, benefits, and consequences of using water resources;	411	effects of PCB's in Great Lakes	178	actions to take to improve water quality
				433	water quality standards	178	predict the quality of surface water to be tested and justify your answer
				433	The Clean Water Act		
				434	importance of water analysis	179	address what you can do to maintain or improve the water quality at the test site
				435	water quality testing		
				436	nitrates and the nitrogen cycle	182	the effects of acid rain on organisms in aquatic environments
				436	water quality testing		
				437	acid rain	212	investigate how the ocean's salinity affects its density
				437	effects of acid rain on natural environments		
				441	sources of salts in the ocean		
				442	composition of seawater		
				444	pollution and the ocean food chain		
				445	pollution and the ocean food chain		
				471	nitrogen cycle		
				471	nitrogen cycle diagrammed		
				472	the carbon cycle explained		
564	landforms shaped by water						

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ES.4.3.c 9 - 12	Earth and Space Science: Students know and understand the processes and interactions of Earth's systems and the structure and dynamics of Earth and other objects in space. (Focus: Geology, Meteorology, Astronomy, Oceanography)	Students know major sources of water, its uses, importance, and cyclic patterns of movement through the environment.	explaining interactions between water and other Earth systems (for example, the biosphere, lithosphere, and atmosphere); and	439	illustration of acid rain formation	
				440	oceans as part of the hydrosphere	
				471	description of Earth's atmosphere	
				472	effect of life on Earth's atmosphere	
				477	layers of the atmosphere	
				478	layers of the atmosphere	
				482	changes to the oceans due to increasing global temperatures	
				568	how urban sprawl changes local climate	

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ES.4.3.d 9 - 12	Earth and Space Science: Students know and understand the processes and interactions of Earth's systems and the structure and dynamics of Earth and other objects in space. (Focus: Geology, Meteorology, Astronomy, Oceanography)	Students know major sources of water, its uses, importance, and cyclic patterns of movement through the environment.	explaining interrelationships between the circulation of oceans and weather and climate.	496	descriptions of ocean currents and their effects on climate	207	research how large bodies of water affect climate
				508	causes and effects of the El Nino Southern Oscillation	215	understanding the Atlantic gyre

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ES.4.4.a 9 - 12	Earth and Space Science: Students know and understand the processes and interactions of Earth's systems and the structure and dynamics of Earth and other objects in space. (Focus: Geology, Meteorology, Astronomy, Oceanography)	Students know the structure of the solar system, composition and interactions of objects in the universe, and how space is explored.	explaining the causes of and modeling the varied lengths of days, seasons, and phases of the Moon;	492	Earth's tilt causes seasons	209	investigating factors which cause the seasons
				518	create a model to explain why Earth has seasons	238	why studying the moon's surface is useful for understanding Earth
				584	the lunar cycle		
				588	lunar eclipses	250	modeling the lunar cycle
				607	properties of the moon	251	constructing a lunar calendar
				608	the moon as a satellite of Earth		
				609	the moon's effect on tides on Earth		
				610	the Earth-moon system		
				611	giant impact theory		

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ES.4.4.b 9 - 12	Earth and Space Science: Students know and understand the processes and interactions of Earth's systems and the structure and dynamics of Earth and other objects in space. (Focus: Geology, Meteorology, Astronomy, Oceanography)	Students know the structure of the solar system, composition and interactions of objects in the universe, and how space is explored.	describing the effect of gravitation on the motions observed in the solar system and beyond;	52	the effect of gravity	20	investigate effect of gravity on motion
				612	orbits of planets around the sun	256	simulate an object in orbit and investigate how orbital period varies within distance
				612	Johannes Kepler		
				613	Kepler's elliptically shaped orbits		
				619	asteroids and comets		
				620	meteors and meteorites and the Kuiper Belt		

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ES.4.4.c 9 - 12	Earth and Space Science: Students know and understand the processes and interactions of Earth's systems and the structure and dynamics of Earth and other objects in space. (Focus: Geology, Meteorology, Astronomy, Oceanography)	Students know the structure of the solar system, composition and interactions of objects in the universe, and how space is explored.	describing electromagnetic radiation produced by the Sun and other stars (for example, X-ray, ultraviolet, visible light, infrared, radio);	237	light waves and the electromagnetic spectrum	
				479	ultraviolet and infrared light	

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ES.4.4.e 9 - 12	Earth and Space Science: Students know and understand the processes and interactions of Earth's systems and the structure and dynamics of Earth and other objects in space. (Focus: Geology, Meteorology, Astronomy, Oceanography)	Students know the structure of the solar system, composition and interactions of objects in the universe, and how space is explored.	identifying and describing the everyday impact of recent space technology (for example, more sophisticated computers, remote sensing, medical imaging).	433	the clean water act	264	understand why spectroscopy is an important tool of astronomers
				439	catalytic converters and scrubbing reduce acid rain		
				483	hydrogen powered cars	268	measuring apparent brightness to calculate the distance to stars and galaxies
				538	what we can learn from seismographs		
				544	understanding earthquakes allows engineers to design safer buildings		
				594	history of the telescope		
				595	types and uses of telescopes		
				596	types and uses of telescopes		
				597	satellites as tools of astronomy		
				598	spacecraft as tools of astronomy		
				599	how the space shuttle works		
				634	the use of spectroscopy to analyze stars		

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INQ. 1.a 9 - 12	Students understand the processes of scientific investigation and design, conduct, communicate about, and evaluate such investigations.		asking questions and stating hypotheses, using prior scientific knowledge to help guide their development;	10	the research question and hypothesis	6	how do we ask questions and get answers from nature?
				429	why haven't we run out of water	170	devise hypothesis and explain
				434	what is in your tap water		
				437	what is acid rain	170	which method will give fastest dissolving rate?
				441	why are oceans salty	182	formulate hypothesis
				451	what is temperature	208	formulate a hypothesis about why the seasons occur
				456	asking questions pertaining to specific heat and heat flow		
				472	why is Earth's atmosphere different from other planets		
				473	why do ears pop		
				492	why does Earth have seasons		
				501	how does rain form		
				509	how do animals survive in the desert		
				515	what is a carbon sink		
				530	proving hypotheses for sea-floor spreading		
				534	why doesn't Earth get bigger and bigger		
				580	form a hypothesis (#7)		
				588	what causes eclipses		

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				621	is Pluto a planet		
INQ.1.b 9 - 12	Students understand the processes of scientific investigation and design, conduct, communicate about, and evaluate such investigations.		creating and defending a written plan of action for a scientific investigation;	7	experimentation begins with a question	7	design your own experiment
				19	design your own experiment	9	design three experiments using car and ramp
				42	devise an experiment	16	decide how to vary the force on the car for this experiment
						26	what variables can be changed?
						75	design pendulum experiment
						93	decision trees and the advantage of doing multiple trials
						151	design experiment to find out if mass is conserved
						170	what three factors influence dissolving rate?
						233	identifying how the earthquake model represents an earthquake

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INQ.1.c 9 - 12	Students understand the processes of scientific investigation and design, conduct, communicate about, and evaluate such investigations.		selecting and using appropriate technologies to gather, process, and analyze data and to report information related to an investigation;	24 using an electronic timer	<p>data tables and graphs can be created on computer or graphing calculator</p> <p>7 use a ruler to make a measurement</p> <p>9 design three experiments and choose technology</p> <p>12 using photogates</p> <p>14 using photogates</p> <p>16 use a force scale</p> <p>17 use photogates to study car on ramp</p> <p>18 use a balance to find mass of car</p> <p>30 use force scale</p> <p>40 choose circuit parts to light a bulb</p> <p>44 using electrical meter</p> <p>46 using electrical meter</p> <p>48 using electrical meter</p> <p>50 using electrical meter</p> <p>86 use CPO Timer to measure frequency</p> <p>107 study reflection of laser beam</p> <p>108 study refraction of laser beam</p>

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					113 trace critical angle with a laser beam 158 use a thermometer
INQ.1.d 9 - 12	Students understand the processes of scientific investigation and design, conduct, communicate about, and evaluate such investigations.		identifying major sources of error or uncertainty within an investigation (for example, particular measuring devices and experimental procedures);	11 controlling variables in experiments 19 did you run a controlled experiment? 20 what factors could explain the variability in their data? 485 what percentage comes from this source? (problem 4) 543 determining distance to an epicenter 547 what explains the difference in density? (#5) 605 how big is Earth?	7 what variables should be controlled? 11 calculate % error 76 calculate % error 129 control the height of the liquid 169 why was plain water tested? 169 what does the word control mean? 197 calculating error between your barometer and a commercial barometer 199 importance of good record keeping in order to avoid error

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INQ.1.e 9 - 12	Students understand the processes of scientific investigation and design, conduct, communicate about, and evaluate such investigations.		constructing and revising scientific explanations and models, using evidence, logic, and experiments that include identifying and controlling variables;	11	control and experimental variables	7	doing a controlled experiment
				24	making a graph	13	graph distance vs. time
				26	independent and dependent variables	15	construct a quantitative graphical model
				26	creating graphs	21	choose independent and dependent variables for graph
				41	make a graph	21	construct reasonable explanation based on data
						27	recognize variables
						35	study data and determine importance of height on speed of marble
						37	organize data into a graph of speed vs. height
						45	analyze data and explain a rule
						51	graph voltage vs. current
						121	graph mass vs. volume
						147	organize observations into a category table
						151	does your experiment agree with law of conservation of mass?
						157	add new rules to list based on findings
						185	constructing a graph of drops of acid vs pH

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Standard #: Grade	Standard	Objective	Benchmark	Volume 1 Student Text Page	Volume 2 Investigation Manual Page
					187 construct a graphical model
					189 construct a temperature vs. time graph
					190 effect of changing mass on collected data
					197 evaluating your aneroid barometer design
					197 constructing a graph from atmospheric pressure data
					203 graphing water and ice temperature readings
					206 constructing a graph of time vs. temperature
					211 determining whether distance from light source or axial tilt plays a more significant role in causing the seasons
					231 evaluating your completed bathymetric map
					247 evaluate your ability to interpret rock formations

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Standard #: Grade	Standard	Objective	Benchmark	Volume 1 Student Text Page		Volume 2 Investigation Manual Page	
INQ. 1.f 9 - 12	Students understand the processes of scientific investigation and design, conduct, communicate about, and evaluate such investigations.		communicating and evaluating scientific thinking that leads to particular conclusions;	10	process of reviewing hypothesis explained	15	interpret a speed vs. time graph
				24	interpretations of patterns in data	21	think about percent change
				27	reading a graph	21	construct reasonable explanation based on data
				78	analyze lever diagram	35	what evidence is there in support of your hypothesis?
				476	atmospheric pressure at various altitudes graph	35	study data and determine importance of height on speed of marble
				524	Kelvin's calculations of Earth's age	39	analyze energy transformations in different scenarios
				645	apparent brightness vs. distance graph	45	analyze data and explain a rule
				651	use the diagram to answer the questions (#2)	77	compare law of conservation of energy to motion of pendulum
				651	arrange the items in the table (#3)	151	review your hypothesis
				651	use the diagram to answer the questions (#4)	151	do the data support the hypothesis
				171	did you prove or disprove your hypothesis?	171	what was happening at molecular level?

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Standard #: Grade	Standard	Objective	Benchmark	Volume 1 Student Text Page	Volume 2 Investigation Manual Page
					217 determining relationship between temperature of the atmosphere and relative humidity 218 interpreting Doppler radar images 237 finding a pattern of volcanoes on a bathymetric map
INQ.1.g 9 - 12	Students understand the processes of scientific investigation and design, conduct, communicate about, and evaluate such investigations.		recognizing and analyzing alternative explanations and models; and	19 which group did the best experiment?	18 evaluate graphs as to whether or not they show relationships between variables 21 evaluate percent change for data collected 75 evaluate statistical significance 157 add new rules to list based on findings 171 evaluate method based on data 197 evaluating your aneroid barometer design 200 evaluating your qualitative ozone strips

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Standard #: Grade	Standard	Objective	Benchmark	Volume 1 Student Text Page		Volume 2 Investigation Manual Page	
INQ.1.h 9 - 12	Students understand the processes of scientific investigation and design, conduct, communicate about, and evaluate such investigations.		explaining the difference between a scientific theory and a scientific hypothesis.	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		
				529	critiquing Wegener's theories of continental drift	39	analyze energy transformations in different scenarios
				563	Darwin's theories of the Andes formation	77	show how energy loss data could be applied to designing a real clock
				566	what causes ice ages		
				611	theories of origin of the moon	77	compare law of conservation of energy to motion of pendulum
				612	early theories of the solar system	151	review your hypothesis
				647	Big Bang theory	171	did you prove or disprove your hypothesis?

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Standard #: Grade	Standard	Objective	Benchmark	Volume 1 Student Text Page		Volume 2 Investigation Manual Page	
INQ.5.a 9 - 12	Students know and understand interrelationships among science, technology, and human activity and how they can affect the world.		analyzing benefits, limitations, costs, and consequences involved in using technology or resources (for example, X-rays, agricultural chemicals, natural gas reserves);	368	limiting reactants	163	economic impact of end-product of combustion reaction
				379	research economic impact of fuel cells	163	too much CO ₂
				379	hydrogen-powered cars and the environment	163	research how trees offset accumulation of CO ₂
				379	research fuel cells	163	research how trees offset accumulation of CO ₂
				379	research environmental impact of fuel cells	163	research how trees offset accumulation of CO ₂
				395	fossil fuels	163	can trees compensate for manmade CO ₂ from vehicles and industry?
				400	economic impact of reducing air pollution	164	perform water quality tests
				400	economic impact of pollution	178	wise use of water supply
				400	problems caused by airborne pollutants	180	perform water quality tests
				433	wise use of water	182	investigate effect of acid rain on microorganisms
				435	water usage and quality	201	research the causes of ozone in the lower atmosphere
				436	effect of excess nitrates on environment		
				437	acid rain explained		
				448	research economic impact of producing gases that cause acid rain		
				448	research the issue of acid rain		

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Standard #: Grade	Standard	Objective	Benchmark	Volume 1 Student Text Page		Volume 2 Investigation Manual Page
INQ.5.b 9 - 12	Students know and understand interrelationships among science, technology, and human activity and how they can affect the world.		analyzing how the introduction of a new technology has affected or could affect human activity (for example, invention of the telescope, applications of modern telecommunications);	433	the clean water act	182 investigate effect of acid rain on microorganisms
				437	acid rain explained	
				439	catalytic converters and scrubbing reduce acid rain	
				448	research the issue of acid rain	
				483	hydrogen powered cars	
				538	what we can learn from seismographs	
				544	understanding earthquakes allows engineers to design safer buildings	

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Standard #: Grade	Standard	Objective	Benchmark	Volume 1 Student Text Page		Volume 2 Investigation Manual Page	
INQ.5.c 9 - 12	Students know and understand interrelationships among science, technology, and human activity and how they can affect the world.		demonstrating the interrelationships between science and technology (for example, building a bridge, designing a better running shoe); and	73	relationship between science and technology	70	using engineering design cycle
				433	the clean water act		
				439	catalytic converters and scrubbing reduce acid rain		
				483	hydrogen powered cars		
				530	using echo sounders to map the sea floor		
				538	what we can learn from seismographs		
				544	understanding earthquakes allows engineers to design safer buildings		
				597	using satellite technology		
				599	space shuttle		
INQ.5.d 9 - 12	Students know and understand interrelationships among science, technology, and human activity and how they can affect the world.		explaining the use of technology in an occupation.	548	describe the work of a geologist and paleontologist and seismologist	177	chemistry and photography
						178	water quality testing

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Standard #: Grade	Standard	Objective	Benchmark	Volume 1 Student Text Page		Volume 2 Investigation Manual Page	
INQ.6.a 9 - 12	Students understand that science involves a particular way of knowing and understand common connections among scientific disciplines.		evaluating print and visual media for scientific evidence, bias, or opinion;	110	study appliance labels and instructions	76	analyze watch manufacturer's claims
				142	create pamphlet on utility's energy saver programs	162	inferences from promotional materials for vehicles
				448	study claims made by bottled water companies	181	study water filtration device claims

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Standard #: Grade	Standard	Objective	Benchmark	Volume 1 Student Text Page	Volume 2 Investigation Manual Page
INQ.6.b 9 - 12	Students understand that science involves a particular way of knowing and understand common connections among scientific disciplines.		explaining that the scientific way of knowing uses a critique and consensus process (for example, peer review, openness to criticism, logical arguments, skepticism);	20 explain your reasoning 73 impact of Da Vinci's work 529 critiquing Wegener's theories of continental drift 612 early theories of the solar system	9 present conclusions to the class 15 discuss and test ideas with your group 19 explain how you arrived at your answer 29 discuss what you learned about gears 35 what evidence is there in support of your hypothesis? 37 describe the flow of energy based on experimental graph 39 critique group's explanation of energy transformations 39 give a brief presentation to the class 47 discuss an explanation with your group 47 present and defend an explanation 77 show how energy loss data could be applied to designing a real clock 129 explain your answer and justify 145 present findings and methods used

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Standard #: Grade	Standard	Objective	Benchmark	Volume 1 Student Text Page	Volume 2 Investigation Manual Page
					151 present results to the class 163 evaluating choice of favorite car

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Standard #: Grade	Standard	Objective	Benchmark	Volume 1 Student Text Page		Volume 2 Investigation Manual Page	
INQ.6.c 9 - 12	Students understand that science involves a particular way of knowing and understand common connections among scientific disciplines.		using graphs, equations, or other models to analyze systems involving change and constancy (for example, comparing the geologic time scale to shorter time frames);	24	making a graph	13	graph distance vs. time
				24	interpretations of patterns in data	15	interpret a speed vs. time graph
				26	creating graphs	15	construct a quantitative graphical model
				27	reading a graph	25	create a mathematical model
				41	make a graph	27	find math rule for lever equilibrium
				42	interpreting distance/time graph	28	derive a math formula
				78	analyze lever diagram	37	organize data into a graph of speed vs. height
				459	heat equation	51	graph voltage vs. current
				476	atmospheric pressure at various altitudes graph	121	graph mass vs. volume
				645	inverse square law	147	organize observations into a category table
				645	apparent brightness vs. distance graph	185	constructing a graph of drops of acid vs pH
				651	use the diagram to answer the questions (#2)	187	construct a graphical model
				651	arrange the items in the table (#3)	187	find equation for trend line
				651	use the diagram to answer the questions (#4)	189	construct a temperature vs. time graph
						197	constructing a graph from atmospheric pressure data
						203	graphing water and ice temperature readings

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Standard #: Grade	Standard	Objective	Benchmark	Volume 1 Student Text Page	Volume 2 Investigation Manual Page
					206 constructing a graph of time vs. temperature 217 determining relationship between temperature of the atmosphere and relative humidity 218 interpreting Doppler radar images 237 finding a pattern of volcanoes on a bathymetric map 257 inverse square law 268 discovering the mathematical relationship between apparent brightness and distance

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Standard #: Grade	Standard	Objective	Benchmark	Volume 1 Student Text Page		Volume 2 Investigation Manual Page	
INQ.6.d 9 - 12	Students understand that science involves a particular way of knowing and understand common connections among scientific disciplines.		analyzing and comparing models of cyclic change as used within and among scientific disciplines (for example, water cycle, circular motion, sound waves, weather cycles);	222	effect of temperature on speed of sound wave	94	does sound behave like other waves?
				222	effect of medium on speed of sound wave	209	investigating factors which cause the seasons
				440	oceans in the water cycle	238	why studying the moon's surface is useful for understanding Earth
				492	Earth's tilt causes seasons		
				518	create a model to explain why Earth has seasons	250	modeling the lunar cycle
				559	volcanoes and water vapor	251	constructing a lunar calendar
				584	the lunar cycle		
				588	lunar eclipses		
				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		

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Standard #: Grade	Standard	Objective	Benchmark	Volume 1 Student Text Page		Volume 2 Investigation Manual Page	
INQ.6.e 9 - 12	Students understand that science involves a particular way of knowing and understand common connections among scientific disciplines.		identifying and predicting cause-effect relationships within a system (for example, the effect of temperature on gas volume, effect of carbon dioxide level on the greenhouse effect, effects of changing nutrients at the base of a food pyramid);	28	identifying cause and effect relationships	21	determine effect of increasing mass
				41	identify cause and effect	185	effect of ocean on carbon dioxide levels in the atmosphere
				438	what causes acid rain		
				456	determining effect of changing mass on temperature changes	190	effect of changing mass on data
				460	thermal equilibrium	197	identifying relationships between air pressure and weather
				481	greenhouse effect and greenhouse gasses	202	investigate the temperature effects of greenhouse gases
				497	factors that shape the weather		
				608	relationship between orbital speed and distance between two objects	206	identifying relationship between percent of Earth covered in water and temperature range
						224	sequencing events
						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

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Standard #: Grade	Standard	Objective	Benchmark	Volume 1 Student Text Page		Volume 2 Investigation Manual Page
INQ.6.f 9 - 12	Students understand that science involves a particular way of knowing and understand common connections among scientific disciplines.		identifying and describing the dynamics of natural systems (for example, weather systems, ecological systems, body systems, systems at dynamic equilibrium);	51	what is equilibrium?	
				415	solubility equilibrium	
				415	equilibrium and solubility	
				429	the water cycle	
				435	pond ecosystem and water quality	
				438	acid rain formation system	
				460	thermal equilibrium	

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Standard #: Grade	Standard	Objective	Benchmark	Volume 1 Student Text Page		Volume 2 Investigation Manual Page	
INQ.6.g 9 - 12	Students understand that science involves a particular way of knowing and understand common connections among scientific disciplines.		identifying and testing a model to analyze systems involving change and constancy (for example, a mathematical expression for gas behavior; constructing a closed ecosystem such as an aquarium);	23	why make models?	13	graph distance vs. time
				24	what is a scientific model?	15	construct a quantitative graphical model
				24	scientific models	25	create a mathematical model
				24	making a graph	27	find math rule for lever equilibrium
				26	creating graphs	28	derive a math formula
				41	make a graph	37	organize data into a graph of speed vs. height
				42	interpreting distance/time graph	51	graph voltage vs. current
				459	heat equation	121	graph mass vs. volume
				485	computer modeling to predict greenhouse effects	147	organize observations into a category table
				494	modeling air currents	185	constructing a graph of drops of acid vs pH
				518	create a model (#1)	187	find equation for trend line
				524	model of Earth's history	187	construct a graphical model
				533	modeling plate boundaries	189	construct a temperature vs. time graph
				576	rock cycle model	197	constructing a graph from atmospheric pressure data
				614	solar system modeling	202	modeling the effect of greenhouse gases on Earth's temperature
				624	model of the sun's anatomy	203	graphing water and ice temperature readings
				645	inverse square law		

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Standard #: Grade	Standard	Objective	Benchmark	Volume 1 Student Text Page	Volume 2 Investigation Manual Page
					206 constructing a graph of time vs. temperature 212 modeling underwater rivers and waterfalls and springs 232 construct a model that simulates an earthquake 257 inverse square law 258 setting up a scale model of the solar system 268 discovering the mathematical relationship between apparent brightness and distance
INQ.6.h 9 - 12	Students understand that science involves a particular way of knowing and understand common connections among scientific disciplines.		explaining an exponential model (for example, pH scale, population growth, Richter scale); and	420 pH and pH scale 420 defining and determining pH 421 pH of substances you use or consume 421 table of pH of common substances 537 conversion of energy in rocks causes seismic waves 538 seismic waves	181 testing pH of tap water samples 184 determining pH of water as carbon dioxide dissolves

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Standard #: Grade	Standard	Objective	Benchmark	Volume 1 Student Text Page		Volume 2 Investigation Manual Page
INQ.6.i 9 - 12	Students understand that science involves a particular way of knowing and understand common connections among scientific disciplines.		refining a hypothesis based on an accumulation of data over time (for example, Alvarez's theory on dinosaur extinction).	34	Aristotle vs. Newton	130 investigate Rutherford's gold foil experiment
				45	Newton's Laws of Motion	
				54	Newton and the force of gravity	
				105	Benjamin Franklin	
				107	Charles-Augustin Coulomb	
				312	contributions of Fermi	
				313	development of atomic theory	
				324	research and create a poster to illustrate development of atomic model	
				332	plate tectonic history	
				393	contributions of Marie and Pierre Curie	
				528	development of plate tectonic theory	
				529	continental drift theory history	
				529	continental drift theory	
				612	changing ideas about the solar system	
				648	development of Big Bang theory	

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Standard #: Grade	Standard	Objective	Benchmark	Volume 1 Student Text Page		Volume 2 Investigation Manual Page	
PS.2.1.a 9 - 12	Physical Science: Students know and understand common properties, forms, and changes in matter and energy. (Focus: Physics and Chemistry)	Students know that matter has characteristic properties, which are related to its composition and structure.	examining, describing, measuring, classifying, and predicting common properties of substances (for example, electrical charge, chemical reactivity, acidity, electrical conductivity, radioactivity, relationships in the periodic table);	105	charge is a fundamental property of matter	42	investigate electric charge
				106	static charge discussed	138	nuclear reactions
				107	explanation of coulomb	141	build model of Na and Cl atoms and explain why they bond to form a molecule
				108	electroscopes		
				108	how an electroscope works	142	arrangement of electrons and groups of elements
				321	groups of elements and valence shells	160	radioactive decay
				329	periodic table columns and valence electrons	160	how do you simulate nuclear decay?
				330	bonding and periodic table position	176	investigate acids and bases
				332	periodic table and electronegativities		
				335	periodic table and oxidation numbers		
				388	nuclear vs chemical reactions		
				417	define and compare acids and bases		
				417	acids and bases compared/contrasted		

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Standard #: Grade	Standard	Objective	Benchmark	Volume 1 Student Text Page		Volume 2 Investigation Manual Page	
PS.2.1.b 9 - 12	Physical Science: Students know and understand common properties, forms, and changes in matter and energy. (Focus: Physics and Chemistry)	Students know that matter has characteristic properties, which are related to its composition and structure.	describing and explaining properties and composition of samples of matter using models (for example, atomic and molecular structure, the periodic table);	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	using the periodic table
				318	proton/electron attraction	133	protons and neutrons
				320	groups of elements	133	location of electrons in atom
				321	studying the periodic table	136	building and studying the periodic table
				332	metals nonmetals and metalloids	136	model stable and neutral atoms
				388	showing valence electrons in a diagram	137	importance of atomic number
						137	build atomic models
						140	find the number of electrons in outermost level
						140	review subatomic particles

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Standard #: Grade	Standard	Objective	Benchmark	Volume 1 Student Text Page		Volume 2 Investigation Manual Page	
PS.2.1.c 9 - 12	Physical Science: Students know and understand common properties, forms, and changes in matter and energy. (Focus: Physics and Chemistry)	Students know that matter has characteristic properties, which are related to its composition and structure.	separating substances based on their chemical and physical properties (for example, color, solubility, chemical reactivity, melting point, boiling point); and	278	mixtures can be separated by physical means	114	separating a homogeneous mixture
				284	changes of state	119	energy and phase changes
				291	density is independent of amount of substance	170	design experiments to explore dissolving rate
				292	elasticity is a physical property of matter	170	solubility and temperature
				292	hardness is a physical property of matter	172	investigate solubility of sugar
				293	brittleness is a physical property of matter		
				294	malleability is a physical property of matter		
				294	tensile strength is a physical property of matter		
				294	development of Kevlar brand fiber		
				412	effect of temperature on solubility		
				412	effect of nature of solvent on solubility		
				413	temperature-solubility graphs		
				414	effect of temperature on solubility of gasses		
				457	engineers use specific heat of substances to design better products		

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				498	phases changes in the atmosphere	
PS.2.1.d 9 - 12	Physical Science: Students know and understand common properties, forms, and changes in matter and energy. (Focus: Physics and Chemistry)	Students know that matter has characteristic properties, which are related to its composition and structure.	using word and chemical equations to relate observed changes in matter to its composition and structure.	336 338 339 371	writing a chemical formula summary of chemical formula writing rules naming compounds which of the equations is balanced?	143 name chemical compounds 143 predict chemical formulas 145 determine empirical formula 149 balance these equations
PS.2.2.a 9 - 12	Physical Science: Students know and understand common properties, forms, and changes in matter and energy. (Focus: Physics and Chemistry)	Students know that energy appears in different forms, and can move (be transferred) and change (be transformed).	identifying, measuring, calculating, and analyzing quantitative relationships involved with energy forms (for example, heat transfer in a system involving mass, specific heat, and change in temperature of matter); and	455 455 456 456 458 459 468	definition of calorie description and use of BTUs definition of specific heat specific heat water's specific heat helps regulate Earth's temperature heat equation use of "R value"	190 calculating thermal energy in calories 205 investigating how the high specific heat of water helps regulate Earth's temperature

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Standard #: Grade	Standard	Objective	Benchmark	Volume 1 Student Text Page		Volume 2 Investigation Manual Page	
PS.2.2.b 9 - 12	Physical Science: Students know and understand common properties, forms, and changes in matter and energy. (Focus: Physics and Chemistry)	Students know that energy appears in different forms, and can move (be transferred) and change (be transformed).	identifying, measuring, calculating, and analyzing relationships associated with energy transfer (changes in temperature, velocity, potential energy, kinetic energy, conduction, convection, radiation, voltage, current).	32	average speed discussed	8	calculating speed
				36	examples of acceleration	36	energy conservation and the roller coaster
				91	following an energy transformation	38	identify potential/kinetic energy conversions
				101	concept of electric current	44	investigate concept of voltage
				102	concept of electric circuits	45	battery chemicals and electrical charge
				103	circuit diagrams	46	investigate concept of electric current
				113	battery uses chemical energy to produce electrical charge	50	Ohm's law
				114	voltage and potential energy	56	build a parallel circuit
				115	how to measure voltage	56	build a series circuit
				117	electrical current explained	58	build a series circuit and find total resistance
				119	how to measure current	60	parallel circuit and Ohm's law
				131	Ohm's law explained	119	investigate temperature and energy transfer in melting process
				132	using Ohm's law to analyze circuits	186	develop a way to convert between Fahrenheit and Celsius temperature scales
				145	parallel circuit defined	188	investigate the increase of temperature of water as thermal energy is added
				145	series circuit defined		
				146	household wiring		
				147	current and voltage in series circuits		
				151	voltage and resistance in parallel circuits		
155	analyze a parallel circuit						

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				156	192 investigate convection in liquids
				analyze a series circuit	
				453	
				comparing temperature in Fahrenheit and Celsius scales	
				454	
				changes in temperature are directly related to changes in energy	
				460	
				thermal equilibrium	
				462	
				heat transfer through air	
				462	
				densely packed solids are good conductors of heat	
				463	
				convection currents and weather	
				463	
				warming hands over candle	
				464	
				convection currents in water	
				465	
				transfer of heat by radiation	
				465	
				solid road surface emits radiation	
				482	
				global warming and heat transfer by radiation	
				493	
				apply knowledge of heat transfer to different situations	
				537	
				potential energy transformed to kinetic energy causes earthquakes	

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PS.2.3.a 9 - 12	Physical Science: Students know and understand common properties, forms, and changes in matter and energy. (Focus: Physics and Chemistry)	Students understand that interactions can produce changes in a system, although the total quantities of matter and energy remain unchanged.	identifying,	88	potential and kinetic energy explained	36	energy conservation and the roller coaster
			describing, and	90	conservation of energy explained	37	investigating conservation of energy with rollercoaster
			explaining physical and chemical changes involving the	92	energy transformations and conservation	38	conservation of energy and energy transformations
			conservation of matter and energy (for example, oscillating	93	different forms of energy described	150	investigate conservation of mass in effervescent tablet reaction
			pendulum/spring, chemical reactions, nuclear reactions);	96	prove that energy is conserved		
				363	history of law of conservation of mass		

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PS.2.3.b 9 - 12	Physical Science: Students know and understand common properties, forms, and changes in matter and energy. (Focus: Physics and Chemistry)	Students understand that interactions can produce changes in a system, although the total quantities of matter and energy remain unchanged.	observing, measuring, and calculating quantities to demonstrate conservation of matter and energy in chemical changes (for example, acid-base, precipitation reactions), and physical interactions of matter (for example, force, work, power);	68 compound machines 83 how to calculate work 85 efficiency and bicycles 86 how to calculate power 86 power explained 87 concept of energy as stored work 96 decide whether or not work is done 96 calculate work done 97 calculate work output from efficiency data 97 calculate work accomplished by a motor 97 compare different amounts of work done 97 calculate power 97 calculate power of two different machines 97 analyze power of motor 138 how to calculate electrical power 375 synthesis or addition reactions 376 decomposition reactions 377 single displacement reactions	29 design and construct complex gear machines 31 calculate work done on block 31 work = force X distance 156 investigate double displacement reactions 158 measure energy changes in 3 different reactions 176 investigate acids and bases 181 testing pH of tap water samples 184 determining pH of water as carbon dioxide dissolves 191 find efficiency of water heater 191 calculating work input and work output 191 power of an immersion heater 263 calculate the power output of a photovoltaic cell

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				377 double displacement reactions	
				417 acids and bases compared/contrasted	
				417 H and OH ions	
				417 properties of acids	
				417 define and compare acids and bases	
				418 strong vs. weak acids	
				418 properties of bases	
				419 strong vs. weak bases	
				419 weak and strong acids and bases	
				420 pH and pH scale	
				420 defining and determining pH	
				421 pH of substances you use or consume	
				421 table of pH of common substances	

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Standard #: Grade	Standard	Objective	Benchmark	Volume 1 Student Text Page		Volume 2 Investigation Manual Page	
PS.2.3.c 9 - 12	Physical Science: Students know and understand common properties, forms, and changes in matter and energy. (Focus: Physics and Chemistry)	Students understand that interactions can produce changes in a system, although the total quantities of matter and energy remain unchanged.	describing and predicting chemical changes (for example, combustion, simple chemical reactions), and physical interactions of matter (for example, velocity, force, work, power),	13	speed is relative	9	collect data and calculate speed of car
				14	how to calculate speed	10	calculate speed of the car
				15	compare and contrast speed and velocity	12	find speed of car at different positions
				18	what is the speed of an object that is standing still?	13	make a position vs. time graph
				20	calculate speed of car	14	calculate speed of car at two places on the ramp
				20	find speed of bumblebee	15	make a speed vs. time graph
				24	accurate speed measurements	16	thinking about force
				25	conceptual models of motion	17	calculate speed of car
				30	position vs. time graphs	21	effect of friction on the car
				32	average speed vs. instantaneous	23	using 3rd law to explain common phenomena
				37	speed vs. time graphs	24	measure force in newtons
				42	calculate speed from distance/time graph	36	find speed of marble
				45	Newton's third law summarized	134	using a spectrometer
				45	Newton's second law summarized	135	observing different light sources with a spectrometer
				45	Newton's first law summarized	148	chemical equations
				48	Newton's first law in detail	156	investigate double displacement reactions
				49	Newton's second law in detail	162	carbon reactions and the environment

Correlation to Colorado Grade 10 Science CSAP Framework
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				56	friction explained	162	structure of fossil fuels
				59	Newton's third law in detail	162	importance of fossil fuels
				64	research effect of friction on human joints	162	investigating combustion reactions
				69	newtons and pounds		
				319	fireworks displays and electron excitation		
				354	chemical reactions and digestion		
				357	combustion reaction		
				361	heartburn reaction		
				361	chemical reactions in living systems		
				364	carbon chains		
				375	synthesis or addition reactions		
				376	decomposition reactions		
				377	double displacement reactions		
				377	single displacement reactions		
				378	consumer chemistry		
				378	combustion reactions		
				381	MRE ration heater reaction		

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				394	
				photosynthesis and carbon reactions	
				395	
				chemistry of the atmosphere	
				395	
				fossil fuels and carbon reactions	
				395	
				chemistry of the atmosphere	
				397	
				carbon reactions	
				419	
				dissociation of water	
				438	
				chemical reactions and the formation of acid rain	

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Standard #: Grade	Standard	Objective	Benchmark	Volume 1 Student Text Page		Volume 2 Investigation Manual Page	
PS.2.3.d 9 - 12	Physical Science: Students know and understand common properties, forms, and changes in matter and energy. (Focus: Physics and Chemistry)	Students understand that interactions can produce changes in a system, although the total quantities of matter and energy remain unchanged.	describing and explaining physical interactions of matter using conceptual models (for example, conservation laws of matter and energy, particle model for gaseous behavior).	88	potential and kinetic energy explained	36	energy conservation and the roller coaster
				90	conservation of energy explained	37	investigating conservation of energy with rollercoaster
				91	energy conversions	38	explore energy transformations
				92	energy transformations and conservation	38	conservation of energy and energy transformations
				93	different forms of energy described	94	does sound behave like other waves?
				96	prove that energy is conserved	104	investigate RGB model of color
				196	waves are all around us	118	observe melting process and study quantitatively
				222	effect of temperature on speed of sound wave	118	investigate melting
				222	effect of medium on speed of sound wave	118	molecules in a liquid
				237	radio and television signals	119	adding heat energy to melt an ice cube
				237	microwave ovens		
				243	RGB model of color		
				250	identify uses of electromagnetic waves		
				272	identify uses of electromagnetic waves		
				284	states of matter and arrangement of molecules		
				285	characteristics of matter related to its state		

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Standard #: Grade	Standard	Objective	Benchmark	Volume 1 Student Text Page	Volume 2 Investigation Manual Page
				363 history of law of conservation of mass 405 molecular structure of ice 451 increasing temperature means increasing motion of molecules 452 molecular motion increases when temperature increases	