

Correlation to Ohio Science Academic Content Standards
Foundations of Physical Science Student Text and Investigation Manual

Standard #: Section	Grade	Topic	Indicator	student text pg	detail	investigation pg	detail
ES09_08 Earth and Space Science	nine	Historical Perspectives and Scientific Revolutions	Use historical examples to explain how new ideas are limited by the context in which they are conceived: are often initially rejected by the scientific establishment: sometimes spring from unexpected findings: and usually grow slowly ...	34	Aristotle vs. Newton	130	investigate Rutherford's gold foil experiment
				34	Newton and the history of physics		
				45	Newton's Laws of Motion		
				45	Newton's discovery of the 2nd law		
				46	oldest known standard weight		
				54	Newton and the force of gravity		
				105	Benjamin Franklin		
				107	Charles-Augustin Coulomb		
				134	history of superconductivity		
				161	history of magnetism		
				312	history of atomic theory		
				312	contributions of Fermi		
				313	development of atomic theory		
				321	contributions of Mendeleev		
				324	research and create a poster to illustrate development of atomic model		
				343	Avogadro's number		

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Standard #: Section	Grade	Topic	Indicator	student text pg	detail	investigation pg	detail
				363	history of law of conservation of mass		
				393	contributions of Marie and Pierre Curie		
				393	history of nuclear chemistry		
				400	research the Clean Air Act of 1970 and 1990		
				434	research local water supply history		
INQ09_01 Scientific Inquiry	nine	Doing Scientific Inquiry	Distinguish between observations and inferences given a scientific situation.	372	observe chemical changes	7	variables in an experiment
						100	observe glow-in-the-dark paper
						146	record detailed observations
						146	observe evidence of chemical change
						158	observe temperature changes in chemical reactions
						164	observe Tyndall effect
						168	observe dissolving process
						175	make observations about local surface water
						192	observe convection currents

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INQ09_02 Scientific Inquiry	nine	Doing Scientific Inquiry	Research and apply appropriate safety precautions when designing and conducting scientific investigations.	500 501 501	featured throughout CPO Science program safety rules described safety quiz safety quiz	20 24 26 40 44 56 58 146 150 158 164 168 172 180 182 186 192 198 200	featured throughout CPO Science program safety tip for car/ramp setup ropes and pulley safety safety tip for hanging weights from lever electrical safety short circuit safety warning short circuit safety warning short circuit safety warning safety in the lab chemistry safety wear goggles and apron safety equipment hot water safety safety tip for water testing thermometer safety heat safety thermometer safety heat safety heat safety safely using rubber bands

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Standard #: Section	Grade	Topic	Indicator	student text pg	detail	investigation pg	detail
INQ09_03 Scientific Inquiry	nine	Doing Scientific Inquiry	Construct, interpret and apply physical and conceptual models that represent or explain systems, objects, events or concepts.	23 24 24 24 26 41 42	why make models? what is a scientific model? scientific models making a graph creating graphs make a graph interpreting distance/time graph	13 15 25 27 28 37 51 121 147 151 181 183	graph distance vs. time construct a quantitative graphical model create a mathematical model find math rule for lever equilibrium derive a math formula organize data into a graph of speed vs. height graph voltage vs. current graph mass vs. volume organize observations into a category table does your experiment agree with law of conservation of mass? construct a graphical model construct a temperature vs. time graph

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Standard #: Section	Grade	Topic	Indicator	student text pg	detail	investigation pg	detail
INQ09_04 Scientific Inquiry	nine	Doing Scientific Inquiry	Decide what degree of precision based on the data is adequate and round off the results of calculator operations to the proper number of significant figures to reasonably reflect those of the inputs.	12	importance of reliable and accurate data collection	4 6 7 9 17 24 36 75 167	difference between precise and accurate data electronic timer and release technique record time interval collect speed data record times collect weight data collect precise speed and height data collect mass and amplitude data collect time data and record observations

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Standard #: Section	Grade	Topic	Indicator	student text pg	detail	investigation pg	detail
INQ09_05 Scientific Inquiry	nine	Doing Scientific Inquiry	Develop oral and written presentations using clear language, accurate data, appropriate graphs, tables, maps and available technology.	20	explain your reasoning		data tables and graphs can be created on computer or graphing calculator
				24	interpretations of patterns in data		
				27	reading a graph	6	compare results with other groups
				27	how to read a graph		
				42	analyze a speed/distance graph	9	reporting on an experiment
				78	analyze lever diagram	9	present conclusions to the class
						9	construct a data table
						11	graph speed vs. position
						11	analyze speed change of car
						12	understand and use data table
						15	discuss and test ideas with your group
						15	interpret a speed vs. time graph
						17	record results in data table
						18	study data table for relationship between force and motion
						18	organize different combinations of data
						19	explain how you arrived at your answer

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Standard #: Section	Grade	Topic	Indicator	student text pg	detail	investigation pg	detail
						24	use data table to record results
						25	analyze block and tackle data
						27	analyze lever equilibrium data
						27	use data table to record results
						29	discuss what you learned about gears
						30	record ropes and pulley data in table
						35	does data support hypothesis?
						36	organize data into a table
						37	describe the flow of energy based on experimental graph
						39	give a brief presentation to the class
						45	did battery voltage change?
						47	discuss an explanation with your group
						47	present and defend an explanation
						75	create data table for self-designed experiment
						76	analyze pendulum data

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Standard #: Section	Grade	Topic	Indicator	student text pg	detail	investigation pg	detail
						78	reading harmonic motion data tables and graphs
						129	explain your answer and justify
						145	present findings and methods used
						145	present findings to the class
						147	students analyze chemical change lab results
						151	design a data table
						151	present results to the class
						167	use data table for observations
						173	write praragraph to explain results
						173	organize water quality data into a table
						175	create water quality report
						179	write summary of findings

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Standard #: Section	Grade	Topic	Indicator	student text pg	detail	investigation pg	detail
INQ09_06 Scientific Inquiry	nine	Doing Scientific Inquiry	Draw logical conclusions based on scientific knowledge and evidence from investigations.			21 35 45 157	construct reasonable explanation based on data study data and determine importance of height on speed of marble analyze data and explain a rule add new rules to list based on findings

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Standard #: Section	Grade	Topic	Indicator	student text pg	detail	investigation pg	detail
PS09_01 Physical Science	nine	Nature of Matter	Recognize that all atoms of the same element contain the same number of protons, and elements with the same number of protons may or may not have the same mass. Those with different masses (different numbers of neutrons) are called isotopes.	311	location/size/charge of subatomic particles	132	atomic number determines what element that atom is
				311	protons/neutrons/electrons	133	identify mass number
				315	atomic number discussed	133	identify element symbol and name
				315	atoms of same element have same atomic number	133	identify atomic number
				316	mass number discussed	133	exploring isotopes
				316	isotopes explained	133	location of electrons in atom
				322	atomic number on the periodic table	133	protons and neutrons
				322	mass number on the periodic table	136	atomic number
				322	chemical symbols and element names	136	mass number
				322	atomic mass on the periodic table	136	understanding isotopes
						137	importance of atomic number
						137	build atomic models
						140	review subatomic particles

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Standard #: Section	Grade	Topic	Indicator	student text pg	detail	investigation pg	detail
PS09_02 Physical Science	nine	Nature of Matter	Illustrate that atoms with the same number of positively charged protons and negatively charged electrons are electrically neutral.	105 106 107 108 108 318 388	charge is a fundamental property of matter static charge discussed explanation of coulomb how an electroscope works electroscopes proton/electron attraction showing valence electrons in a diagram	42 132 136 140	investigate electric charge building atom models model stable and neutral atoms find the number of electrons in outermost level
PS09_03 Physical Science	nine	Nature of Matter	Describe radioactive substances as unstable nuclei that undergo random spontaneous nuclear decay emitting particles and/or high energy wavelike radiation.	387 388 393 393 400	fusion and fission explained nuclear vs chemical reactions radioisotopes in science and medicine carbon dating research pros and cons of nuclear technology	138 138 160 160 161	fusion and fission nuclear reactions radioactive decay how do you simulate nuclear decay? research pros and cons of uses for radioactive elements

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Standard #: Section	Grade	Topic	Indicator	student text pg	detail	investigation pg	detail
PS09_04 Physical Science	nine	Nature of Matter	Show that when elements are listed in order according to the number of protons (called the atomic number), the repeating patterns of physical and chemical properties identify families of elements. Recognize repeating pattern of electron configurations.	320 321 329 330 332 335 388	groups of elements groups of elements and valence shells periodic table columns and valence electrons bonding and periodic table position periodic table and electronegativities periodic table and oxidation numbers showing valence electrons in a diagram	133 140 141 142	using the periodic table find the number of electrons in outermost level build model of Na and Cl atoms and explain why they bond to form a molecule arrangement of electrons and groups of elements
PS09_05 Physical Science	nine	Nature of Matter	Describe how ions are formed when an atom or a group of atoms acquire an unbalanced charge by gaining or losing one or more electrons.	324 324 335	use the periodic table to predict chemical formulas which element is more likely to combine with other elements? chemical bonding and the periodic table	136 141 141	ions modeling a chemical bond whan an atom ionizes

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Standard #: Section	Grade	Topic	Indicator	student text pg	detail	investigation pg	detail
PS09_06 Physical Science	nine	Nature of Matter	Explain that the electric force between the nucleus and the electrons hold an atom together. Relate that on a larger scale, electric forces hold solid and liquid materials together (e.g., salt crystals, water).	389 389 389	strong nuclear force forces in the nucleus electromagnetic force	136	strong force

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Standard #: Section	Grade	Topic	Indicator	student text pg	detail	investigation pg	detail
PS09_07 Physical Science	nine	Nature of Matter	Show how atoms may be bonded together by losing, gaining or sharing electrons and that in a chemical reaction, the number, type of atoms and total mass must be the same before and after the reaction (e.g., writing chemical formulas and balanced equations)	324	use the periodic table to predict chemical formulas	138	nuclear reactions
				324	which element is more likely to combine with other elements?	141	modeling a chemical bond
				330	ionic bonds	143	classify ionic compounds
				331	covalent bonds	143	name chemical compounds
				332	distinguishing between ionic and covalent bonds	143	predict chemical formulas
				335	chemical bonding and the periodic table	143	ionic compounds
				336	writing a chemical formula	145	determine empirical formula
				338	summary of chemical formula writing rules	148	reactants and products
				339	naming compounds	148	chemical equations
				357	chemical reactions involve rearrangement of atoms	149	balance these equations
				359	balancing chemical equations	149	practice balancing equations
				361	chemical reactions in living systems	152	predict how much product formed given the reactants
				363	history of law of conservation of mass	152	write the balanced equation
				371	which of the equations is balanced?	157	predict the products of double displacement reactions
				378	consumer chemistry	160	how do you simulate nuclear decay?
				378	combustion reactions	162	investigating combustion reactions

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Standard #: Section	Grade	Topic	Indicator	student text pg	detail	investigation pg	detail
				381	MRE ration heater reaction		
				388	nuclear vs chemical reactions		
				395	chemistry of the atmosphere		
				395	chemistry of the atmosphere		
				397	carbon reactions		
				444	chemical reactions and the formation of acid rain		
				487	chemical reactions in living systems		
PS09_08 Physical Science	nine	Nature of Matter	Demonstrate the pH scale (0 - 14) is used to measure acidity and classify solutions as acidic, basic, or neutral.	437	concentration of ions and pH	176	measure pH of everyday solutions
				440	examples of acid and base chemistry	176	measure pH
				443	pH and blood	176	investigate acids and bases

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PS09_09 Physical Science	nine	Nature of Matter	Investigate the properties of pure substances and mixtures (e.g., density, conductivity, hardness, properties of alloys, superconductors, and semiconductors).	278	mixtures can be separated by physical means	114	investigating a mixture
				278	pure substances cannot be separated by physical means	114	separating a homogeneous mixture
				279	summary of matter classification	114	investigate a homogeneous mixture
				281	volume and mass contrasted	116	mass and volume measurements
				283	atoms and molecules	119	melting point of ice
				284	melting and boiling point explained	124	build a density column
				284	melting and boiling points	126	investigating buoyancy with clay boats
				285	table of melting and boiling points	128	use CPO viscometer to study viscosity
				288	create a poster of matter classification	141	compare and contrast elements and compounds
				291	density is independent of amount of substance	165	investigate solutions and colloids and suspensions
				291	density explained		
				292	hardness is a physical property of matter		
				292	elasticity is a physical property of matter		
				293	brittleness is a physical property of matter		
				294	malleability is a physical property of matter		

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Standard #: Section	Grade	Topic	Indicator	student text pg	detail	investigation pg	detail
				294	tensile strength is a physical property of matter		
				295	relationship between mass volume and density		
				296	density of liquid water vs. ice		
				297	buoyancy explained		
				298	sinking and floating		
				302	viscosity of motor oils		
				305	viscosity of glue mixtures		
PS09_10 Physical Science	nine	Nature of Matter	Compare the conductivity of different materials and explain the role of electrons in the ability to conduct electricity.	121	electrical conductivity explained	49	conductivity of aluminum vs. copper
				469	thermal conductivity explained	190	investigate and rank materials for thermal conductivity

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PS09_11 Physical Science	nine	Nature of Energy	Explain how thermal energy exists in the random motion and vibrations of atoms and molecules (kinetic energy). Recognize that the higher the temperature, the greater the molecular motion, and during changes of state the temp. remains constant.	451	temperature and kinetic energy	119	investigate temperature and energy transfer in melting process
				451	increasing temperature means increasing motion of molecules	119	investigate melting and create a graph
				455	temperature and thermal energy and heat	119	adding heat energy to melt an ice cube
				468	densely packed solids are good conductors of heat	119	create a temperature vs. time graph of phase change
				468	heat transfer through air	182	relationship between heat and temperature
				470	warming hands over candle	190	investigate conduction through all states of matter
				470	convection currents and weather	192	investigate convection in liquids
				472	convection currents in water	194	investigate radiation emitted by liquids
				476	solid road surface emits radiation	194	investigate radiation emitted by solids
				478	apply knowledge of heat transfer to different situations		
				481	global warming and heat transfer by radiation		
				481	global warming		
				488	cooling processes and the human body		
				488	cooling processes and the human body		

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Standard #: Section	Grade	Topic	Indicator	student text pg	detail	investigation pg	detail
				491	heat generated in mechanical systems		
				493	using heat to do mechanical work		
				494	cooling processes and mechanical systems		
				494	cooling processes and mechanical systems		
PS09_12 Physical Science	nine	Nature of Energy	Explain how an object's kinetic energy depends on its mass and its speed.	87	concept of energy as stored work	36	energy conservation and the roller coaster
				91	following an energy transformation	38	identify potential/kinetic energy conversions
PS09_13 Physical Science	nine	Nature of Energy	Demonstrate that near Earth's surface an object's gravitational potential energy depends upon its weight and height above a reference surface.	91	following an energy transformation	36	energy conservation and the roller coaster
						38	identify potential/kinetic energy conversions

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Standard #: Section	Grade	Topic	Indicator	student text pg	detail	investigation pg	detail
PS09_14 Physical Science	nine	Nature of Energy	Summarize how nuclear reactions convert a small amount of matter into a large amount of energy. (Fission involves the splitting of a large nucleus into smaller nuclei; fusion is the joining of two small nuclei into a larger nucleus at high energies).	387	fusion and fission explained	138	fusion and fission
PS09_15 Physical Science	nine	Nature of Energy	Trace the transformations of energy within a system (e.g., chemical to electrical to mechanical) and recognize that energy is conserved. Show that these transformations involve the release of some thermal energy.	88 90 91 91 91 92 93 96	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	37 38 38 39 39 188	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 specific heat and conservation of energy

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Standard #: Section	Grade	Topic	Indicator	student text pg	detail	investigation pg	detail
PS09_16 Physical Science	nine	Nature of Energy	Illustrate that chemical reactions are either endothermic or exothermic (e.g., cold packs, ahot packs and the burning of fossil fuels).	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
PS09_17 Physical Science	nine	Nature of Energy	Demonstrate that thermal energy can be transferred by conduction, convection or radiation (e.g., through materials by the collision of particles, moving air masses or across empty space by forms of electromagnetic radiation).	468 468 470 470 472 476 478 481	densely packed solids are good conductors of heat heat transfer through air warming hands over candle convection currents and weather convection currents in water solid road surface emits radiation apply knowledge of heat transfer to different situations global warming and heat transfer by radiation	190 192 194 194	investigate conduction through all states of matter investigate convection in liquids investigate radiation emitted by liquids investigate radiation emitted by solids

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Standard #: Section	Grade	Topic	Indicator	student text pg	detail	investigation pg	detail
PS09_18 Physical Science	nine	Nature of Energy	Demonstrate that electromagnetic radiation is a form of energy. Recognize that spectrum (e.g., radio waves, microwaves, infrared, visible light, ultraviolet, X-rays, and gamma rays).	196 237 237 237 237 250 272 474	waves are all around us visible light and the electromagnetic spectrum light waves and the electromagnetic spectrum radio and television signals microwave ovens identify uses of electromagnetic waves identify uses of electromagnetic waves ultraviolet and infrared light	134	investigating visible light with a spectrometer
PS09_19 Physical Science	nine	Nature of Energy	Show how the properties of a wave depend on the properties of the medium through which it travels. Recognize that electromagnetic waves can be propagated without a medium.	196 197 205 237 237 250 272 474	waves are all around us transverse and longitudinal waves standing waves on a string radio and television signals microwave ovens identify uses of electromagnetic waves identify uses of electromagnetic waves electromagnetic radiation	82 84	study wave pulses on elastic cord make different types of waves in a ripple tank

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PS09_20 Physical Science	nine	Nature of Energy	Describe how waves can superimpose on one another when propoagated in the same medium. Analyze conditions in which waves can bend around corners, reflect off surfaces, are absorbed, and change direction and speed when entering a different material.	201	waves and absorption	85	observing reflection in water waves
				201	waves and reflection	95	interference and sound waves
				201	reflection in water waves and light waves	95	investigate interference with sound waves
				201	waves and refraction	101	examine light through diffraction grating
				202	refraction and eyeglasses	106	tracing incident and reflected rays
				206	constructive and destructive interference	107	investigate how light interacts with mirrors
				210	can wave interference sink a ship?	107	plot reflected rays from a mirror
				223	interference of sound waves	107	investigate reflection of light
				225	consonance and dissonance and beats	108	tracing incident and refracted rays
				258	forming images with lenses	108	investigate how light interacts with a prism
				258	refraction in optical systems	108	explore refraction with lenses
				260	reflection and mirrors	108	explore refraction with a prism
				261	refraction and lenses	110	finding focal point and focal length of a lens
				263	index of refraction	111	plotting images formed when light is refracted by a lens
				263	index of refraction		
				273	find the angle of reflection		
				476	absorption and emission		

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PS09_21 Physical Science	nine	Forces and Motion	Demonstrate that motion is a measurable quantity that depends on the observer's frame of reference and describe the object's motion in terms of position, velocity, acceleration and time.	14	how to calculate speed	8	calculating speed
				15	compare and contrast speed and velocity	9	collect data and calculate speed of car
				20	find speed of bumblebee	10	calculate speed of the car
				20	calculate speed of car	12	calculate speed of moving car
				24	accurate speed measurements	12	model the car's motion graphically
				29	position vs. time graph discussion	12	find speed of car at different positions
				30	position vs. time graphs	13	make a position vs. time graph
				32	average speed vs. instantaneous	14	calculate acceleration of car on ramp
				32	average speed discussed	14	acceleration is the rate at which speed changes
				33	understanding acceleration	14	calculate speed of car at two places on the ramp
				35	how to calculate acceleration	15	make a speed vs. time graph
				36	examples of acceleration	15	changes in motion can be represented graphically
				37	speed vs. time graphs	17	explore 2nd law and acceleration
				37	speed vs. time graph discussion	17	calculate speed of car
				41	find acceleration of car	36	find speed of marble
				42	calculate speed from distance/time graph		
				49	link between force and acceleration		
				53	acceleration due to gravity		

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PS09_22 Physical Science	nine	Forces and Motion	Demonstrate that any object does not accelerate (remains at rest or maintains a constant speed and direction of motion) unless an unbalanced force acts on it.	45 46 48 49 51 51	Newton's first law summarized force has potential to change motion Newton's first law in detail force is related to acceleration net force explained balanced and unbalanced forces	14 16 19	exploring acceleration on a ramp unbalanced forces and acceleration of car find correct relationship between force mass and acceleration
PS09_23 Physical Science	nine	Forces and Motion	Explain the change in motion (acceleration) of an object. Demonstrate that the acceleration is proportional to the net force acting on the object and inversely proportional to the mass of the object.	45 48 49 50 64	Newton's second law summarized Newton's laws explained and applied Newton's second law in detail Newton's second law applied solving problems using $f=ma$	16 16 19 20	2nd law thinking about force discover 2nd law of motion force and motion with car and ramp
PS09_24 Physical Science	nine	Forces and Motion	Demonstrate that whenever one object exerts a force on another, an equal amount of force is exerted back 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

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PS09_25 Physical Science	nine	Forces and Motion	Demonstrate the ways in which frictional forces constrain the motion of objects (e.g., car traveling around a curve, a block on an inclined plane, a person running, an airplane in flight).	56 64	friction explained research effect of friction on human joints	21	effect of friction on the car

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PS09_26 Physical Science	nine	Historical Perspectives and Scientific Revolutions	Use historical examples to explain how new ideas are limited by the context in which they are conceived; ar often initially rejected by the scientific establishment; sometimes spring from unexpected findings; and usually grow slowly ...	34	Newton and the history of physics	130	investigate Rutherford's gold foil experiment
				45	Newton's discovery of the 2nd law		
				45	Newton's Principia		
				46	oldest known standard weight		
				55	Newton and the apple legend		
				73	Leonardo DaVinci		
				86	James Watt		
				110	research Franklin's electricity experiments		
				115	Volta's batteries		
				131	Georg Ohm's work with circuits		
				134	history of superconductivity		
				160	Faraday's contributions		
				161	history of magnetism		
				312	history of atomic theory		
				312	Dalton's contributions		
				313	development of atomic theory		
				320	the quests of alchemists		
				321	Mendeleev's periodic table		

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				324	research and create a poster to illustrate development of atomic model		
				332	Linus Pauling and electronegativities		
				343	Avogadro's number		
				363	Antoine Lavoisier		
				363	history of law of conservation of mass		
				370	research Lavoisier's contributions		
				391	scientific discovery and the atomic age		
				393	history of nuclear chemistry		
				393	Marie and Pierre Curie		
				393	accomplishments of Marie Curie		
				400	research the Clean Air Act of 1970 and 1990		
				434	research local water supply history		
				456	contributions of Joule		
				464	research the history of heat and temperature		

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PS09_27 Physical Science	nine	Historical Perspectives and Scientific Revolutions	Describe advances and issues in physical science that have important, long-lasting effects on science and society (e.g., atomic theory, quantum theory, Newtonian mechanics, nuclear energy, nanotechnology, plastics and ceramics and communication tech.)	34	Aristotle vs. Newton	130	investigate Rutherford's gold foil experiment
				45	Newton's Laws of Motion	163	economic impact of end-product of combustion reaction
				54	Newton and the force of gravity	163	too much CO ₂
				105	Benjamin Franklin	163	consider a vehicle's fuel economy
				107	Charles-Augustin Coulomb	163	research how trees offset accumulation of CO ₂
				313	development of atomic theory	163	can trees compensate for manmade CO ₂ from vehicles and industry?
				321	contributions of Mendeleev	172	save water for houseplants
				321	contributions of Mendeleev	172	perform water quality tests
				324	research and create a poster to illustrate development of atomic model	174	wise use of water supply
				333	problems with disposing of plastics	175	maintaining water supply quality
				355	recycling tires	178	investigate effect of acid rain on microorganisms
				356	recycling discarded tires		
				364	petroleum		
				368	limiting reactants		
				379	research fuel cells		
				379	research economic impact of fuel cells		
				379	research environmental impact of fuel cells		

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				379	research fuel cells		
				379	hydrogen-powered cars and the environment		
				392	storage of nuclear waste		
				395	fossil fuels		
				400	problems caused by airborne pollutants		
				400	economic impact of pollution		
				400	economic impact of reducing air pollution		
				421	wise use of water		
				425	water cycle and conservation		
				430	water usage and quality		
				444	acid rain explained		
				448	research economic impact of producing gases that cause acid rain		
				448	research the issue of acid rain		

Correlation to Ohio Science Academic Content Standards

Foundations of Physical Science

Student Text and Investigation Manual

Standard #: Section	Grade	Topic	Indicator	student text pg	detail	investigation pg	detail
ST09_01 Science and Technology	nine	Understanding Technology	Describe means of comparing the benefits with the risks of technology and how science can inform public policy.	379	hydrogen-powered cars and the environment	163	too much CO2
				379	research environmental impact of fuel cells	163	research how trees offset accumulation of CO2
				379	research fuel cells	163	can trees compensate for manmade CO2 from vehicles and industry?
				395	fossil fuels		
				400	problems caused by airborne pollutants	172	perform water quality tests
				400	clean air act of 1970	174	wise use of water supply
				421	wise use of water		
				430	water usage and quality		
ST09_02 Science and Technology	nine	Abilities To Do Technological Design	Identify a problem or need, propose designs and choose among alternative solutions for the problem.	74	sample engineering problem	70	designing and testing different electric motors
						70	proposing and comparing different electric motor designs
						71	which motor gave the highest speed and why?
						71	did draining the batteries affect motor speed?

Correlation to Ohio Science Academic Content Standards
Foundations of Physical Science Student Text and Investigation Manual

Standard #: Section	Grade	Topic	Indicator	student text pg	detail	investigation pg	detail
ST09_03 Science and Technology	nine	Abilities To Do Technological Design	Explain why a design should be continually assessed and the ideas of the design should be tested, adapted and refined.	74	sample engineering problem	70 70 71 71 71	designing and testing different electric motors proposing and comparing different electric motor designs testing a motor for performance which motor gave the highest speed and why? did draining the batteries affect motor speed?