Correlation to Nebraska Science Standards

Foundations of Physical Science Student Text and Investigation Manual

Standard #: Grades	Topic/Subject	Standard	Benchmark	student text pg	detail	investigation pg	detail
12.1.1 9 - 12	Unifying Concepts and Processes	Unifying concepts and processes help students think about and integrate a range of basic ideas which builds an understanding of the natural world.	Students will develop an understanding of systems, order, and organization.	51	what is equilibrium?	87	changing frequency in standing waves
				59	equilibrium/action reaction		
				164	electromagnets reverse current and switch polarity		
				180	harmonic motion in natural systems		
				258	optical systems		
				261	change in optical systems		
				278	system of classifying matter		
				409	a solute and a solvent make up a system		

Correlation to Nebraska Science Standards

Foundations of Physical Science Student Text and Investigation Manual

Standard #: Grades	Topic/Subject	Standard	Benchmark	student text pg	detail	investigation pg	detail
12.1.2 9 - 12	Unifying Concepts and Processes	Unifying concepts and processes help students think about and integrate a range of basic ideas which builds an understanding of the natural world.	Students will develop an understanding of evidence, models, and explanation.	11	controlling variables in experiments	7	what variables should be controlled?
				19	did you run a controlled experiment?	11	calculate % error
				20	what factors could explain the variability in their data?	13	graph distance vs. time
				23	why make models?	15	construct a quantitative graphical model
				24	scientific models	15	interpret a speed vs. time graph
				24	what is a scientific model?	21	construct reasonable explanation based on data
				24	making a graph	21	think about percent change
				24	interpretations of patterns in data	25	create a mathematical model
				26	creating graphs	27	find math rule for lever equilibrium
				27	reading a graph	28	derive a math formula
				41	make a graph	35	study data and determine importance of height on speed of marble
				42	interpreting distance/time graph	37	organize data into a graph of speed vs. height
				78	analyze lever diagram	45	analyze data and explain a rule
						51	graph voltage vs. current
						76	calculate % error
						121	graph mass vs. volume

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Foundations of Physical Science Student Text and Investigation Manual

Standard #: Grades	Topic/Subject	Standard	Benchmark	student text pg	detail	investigation pg	detail
						129	control the height of the liquid
						147	organize observations into a category table
						151	does your experiment agree with law of conservation of mass?
						151	do the data support the hypothesis
						165	what does the word "control" mean?
						165	why was plain water tested?
						167	what was happening at molecular level?
						181	construct a graphical model
						183	construct a temperature vs. time graph

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Standard #: Grades	Topic/Subject	Standard	Benchmark	student text pg	detail	investigation pg	detail
12.1.3 9 - 12	Unifying Concepts and Processes	Unifying concepts and processes help students think about and integrate a range of basic ideas which builds an understanding of the natural world.	Students will develop an understanding of change, constancy, and measurement	5	measuring distance	5	measuring metric and english lengths
				11	controlling variables in experiments	6	measure time
				19	did you run a controlled experiment?	6	compare results with other groups
				20	what factors could explain the variability in their data?	7	what variables should be controlled?
				42	analyze a speed/distance graph	11	graph speed vs. position
						11	calculate % error
						11	analyze speed change of car
						16	measure force
						18	study data table for relationship between force and motion
						25	analyze block and tackle data
						27	analyze lever equilibrium data
						35	does data support hypothesis?
						44	measure voltage
						45	did battery voltage change?
						46	measure current
						48	measure resistance
						76	analyze pendulum data
						76	calculate % error

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Foundations of Physical Science Student Text and Investigation Manual

Standard #: Grades	Topic/Subject	Standard	Benchmark	student text pg	detail	investigation pg	detail
						87	measure wavelength
						116	measure mass
						117	measure volume
						129	find average velocity
						129	control the height of the liquid
						147	students analyze chemical change lab results
						165	why was plain water tested?
						165	what does the word "control" mean?
						167	average dissolving rate
						180	measure temperature
12.1.4 9 - 12	Unifying Concepts and Processes	Unifying concepts and processes help students think about and integrate a range of basic ideas which builds an understanding of the natural world.	Students will develop an understanding of form and function.	80	form and function of wheelbarrow sailboat human jaw	68	form and function of different electric motor configurations
						108	form and function of human eye, prism, and lenses

Correlation to Nebraska Science Standards

Foundations of Physical Science Student Text and Investigation Manual

Standard #: Grades	Topic/Subject	Standard	Benchmark	student text pg	detail	investigation pg	detail
12.1.5 9 - 12	Unifying Concepts and Processes	Unifying concepts and processes help students think about and integrate a range of basic ideas which builds an understanding of the natural world.	students will develop an understanding of change over a period of time.	59 164 261	equilibrium/action reaction electromagnets reverse current and switch polarity change in optical systems	87	changing frequency in standing waves

Correlation to Nebraska Science Standards

Foundations of Physical Science Student Text and Investigation Manual

Standard #: Grades	Topic/Subject	Standard	Benchmark	student text pg	detail	investigation pg	detail
12.2.1 9 - 12	Science as Inquiry	Science as inquiry requires students to combine processes and scientific knowledge with scientific reasoning and critical thinking to develop their understanding of science.	students will develop the abilities needed to do scientific inquiry.	7	experimentation begins with a question	6	how do we ask questions and get answers from nature?
				9	steps in the scientific method	6	predict which car will move fastest
				10	forming a hypothesis	6	formulate hypothesis
				10	the research question and hypothesis	7	doing a controlled experiment
				11	control and experimental variables	7	design your own experiment
				12	writing lab procedures	7	compare results with hypothesis
				19	design your own experiment	7	test the effect of one other variable
				19	design your own experiment	7	variables in an experiment
				19	which group did the best experiment?	7	perform your own experiment
				20	finding variability in data	9	conduct three experiments with appropriate equipment
				26	independent and dependent variables	9	devise a hypothesis
				28	identifying cause and effect relationships	9	design three experiments and choose equpiment
				41	identify cause and effect	9	design three experiments using car and ramp
				42	devise an experiment	9	design three experiments and choose technology
				79	look at force data and decide the usefulness of a machine	10	conduct car/ramp experiment
				288	find the thickness of a single card		

Correlation to Nebraska Science Standards

Foundations of Physical Science Student Text and Investigation Manual

Standard #: Topic/Subject Standard Benchmark Grades	student text pg	detail	investigation pg	detail
	372	observe chemical changes	10	selecting ramp and photogates
	500	safety rules described	12	select equipment and set up experiment
	501	safety quiz	16	decide how to vary the force on the car for this experiment
			16	investigate Newton's 2nd law
			18	evaluate graphs as to whether or not they show relationships between variables
			18	use data to describe relationship between force and motion
			19	use data to infer correct relationship between variables
			20	safety tip for car/ramp setup
			21	choose independent and dependent variables for graph
			21	evaluate percent change for data collected
			21	determine effect of increasing mass
			24	ropes and pulley safety
			26	what variables can be changed?

Correlation to Nebraska Science Standards

Foundations of Physical Science Student Text and Investigation Manual

Standard #: Grades	Topic/Subject	Standard	Benchmark	student text pg	detail	investigation pg	detail
						26	safety tip for hanging weights from lever
						27	think about the variables
						27	recognize variables
						30	rigging block and tackle
						30	interpret block and tackle data
						34	where does the marble move the fastest?
						34	formulate hypothesis
						34	investigate motion on a rollercoaster
						40	electrical safety
						40	choose circuit parts to light a bulb
						43	how did A and B tapes acquire different charge?
						44	short circuit safety warning
						56	short circuit safety warning
						58	short circuit safety warning
						75	evaluate statistical significance
						75	perform self-designed experiment
						75	investigate variables that affect the period of a pendulum

Correlation to Nebraska Science Standards

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Standard #: Grades	Topic/Subject	Standard	Benchmark	student text pg	detail	investigation pg	detail
						75	plan three experiments to determine which variable affects the period of a pendulum
						75	design pendulum experiment
						93	decision trees and the advantage of doing multiple trials
						100	observe glow-in-the-dark paper
						101	how could you extend the investigation to explore materials that give off light when heated?
						117	how could you find the volume of one drop of water?
						141	build models of Na and Cl and use them to explain bonding
						145	plan a procedure and select necessary equipment
						145	carry out procedure and select equipment
						146	observe evidence of chemical change
						146	safety in the lab
						150	chemistry safety

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Standard #: Grades	Topic/Subject	Standard	Benchmark	student text pg	detail	investigation pg	detail
						151	design experiment to find out if mass is conserved
						151	explain how hypothesis compares to results
						151	perform the experiment you designed
						151	select materials from list
						151	write a procedure
						151	plan procedures and select materials
						157	add new rules to list based on findings
						158	observe temperature changes in chemical reactions
						158	wear goggles and apron
						164	observe Tyndall effect
						164	safety equipment
						166	write a procedure
						166	what three factors influence dissolving rate?
						166	which method will give fastest dissolving rate?
						166	which factor will produce fastest dissolving rate?
						166	devise hypothesis and explain

Correlation to Nebraska Science Standards

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Standard #: Grades	Topic/Subject	Standard	Benchmark	student text pg	detail	investigation pg	detail
						167	evaluate method based on data
						168	hot water safety
						168	observe dissolving process
						172	safety tip for water testing
						174	visit local water supply and perform testing
						175	make observations about local surface water
						175	safety tip for testing local surface water
						177	research pH indicators
						178	formulate hypothesis
						180	thermometer safety
						182	heat safety
						186	thermometer safety
						192	observe convection currents
						192	heat safety
						198	formulate hypothesis
						198	heat safety
						198	which type of food contains the most energy?
						200	safely using rubber bands
						201	research electricity generation

Correlation to Nebraska Science Standards

Foundations of Physical Science Student Text and Investigation Manual

Standard #: Grades	Topic/Subject	Standard	Benchmark	student text pg	detail	investigation pg	detail
12.3.1 9 - 12	Physical Science	Physical science focuses on the science facts, concepts, principles, theories, and models that are important for all students to know, understand, and use.	students will develop an understanding of the structure of the atom.	311	location/size/charge of subatomic particles	132	building atom models
				311	protons/neutrons/electrons	132	atomic number determines what element that atom is
				315	atomic number discussed	133	location of electrons in atom
				315	atoms of same element have same atomic number	133	exploring isotopes
				316	mass number discussed	133	identify mass number
				316	isotopes explained	133	identify atomic number
				318	proton/electron attraction	133	identify element symbol and name
				322	atomic mass on the periodic table	133	protons and neutrons
				322	mass number on the periodic table	136	model stable and neutral atoms
				322	atomic number on the periodic table	136	understanding isotopes
				322	chemical symbols and element names	136	strong force
				387	fusion and fission explained	136	atomic number
				388	nuclear vs chemical reactions	136	mass number
				388	showing valence electrons in a diagram	137	build atomic models
				389	electromagnetic force	137	importance of atomic number
				389	strong nuclear force	138	nuclear reactions
				389	forces in the nucleus	138	fusion and fission
						140	find the number of electrons in outermost level
						140	review subatomic particles

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Standard #: Grades	Topic/Subject	Standard	Benchmark	student text pg	detail	investigation pg	detail
						160	radioactive decay
						160	how do you simulate nuclear decay?

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Standard #: Grades	Topic/Subject	Standard	Benchmark	student text pg	detail	investigation pg	detail
12.3.2 9 - 12	Physical Science	Physical science focuses on the science facts, concepts, principles, theories, and models that are important for all students to know, understand, and use.	students will develop an understanding of the structure and properties of matter.	278	compounds are composed of elements	118	molecules in a liquid
				284	changes of state	118	investigate melting
				284	states of matter and arrangement of molecules	119	energy and phase changes
				320	groups of elements	119	create a temperature vs. time graph of phase change
				321	studying the periodic table	133	using the periodic table
				321	groups of elements and valence shells	136	ions
				324	use the periodic table to predict chemical formulas	136	building and studying the periodic table
				324	which element is more likely to combine with other elements?	140	why do atoms form chemical bonds?
				329	periodic table columns and valence electrons	141	build model of Na and Cl atoms and explain why they bond to form a molecule
				330	bonding and periodic table position	141	whan an atom ionizes
				332	periodic table and electronegativities	141	modeling a chemical bond
				335	chemical bonding and the periodic table	142	arrangement of electrons and groups of elements
				335	periodic table and oxidation numbers	142	why do atoms combine in certain ratios?
				353	physical and chemical changes and digestion	143	ionic compounds
				355	physical and chemical changes in tire recycling	146	investigate and observe chemical and physical changes in the lab
				364	carbon chains	162	carbon reactions and the environment

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Standard #: Grades	Topic/Subject	Standard	Benchmark	student text pg	detail	investigation pg	detail
				372	determine if changes are chemical or physical		

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Standard #: Grades	Topic/Subject	Standard	Benchmark	student text pg	detail	investigation pg	detail
12.3.3 9 - 12	Physical Science	Physical science focuses on the science facts, concepts, principles, theories, and models that are important for all students to know, understand, and use.	students will develop an understanding of chemical reactions.	321	groups of elements and valence shells	141	build model of Na and Cl atoms and explain why they bond to form a molecule
				329	periodic table columns and valence electrons	142	arrangement of electrons and groups of elements
				330	bonding and periodic table position	143	name chemical compounds
				332	periodic table and electronegativities	143	predict chemical formulas
				335	periodic table and oxidation numbers	145	determine empirical formula
				336	writing a chemical formula	148	chemical equations
				338	summary of chemical formula writing rules	148	reactants and products
				339	naming compounds	149	balance these equations
				354	new substances are formed when a chemical change occurs	149	practice balancing equations
				357	combustion reaction	150	investigate conservation of mass in effervescent tablet reaction
				357	chemical reactions involve rearrangement of atoms	152	write the balanced equation
				359	balancing chemical equations	152	predict how much product formed given the reactants
				361	heartburn reaction	156	predict products in a double displacement reaction
				361	chemical reactions in living systems	156	investigate double displacement reactions
				363	history of law of conservation of mass		

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Standard #: Topic/Subject Standard Benchmark Grades	student text pg	detail	investigation pg	detail
	364	formation of petroleum is a very slow chemical reaction	157	predict the products of double displacement reactions
	371	which of the equations is balanced?	158	investigate energy changes in chemical reactions
	375	synthesis or addition reactions	158	measure energy changes in 3 different reactions
	376	decomposition reactions	162	investigating combustion reactions
	377	single displacement reactions		
	377	double displacement reactions		
	378	consumer chemistry		
	378	combustion reactions		
	381	MRE ration heater reaction		
	381	exothermic reactions and MREs		
	382	endothermic reactions and cold packs		
	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		

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Standard #: Grades	Topic/Subject	Standard	Benchmark	student text pg	detail	investigation pg	detail
12.3.4 9 - 12	Physical Science	Physical science focuses on the science facts, concepts, principles, theories, and models that are important for all students to know, understand, and use.	students will develop an understanding of motions and forces.	13	speed is relative	8	calculating speed
				14	how to calculate speed	9	collect data and calculate speed of car
				15	compare and contrast speed and velocity	10	calculate speed of the car
				18	what is the speed of an object that is standing still?	12	calculate speed of moving car
				20	find speed of bumblebee	12	model the car's motion graphically
				20	calculate speed of car	12	find speed of car at different positions
				24	accurate speed measurements	13	make a position vs. time graph
				25	conceptual models of motion	14	exploring acceleration on a ramp
				29	position vs. time graph discussion	14	calculate acceleration of car on ramp
				30	position vs. time graphs	14	calculate speed of car at two places on the ramp
				32	average speed vs. instantaneous	14	acceleration is the rate at which speed changes
				32	average speed discussed	15	changes in motion can be represented graphically
				33	understanding acceleration	15	make a speed vs. time graph
				35	how to calculate acceleration	16	2nd law
				36	examples of acceleration	16	thinking about force
				37	speed vs. time graphs	16	unbalanced forces and acceleration of car
				37	speed vs. time graph discussion	17	caclulate speed of car
				41	find acceleration of car		

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Standard #: Topic/Subject Standard Benchmark Grades	student text pg	detail	investigation pg	detail
	42	calculate speed from distance/time graph	17	explore 2nd law and acceleration
	45	Newton's third law summarized	19	discover 2nd law of motion
	45	Newton's first law summarized	19	find correct relationship between force mass and acceleration
	45	Newton's second law summarized	20	force and motion with car and ramp
	46	force has potential to change motion	20	investigate effect of gravity on motion
	47	weight vs. mass	20	weight vs. mass
	48	Newton's laws explained and applied	21	effect of friction on the car
	48	Newton's first law in detail	22	car and ramp and Newton's 3rd law
	49	link between force and acceleration	23	using 3rd law to explain common phenomena
	49	force is related to acceleration	24	measure force in newtons
	49	Newton's second law in detail	25	discover mechanical advantage of ropes and pulleys
	50	Newton's second law applied	27	changing force and distance on a lever
	51	balanced and unbalanced forces	27	set up a lever that has mechanical advantage
	51	net force explained	30	exploring force and distance with ropes and pulleys
	52	gravity depends on mass	36	find speed of marble
	52	the effect of gravity	66	build an electromagnet
	53	how to calculate weight		

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Standard #: Grades	Topic/Subject	Standard	Benchmark	student text pg	detail	investigation pg	detail
				53	acceleration due to gravity	67	find out what happens to strength of electromagnet when current is increased
				54	Newton's law of universal gravitation		
				55	calculating gravitational force between objects		
				56	friction explained		
				59	Newton's third law in detail		
				60	law of conservation of momentum		
				60	how to calculate momentum		
				64	research effect of friction on human joints		
				64	calculate momentum		
				64	solving problems using f=ma		
				67	how simple machines manipulate forces		
				69	how to calculate mechanical advantage		
				69	newtons and pounds		
				70	mechanical advantage of block and tackle		
				71	pliers as an example of a lever		
				71	how a lever works		
				71	parts of a lever		

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Standard #: Grades	Topic/Subject	Standard	Benchmark	student text pg	detail	investigation pg	detail
				71	the human body and simple machines		
				72	mechanical advantage of a lever		
				75	how gears work		
				78	set up a lever with MA greater than 1		
				78	design a toothbrush		
				79	analyze pulleys with different numbers of supporting strings		
				79	calculate mechanical advantage		
				79	analyze block and tackle		
				80	analyze wheelbarrow		
				80	analyzing the jaw as a lever		
				80	analyze block and tackle machine on a sailboat		
				80	analyze the human jaw as a simple machine		
				164	what is an electromagnet?		
				166	increased current vs. strength of magnetic field		
				166	building an electromagnet		

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Standard #: Grades	Topic/Subject	Standard	Benchmark	student text pg	detail	investigation pg	detail
12.3.5 9 - 12	Physical Science	Physical science focuses on the science facts, concepts, principles, theories, and models that are important for all students to know, understand, and use.	students will develop an understanding of the conservation of energy and increase in disorder.	68	compound machines	29	design and construct complex gear machines
				84	work input and output	31	work output vs. work input
				85	some input work is converted to heat	36	energy conservation and the roller coaster
				88	potential and kinetic energy explained	37	investigating conservation of energy with rollercoaster
				90	conservation of energy explained	38	identify potential/kinetic energy conversions
				91	energy conversions	38	explore energy transformations
				91	understand basic forms of energy	38	conservation of energy and energy transformations
				91	following an energy transformation	39	make an energy flow chart
				91	following an energy transformation	39	identify type of energy involved
				92	where does "spent" energy go?	188	specific heat and conservation of energy
				92	energy transformations and conservation	190	investigate conduction through all states of matter
				93	different forms of energy described	192	investigate convection in liquids
				96	prove that energy is conserved	194	investigate radiation emitted by solids
				96	explain the "lost" energy	194	investigate radiation emitted by liquids
				468	densely packed solids are good conductors of heat		
				468	heat transfer through air		
				470	warming hands over candle		

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Standard #: Grades	Topic/Subject	Standard	Benchmark	student text pg	detail	investigation pg	detail
				470	convection currents and weather		
				472	convection currents in water		
				476	solid road surface emits radiation		
				478	apply knowledge of heat transfer to different situations		
				481	global warming and heat transfer by radiation		

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Standard #: Grades	Topic/Subject	Standard	Benchmark	student text pg	detail	investigation pg	detail
12.3.6 9 - 12	Physical Science	Physical science focuses on the science facts, concepts, principles, theories, and models that are important for all students to know, understand, and use.	students will develop an understanding of the interactions of energy and matter.	180	oscillators explained	82	study wave pulses on elastic cord
				184	understanding graphs of harmonic motion	83	measure speed of a wave pulse
				195	waves transmit energy	83	find speed of a wave
				196	waves are all around us	84	make different types of waves in a ripple tank
				197	transverse and longitudinal waves	85	observing reflection in water waves
				198	frequency and wavelength and amplitude	86	adjust frequency of a standing wave
				201	waves and refraction	86	investigate frequency and wavelength
				201	waves and reflection	87	investigating resonance
				201	reflection in water waves and light waves	88	natural frequency and resonance of standing waves on a string
				201	waves and absorption	90	investigate human perception of sound
				202	refraction and eyeglasses	90	investigate human perception of sound
				204	resonance explained	90	what is sound and how do we hear it?
				205	standing waves on a string	94	does sound behave like other waves?
				206	constructive and destructive interference	95	interference and sound waves
				210	can wave interference sink a ship?	95	investigate interference with sound waves
				210	natural frequency of a building and earthquakes		
				213	how the ear works		
				215	properties of sound waves		
				217	loudness and decibels		

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Standard #: Topic/Subject Standard Benchmark Grades	student text pg	detail	investigation pg	detail
	219	frequency of sound and pitch	96	investigating sound resonance
	220	white noise	98	investigate sound and music
	220	voice recognition programs	101	observing white light through diffraction grating
	220	sonograms	101	examine light through diffraction grating
	221	importance of wavelength of sound waves	102	polarization of a spring wave
	222	effect of temperature on speed of sound wave	102	polarization of water waves
	222	effect of medium on speed of sound wave	103	polarization of light
	223	interference of sound waves	108	explore refraction with a prism
	225	consonance and dissonance and beats	134	investigating visible light with a spectrometer
	226	musical instruments	134	what does atomic structure have to do with light and color?
	234	electrons and energy levels and light emission	134	using a spectrometer
	237	visible light and the electromagnetic spectrum	135	observing different light sources with a spectrometer
	237	light waves and the electromagnetic spectrum		
	237	radio and television signals		
	237	microwave ovens		
	240	polarization of light		
	242	properties of light waves		

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Standard #: Grades	Topic/Subject	Standard	Benchmark	student text pg	detail	investigation pg	detail
				250	identify uses of electromagnetic waves		
				261	refraction and lenses		
				272	identify uses of electromagnetic waves		
				319	fireworks displays and electron excitation		
				474	electromagnetic radiation		
				474	energy and radiation relationships		

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Standard #: Grades	Topic/Subject	Standard	Benchmark	student text pg	detail	investigation pg	detail
12.6.1 9 - 12	Science and Technology	An understanding of science and technology establishes connections between the natural and designed world, linking science to technology.	students will develop an understanding of technological design.	20 74	explain your reasoning sample engineering problem	4 9 9 15 19 29 37 39 47 47 70 70 71 71	dimensional diagrams present conclusions to the class reporting on an experiment discuss and test ideas with your group explain how you arrived at your answer discuss what you learned about gears describe the flow of energy based on experimental graph give a brief presentation to the class discuss an explanation with your group present and defend an explanation proposing and comparing different electric motor designs designing and testing different electric motors which motor gave the highest speed and why? testing a motor for performance

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Standard #: Grades	Topic/Subject	Standard	Benchmark	student text pg	detail	investigation pg	detail
						71	did draining the batteries affect motor speed?
						129	explain your answer and justify
						145	present findings and methods used
						151	present results to the class
12.6.2 9 - 12	Science and Technology	An understanding of science and technology establishes connections between the natural and designed world, linking science to technology.	students will develop an understanding about science and technology.	73	relationship between science and technology	70	using engineering design cycle

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Standard #: Grades	Topic/Subject	Standard	Benchmark	student text pg	detail	investigation pg	detail
12.7.1 9 - 12	Science in Personal and Social Perspectives	A personal and social perspective of science helps a student understand and act on personal and social issues. This perspective builds a foundation for future decision making.	students will develop an understanding of personal and community health.	333	problems with disposing of plastics	161	research pros and cons of uses for radioactive elements
				355	recycling tires	163	economic impact of end-product of combustion reaction
				356	recycling discarded tires	163	too much CO_2
				364	petroleum	163	consider a vehicle's fuel economy
				368	limiting reactants	163	research how trees offset accumulation of CO_2
				379	research fuel cells	163	can trees compensate for manmade CO_2 from vehicles and industry?
				379	research environmental impact of fuel cells	172	save water for houseplants
				379	research fuel cells	172	perform water quality tests
				379	hydrogen-powered cars and the environment	174	wise use of water supply
				379	research economic impact of fuel cells	175	maintaining water supply quality
				392	storage of nuclear waste	178	investigate effect of acid rain on microorganisms
				393	radioisotopes in science and medicine		
				393	carbon dating		
				395	fossil fuels		
				400	economic impact of reducing air pollution		
				400	research pros and cons of nuclear technology		
				400	economic impact of pollution		
				400	problems caused by airborne pollutants		

Correlation to Nebraska Science Standards

Foundations of Physical Science Student Text and Investigation Manual

Standard #: Topic/Subject Standard Benchmark Grades	student text pg	detail	investigation pg	detail
	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 Nebraska Science Standards

Foundations of Physical Science Student Text and Investigation Manual

Standard #: Grades	Topic/Subject	Standard	Benchmark	student text pg	detail	investigation pg	detail
12.7.4 9 - 12	Science in Personal and Social Perspectives	A personal and social perspective of science helps a student understand and act on personal and social issues. This perspective builds a foundation for future decision making.	students will develop an understanding of environmental quality.	333	problems with disposing of plastics	163	economic impact of end-product of combustion reaction
				355	recycling tires	163	too much CO2
				356	recycling discarded tires	163	consider a vehicle's fuel economy
				364	petroleum	163	research how trees offset accumulation of CO2
				368	limiting reactants	163	can trees compensate for manmade CO2 from vehicles and industry?
				379	research economic impact of fuel cells	172	save water for houseplants
				379	research environmental impact of fuel cells	172	perform water quality tests
				379	research fuel cells	174	wise use of water supply
				379	hydrogen-powered cars and the environment	175	maintaining water supply quality
				379	research fuel cells	178	investigate effect of acid rain on microorganisms
				392	storage of nuclear waste		
				395	fossil fuels		
				400	economic impact of reducing air pollution		
				400	problems caused by airborne pollutants		
				400	economic impact of pollution		
				421	wise use of water		
				425	water cycle and conservation		
				430	water usage and quality		
				444	acid rain explained		

Correlation to Nebraska Science Standards

Foundations of Physical Science Student Text and Investigation Manual

Standard #: Grades	Topic/Subject	Standard	Benchmark	student text pg	detail	investigation pg	detail
				448	research the issue of acid rain		
				448	research economic impact of producing gases that cause acid rain		
12.7.5 9 - 12	Science in Personal and Social Perspectives	A personal and social perspective of science helps a student understand and act on personal and social issues. This perspective builds a foundation for future decision making.	students will develop an understanding of natural and human-induced hazards.	393	carbon dating	161	research pros and cons of uses for radioactive elements
				393	radioisotopes in science and medicine		
				400	research pros and cons of nuclear technology		
12.7.6 9 - 12	Science in Personal and Social Perspectives	A personal and social perspective of science helps a student understand and act on personal and social issues. This perspective builds a foundation for future decision making.	students will develop an understanding of the role of science and technology in local, national, and global challenges.	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
				395	impact of industrial revolution	173	study water filtration device claims
				400	clean air act of 1970		
				434	study claims made by bottled water companies		

Correlation to Nebraska Science Standards

Foundations of Physical Science Student Text and Investigation Manual

Standard #: Grades	Topic/Subject	Standard	Benchmark	student text pg	detail	investigation pg	detail
12.8.1 9 - 12	History and Nature of Science	The history and nature of science illustrates different aspects of scientific inquiry, the human aspects of science, and the role that science has played in the development of various cultures.	students will develop an understanding of science as a human endeavor.	73 320 391	impact of Da Vinci's work the quests of alchemists scientific discovery and the atomic age	6 163	asking questions and learning about natural world evaluating choice of favorite car

Correlation to Nebraska Science Standards

Foundations of Physical Science Student Text and Investigation Manual

Standard #: Grades	Topic/Subject	Standard	Benchmark	student text pg	detail	investigation pg	detail
12.8.2 9 - 12	History and Nature of Science	The history and nature of science illustrates different aspects of scientific inquiry, the human aspects of science, and the role that science has played in the development of various cultures.	students will develop an understanding of the nature of scientific knowledge.	10	process of reviewing hypothesis explained	6	predict which car will move fastest
				20	finding variability in data	7	test the effect of one other variable
				28	identifying cause and effect relationships	18	use data to describe relationship between force and motion
				41	identify cause and effect	19	use data to infer correct relationship between variables
				79	look at force data and decide the usefulness of a machine	21	construct reasonable explanation based on data
						21	determine effect of increasing mass
						27	think about the variables
						30	interpret block and tackle data
						34	where does the marble move the fastest?
						35	study data and determine importance of height on speed of marble
						35	what evidence is there in support of your hypothesis?
						39	analyze energy transformations in different scenarios
						39	review energy theory in context of everyday scenarios

Correlation to Nebraska Science Standards

Foundations of Physical Science Student Text and Investigation Manual

Standard #: Grades	Topic/Subject	Standard	Benchmark	student text pg	detail	investigation pg	detail
						39	critique group's explanation of energy transformations
						43	how did A and B tapes acquire different charge?
						45	analyze data and explain a rule
						75	investigate variables that affect the period of a pendulum
						77	compare law of conservation of energy to motion of pendulum
						77	show how energy loss data could be applied to designing a real clock
						141	build models of Na and Cl and use them to explain bonding
						151	explain how hypothesis compares to results
						151	review your hypothesis
						151	perform the experiment you designed
						157	add new rules to list based on findings
						167	did you prove or disprove your hypothesis?

Correlation to Nebraska Science Standards

Foundations of Physical Science Student Text and Investigation Manual

Standard #: Grades	Topic/Subject	Standard	Benchmark	student text pg	detail	investigation pg	detail
12.8.3 9 - 12	History and Nature of Science	The history and nature of science illustrates different aspects of scientific inquiry, the human aspects of science, and the role that science has played in the development of various cultures.	students will develop an understanding of the history of science.	34	Newton and the history of physics	130	investigate Rutherford's gold foil experiment
				45	Newton's Principia		
				45	Newton's discovery of the 2nd law		
				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		
				321	Mendeleev's periodic table		

Correlation to Nebraska Science Standards

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Standard #: Grades	Topic/Subject	Standard	Benchmark	student text pg	detail	investigation pg	detail
				324	research and create a poster to illustrate development of atomic model		
				332	Linus Pauling and electronegativities		
				343	Avogadro's number		
				363	history of law of conservation of mass		
				363	Antoine Lavoisier		
				370	research Lavoisier's contributions		
				393	history of nuclear chemistry		
				393	accomplishments of Marie Curie		
				393	Marie and Pierre 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		