

Correlation to 2009 New Jersey Core Curriculum Content Standards for Science
CPO Science Physical Science (Middle School)

Standard #: Grade level	Standard	Strand	Cumulative Progress Indicator	Volume 1 Student Text page	Volume 2 Investigation Manual page
5.1.08.A.1 5 - 8	Science Practices	Understand Scientific Explanations	Demonstrate understanding and use interrelationships among central scientific concepts to revise explanations and to consider alternative explanations.	28 interpreting observations and proposing explanations 29 construct explanations supported by direct and indirect evidence 30 review theories based on observations 33 critique based on 242 explanations based on observations 270 interpreting observations and making explanations 404 construct explanations based on data 444 explanations based on evidence	6 construct reasonable explanations supported by direct and indirect data 7 interpreting observations and proposing explanations 14 explain using data 38 construct explanations based on evidence 40 constructing explanations 49 explanations based on evidence 58 interpret observations 76 interpret observations 80 interpret observations

Correlation to 2009 New Jersey Core Curriculum Content Standards for Science
CPO Science Physical Science (Middle School)

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5.1.08.A.2 5 - 8	Science Practices	Understand Scientific Explanations	Use mathematical, physical, and computational tools to build conceptual-based models and to pose theories.	36 using algebraic models 60 graphs 61 making and evaluating graphs 61 interpretations of patterns in data 62 constructing a graph 63 know that scientific knowledge can be in the form of models 63 constructing graph from data 83 using algebraic formulas 86 using algebraic models 98 using algebraic model 115 using algebraic models 138 the power equation 184 interpretations of patterns from data 200 equation for Ohm's law 222 harmonic motion graphs 227 calculating wave speeds 294 making a graph 340 make and evaluate graphs	9 calculate speed 14 construct a graphical model 15 construct a graphical model 17 make graph from data 22 make model from data 27 calculate speed 27 making a graph from data 29 find the mechanical advantage 56 find the mass/volume ratio 83 scientific knowledge is sometimes in the form of models 110 lab notebook 111 making graphs

Correlation to 2009 New Jersey Core Curriculum Content Standards for Science
CPO Science Physical Science (Middle School)

Standard #: Grade level	Standard	Strand	Cumulative Progress Indicator	Volume 1 Student Text page		Volume 2 Investigation Manual page	
5.1.08.A.3 5 - 8	Science Practices	Understand Scientific Explanations	Use scientific principles and models to frame and synthesize scientific arguments and pose theories.	29	construct explanations supported by direct and indirect evidence	6	construct reasonable explanations supported by direct and indirect data
				61	analyze trends from data	14	explain using data
				63	make predictions	38	construct explanations based on evidence
				242	explanations based on observations	40	constructing explanations
				318	write up results	49	explanations based on evidence
				340	make predictions baed on data	55	make predictions based on observations
				380	writing up results	58	make predictions on observed data
				404	construct explanations based on data	82	make predictions based on inferences from data
				444	explanations based on evidence	92	formal lab report
						93	lab reports
						93	writing up results
						94	lab report
						94	writing up results
		110	lab report				
		111	making graphs				

Correlation to 2009 New Jersey Core Curriculum Content Standards for Science
CPO Science Physical Science (Middle School)

Standard #: Grade level	Standard	Strand	Cumulative Progress Indicator	Volume 1 Student Text page		Volume 2 Investigation Manual page	
5.1.08.B.1 5 - 8	Science Practices	Generate Scientific Evidence Through Active Investigations	Design investigations and use scientific instrumentation to collect, analyze, and evaluate evidence as part of building and revising models and explanations.	12	measurement	4	measurements
				28	inquiry process	5	measurement and selecting appropriate tools
				29	objective, repeatable evidence	43	design scientific experiments
				32	why the scientific method works	49	measuring
				42	collect data with precision as a central consideration	50	collect data with precision as a central consideration
				48	precision of data	77	measurements
				76	measurements	95	measuring
				102	design experiments	96	measuring
				184	measuring	97	measuring
				401	design experiment—including choosing equipment	98	measuring
				411	design experiment with appropriate equipment	101	measurements
						102	measurements
						103	measurements

Correlation to 2009 New Jersey Core Curriculum Content Standards for Science
CPO Science Physical Science (Middle School)

Standard #: Grade level	Standard	Strand	Cumulative Progress Indicator	Volume 1 Student Text page	Volume 2 Investigation Manual page		
5.1.08.B.2 5 - 8	Science Practices	Generate Scientific Evidence Through Active Investigations	Gather, evaluate, and represent evidence using scientific tools, technologies, and computational strategies.	42	basic statistical analysis of data—average	3	data tables
				45	basic statistical analysis	3	data tables
				48	data tables	4	data tables
				48	averages	6	data tables
				61	analyze trends from data	9	data tables
				61	interpretations of patterns in data	10	data tables
				61	interpretations of patterns in data	11	data tables
				63	know that scientific knowledge can be in the form of models	14	data tables
				63	know that scientific knowledge can be in the form of models	15	data tables
				76	data tables	17	data tables
				76	data tables	17	analyze trends from data
				184	interpretations of patterns from data	18	data tables
				318	data tables	19	data tables
				340	data tables	22	data tables
				404	data tables	22	data tables
424	data tables	23	making measurements				
424	data tables	24	data tables				
424	data tables	27	data tables				
424	data tables	28	data tables				
424	data tables	29	data tables				
424	data tables	30	data tables				
424	data tables	34	data tables				

Correlation to 2009 New Jersey Core Curriculum Content Standards for Science
CPO Science Physical Science (Middle School)

Standard #: Grade level	Standard	Strand	Cumulative Progress Indicator	Volume 1 Student Text page	Volume 2 Investigation Manual page
					39 data tables
					42 data tables
					47 data tables
					49 data tables
					50 data tables
					51 data tables
					53 data tables
					54 data tables
					56 data tables
					57 data tables
					65 data tables
					69 data tables
					73 data tables
					76 data tables
					78 making observations
					78 data tables
					79 data tables
					80 data tables
					83 scientific knowledge is sometimes in the form of models
					83 data tables
					84 data tables

Correlation to 2009 New Jersey Core Curriculum Content Standards for Science
CPO Science Physical Science (Middle School)

Standard #: Grade level	Standard	Strand	Cumulative Progress Indicator	Volume 1 Student Text page	Volume 2 Investigation Manual page
					94 data tables 98 data tables 110 data tables
5.1.08.B.3 5 - 8	Science Practices	Generate Scientific Evidence Through Active Investigations	Use qualitative and quantitative evidence to develop evidence- based arguments.	29 construct explanations supported by direct and indirect evidence 61 interpretations of patterns in data 61 interpretations of patterns in data 63 make predictions 184 interpretations of patterns from data 184 interpretations of patterns from data 242 explanations based on observations 340 make predictions baed on data 404 construct explanations based on data 444 explanations based on evidence	6 construct reasonable explanations supported by direct and indirect data 14 explain using data 38 construct explanations based on evidence 40 constructing explanations 49 explanations based on evidence 55 make predictions based on observations 58 make predictions on observed data 82 make predictions based on inferences from data

**Correlation to 2009 New Jersey Core Curriculum Content Standards for Science
CPO Science Physical Science (Middle School)**

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5.1.08.B.4 5 - 8	Science Practices	Generate Scientific Evidence Through Active Investigations	Use quality controls to examine data sets and to examine evidence as a means of generating and reviewing explanations.	24	error in experiments	5	errors in data
				31	review scientific hypothesis based on comparison with evidence	5	analysis of errors in measurement
				43	analysis of error	7	test hypothesis against observations
				44	analysis of errors in both measurements and interpretation	9	test hypothesis against observations
				45	analysis of errors in measurement		
				61	analyze trends from data		
				61	interpretations of patterns in data		
				184	systematic error		
				184	interpretations of patterns from data		

**Correlation to 2009 New Jersey Core Curriculum Content Standards for Science
CPO Science Physical Science (Middle School)**

Standard #: Grade level	Standard	Strand	Cumulative Progress Indicator	Volume 1 Student Text page	Volume 2 Investigation Manual page
5.1.08.C.1 5 - 8	Science Practices	Reflect on Scientific Knowledge	Monitor one's own thinking as understandings of scientific concepts are refined.	28 interpreting observations and proposing explanations 29 construct explanations supported by direct and indirect evidence 242 explanations based on observations 270 interpreting observations and making explanations 404 construct explanations based on data 444 explanations based on evidence	6 construct reasonable explanations supported by direct and indirect data 7 interpreting observations and proposing explanations 14 explain using data 38 construct explanations based on evidence 40 constructing explanations 49 explanations based on evidence 58 interpret observations 76 interpret observations 80 interpret observations
5.1.08.C.2 5 - 8	Science Practices	Reflect on Scientific Knowledge	Revise predictions or explanations on the basis of discovering new evidence, learning new information, or using models.	30 review theories based on observations 31 review scientific hypothesis based on comparison with evidence	

Correlation to 2009 New Jersey Core Curriculum Content Standards for Science
CPO Science Physical Science (Middle School)

Standard #: Grade level	Standard	Strand	Cumulative Progress Indicator	Volume 1 Student Text page	Volume 2 Investigation Manual page
5.1.08.C.3 5 - 8	Science Practices	Reflect on Scientific Knowledge	Generate new and productive questions to evaluate and refine core explanations.	31 review scientific hypothesis based on comparison with evidence 33 formulate a testable hypothesis	6 formulate testable hypothesis 7 test hypothesis against observations 9 formulate testable hypothesis 9 make hypothesis 9 test hypothesis against observations 13 conduct car/ramp experiment 19 formulate a testable hypothesis 26 make testable hypothesis 58 conduct scientific vocabulary
5.1.08.D.1 5 - 8	Science Practices	Participate Productively in Science	Engage in multiple forms of discussion in order to process, make sense of, and learn from others' ideas, observations, and experiences.	29 communication is important to science 269 communication as essential to science 318 oral presentation of results 318 write up results 380 writing up results	5 collaboration 32 communicating as essential to science 93 communicating results is essential to science 93 writing up results 94 writing up results 111 making graphs

Correlation to 2009 New Jersey Core Curriculum Content Standards for Science
CPO Science Physical Science (Middle School)

Standard #: Grade level	Standard	Strand	Cumulative Progress Indicator	Volume 1 Student Text page		Volume 2 Investigation Manual page	
5.1.08.D.2 5 - 8	Science Practices	Participate Productively in Science	Engage in productive scientific discussion practices during conversations with peers, both face-to-face and virtually, in the context of scientific investigations and model-building.	29	communication is important to science	32	communicating as essential to science
				269	communication as essential to science	93	communicating results is essential to science

Correlation to 2009 New Jersey Core Curriculum Content Standards for Science
CPO Science Physical Science (Middle School)

Standard #: Grade level	Standard	Strand	Cumulative Progress Indicator	Volume 1 Student Text page		Volume 2 Investigation Manual page	
5.1.08.D.3 5 - 8	Science Practices	Participate Productively in Science	Demonstrate how to safely use tools, instruments, and supplies.	11	balances	1	timers
				12	rulers	2	timers and photogates
				12	measurement	3	photogates
				24	balances	4	measurements
				30	understand sensitivity of measuring tools	4	balances
				46	photogates	5	measurement and selecting appropriate tools
				54	photogates	8	photogates
				56	timers	13	timers and photogates
				57	maps	16	understand the sensitivity of a measuring tool
				76	rulers	16	force scales
				76	measurements	16	balances
				184	measuring	17	balances
				277	how a thermometer works	18	timers and photogates
				294	thermometers	19	photogates
				299	graduated cylinder	23	photogates
				424	thermometers	26	photogates
				424	lab safety	28	ropes and pulley safety
						28	force scales
						29	force scales
						42	photogates
						43	photogates

Correlation to 2009 New Jersey Core Curriculum Content Standards for Science
CPO Science Physical Science (Middle School)

Standard #: Grade level	Standard	Strand	Cumulative Progress Indicator	Volume 1 Student Text page	Volume 2 Investigation Manual page
					49 measuring
					51 balances
					52 thermometers
					56 balances
					73 graduated cylinders
					73 balances
					75 safety
					77 measurements
					77 safety
					79 using balances
					86 lab safety
					87 lab safety
					88 lab safety
					88 goggles
					89 lab safety
					89 goggles and aprons
					90 lab safety
					90 goggles
					91 lab safety
					95 metric and English rulers
					95 measuring
					96 metric rulers

Correlation to 2009 New Jersey Core Curriculum Content Standards for Science
CPO Science Physical Science (Middle School)

Standard #: Grade level	Standard	Strand	Cumulative Progress Indicator	Volume 1 Student Text page	Volume 2 Investigation Manual page
					96 measuring
					97 metric rulers
					97 measuring
					98 metric rulers
					98 measuring
					99 temperature measuring devices
					100 thermometers
					100 beakers
					101 measurements
					101 rulers
					102 measurements
					103 measurements
					105 graduated cylinders
					106 balances
					107 balances
					108 balances

Correlation to 2009 New Jersey Core Curriculum Content Standards for Science
CPO Science Physical Science (Middle School)

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5.2.06.A.1 5-6	Physical Science	Properties of Matter	Determine the volume of common objects using water displacement methods.	299 measure volume of regular and irregular objects using several methods 302 volume of regular solids	56 measure volume with a variety of methods 101 measure volume of regular objects 102 volume of regular objects 103 measure volume of regular objects 104 measure volume of regular objects 105 measure volume of irregular objects

Correlation to 2009 New Jersey Core Curriculum Content Standards for Science
CPO Science Physical Science (Middle School)

Standard #: Grade level	Standard	Strand	Cumulative Progress Indicator	Volume 1 Student Text page	Volume 2 Investigation Manual page
5.2.06.A.2 5-6	Physical Science	Properties of Matter	Calculate the density of objects or substances after determining volume and mass.	4 mass 5 mass and volume 24 mass of objects 174 compare materials—density and mass 298 compare objects using properties—mass and density 299 compare objects based on volume 300 measure densities 300 compare objects based on density 301 compare objects using density 302 measure and compare densities 303 compare objects and materials using mass and volume and density 306 compare objects using density 307 compare objects based on density 308 compare objects based on density	55 volume and mass are different 56 volume and mass are two different measures for the same material 56 compare objects based on mass and volume and density 74 compare materials based on density 101 volume 103 volume 104 volume 105 volume 106 mass 107 mass 108 mass

Correlation to 2009 New Jersey Core Curriculum Content Standards for Science
CPO Science Physical Science (Middle School)

Standard #: Grade level	Standard	Strand	Cumulative Progress Indicator	Volume 1 Student Text page	Volume 2 Investigation Manual page
				309 compare objects based on density	
5.2.06.A.3 5-6	Physical Science	Properties of Matter	Determine the identity of an unknown substance using data about intrinsic properties.	316 classify materials based on physical properties 317 classify materials based on properties 344 chemical and physical properties 350 physical and chemical properties 357 melting and boiling points 357 classify by chemical and physical properties 358 physical properties of gold 364 describe how mixtures can be separated using physical means 370 mixtures can be separated by physical means	

Correlation to 2009 New Jersey Core Curriculum Content Standards for Science
CPO Science Physical Science (Middle School)

Standard #: Grade level	Standard	Strand	Cumulative Progress Indicator	Volume 1 Student Text page	Volume 2 Investigation Manual page
5.2.06.B.1 5-6	Physical Science	Changes in Matter	Compare the properties of reactants with the properties of the products when two or more substances are combined and react chemically.	5 chemical changes such as burning 314 formation of NaCl crystals 344 simple chemical changes—rusting 365 explain chemical reactions in terms of atoms and molecules 367 demonstrate that when two or more substances are combined new properties are seen 370 new substances are formed when two substances combine and it has new properties 407 simple chemical changes 407 simple chemical changes 410 chemical reactions in terms of atoms and molecules	71 new substances are formed when substances combine 77 how new substances are formed in chemical reactions
5.2.06.C.1 5-6	Physical Science	Forms of Energy	Predict the path of reflected or refracted light using reflecting and refracting telescopes as examples.	261 mirrors reflect light 263 reflection of light 264 reflection explained 265 index of refraction	48 refractive optics such as lenses

**Correlation to 2009 New Jersey Core Curriculum Content Standards for Science
CPO Science Physical Science (Middle School)**

Standard #: Grade level	Standard	Strand	Cumulative Progress Indicator	Volume 1 Student Text page	Volume 2 Investigation Manual page
5.2.06.C.3 5-6	Physical Science	Forms of Energy	Describe how prisms can be used to demonstrate that visible light from the Sun is made up of different colors.	248 white light is a mixture of colors	
5.2.06.D.1 5-6	Physical Science	Energy Transfer and Conservation	Use simple circuits involving batteries and motors to compare and predict the current flow with different circuit arrangements.	196 electric circuits	35 construct simple circuits 36 simple circuits 37 simple circuits
5.2.06.E.1 5-6	Physical Science	Forces and Motion	Model and explain how the description of an object's motion from one observer's view may be different from a different observer's view.		
5.2.06.E.2 5-6	Physical Science	Forces and Motion	Describe the force between two magnets as the distance between them is changed.	190 compare and contrast electrical force and magnetic force 203 what is a magnet 204 concept of magnetic field 204 concept of force fields 206 magnetic vs electric force 214 how coils concentrate magnetic field	35 concept of electric current 39 magnetic field

Correlation to 2009 New Jersey Core Curriculum Content Standards for Science
CPO Science Physical Science (Middle School)

Standard #: Grade level	Standard	Strand	Cumulative Progress Indicator	Volume 1 Student Text page	Volume 2 Investigation Manual page
5.2.06.E.3 5-6	Physical Science	Forces and Motion	Demonstrate and explain the frictional force acting on an object with the use of a physical model.	87 effect of friction on motion 88 effects of friction on motion of objects 89 effects of friction on motion 90 effects of friction on motion 91 effects of friction 92 effects of friction 93 effects of friction on motion 99 effect of friction on motion 101 effects of friction (drag) on motion of planes 102 investigate how friction affects motion 121 effect of friction on objects 142 friction and machines 221 friction and damping	18 investigate the effects of friction on motion of objects 19 investigate effects of friction on motion 20 effects of friction
5.2.06.E.4 5-6	Physical Science	Forces and Motion	Predict if an object will sink or float using evidence and reasoning.		56 floating or sinking 57 floating and sinking

Correlation to 2009 New Jersey Core Curriculum Content Standards for Science
CPO Science Physical Science (Middle School)

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5.2.08.A.1 5 - 8	Physical Science	Properties of Matter	Explain that all matter is made of atoms, and give examples of some common elements.	18 matter is composed of atoms 19 describe matter as composed of atoms 20 matter as composed of atoms 360 identify symbols of atoms	59 atomic symbol and atomic number and mass number 63 identify symbols and atomic number and mass number 64 identify symbol and atomic number and mass number of elements 66 identify symbol and atomic number and mass number of elements

**Correlation to 2009 New Jersey Core Curriculum Content Standards for Science
CPO Science Physical Science (Middle School)**

Standard #: Grade level	Standard	Strand	Cumulative Progress Indicator	Volume 1 Student Text page	Volume 2 Investigation Manual page
5.2.08.A.2 7-8	Physical Science	Properties of Matter	Analyze and explain the implications of the statement "all substances are composed of elements."	<p>20 recognize that compounds are composed of elements</p> <p>20 elements combine in constant proportions</p> <p>314 compounds composed of elements</p> <p>363 recognize that compounds are made of elements</p> <p>364 compounds are composed of elements</p> <p>366 understand that atoms combine in constant proportions to form compounds</p> <p>367 elements combine in certain proportions to form compounds</p> <p>368 difference between ionic and covalent bonds</p> <p>368 understand that elements combine in constant proportions to form compounds</p> <p>370 understand that elements combine in constant proportions in compounds</p>	

Correlation to 2009 New Jersey Core Curriculum Content Standards for Science
CPO Science Physical Science (Middle School)

Standard #: Grade level	Standard	Strand	Cumulative Progress Indicator	Volume 1 Student Text page	Volume 2 Investigation Manual page
				371 elements combine in constant proportions in compounds	

**Correlation to 2009 New Jersey Core Curriculum Content Standards for Science
CPO Science Physical Science (Middle School)**

Standard #: Grade level	Standard	Strand	Cumulative Progress Indicator	Volume 1 Student Text page	Volume 2 Investigation Manual page		
5.2.08.A.3 7-8	Physical Science	Properties of Matter	Use the kinetic molecular model to predict how solids, liquids, and gases would behave under various physical circumstances, such as heating or cooling.	5	properties of solids and liquids and gas	52	common phase changes
				18	molecular motion changed by addition of heat	53	heat of fusion in terms of energy of atoms
				19	molecular motion changed by addition of heat	53	phase changes
				96	relationship between real materials and concepts of atoms	53	states of matter based on arrangement and motion of atoms
				280	physical differences between phases of matter		
				280	phases of matter		
				281	heat energy and molecular motion		
				281	phase changes		
				301	physical differences between states of matter		
				303	explain the relationship between materials and the concepts of atoms		
				310	explain matter states based on arrangement of atoms		
				351	relationship between materials and idea of atoms and molecules		

**Correlation to 2009 New Jersey Core Curriculum Content Standards for Science
CPO Science Physical Science (Middle School)**

Standard #: Grade level	Standard	Strand	Cumulative Progress Indicator	Volume 1 Student Text page	Volume 2 Investigation Manual page
				354 relationship between real materials and arrangement of atoms 355 relationship between real materials and arrangements of atoms 387 explain how molecular motion is affected by addition of heat energy	
5.2.08.A.4 7-8	Physical Science	Properties of Matter	Predict the physical and chemical properties of elements based on their positions on the Periodic Table	345 recognizing groups or families on the periodic table 345 describe periodic table 346 identify metals and nonmetals on the periodic table 348 recognizing metals and nonmetals and metalloids 348 recognizing groups and families of periodic table 348 describing periodic table 350 recognizing groups and families and periodic table 350 describe periodic table 352 describe periodic table 353 groups on periodic table	61 periodic table 64 build and describe periodic table 65 identify groups or families on periodic table 66 periodic table 67 identify metals and nonmetals and metalloids 67 recognizing groups or families 67 periodic table 68 periodic table

Correlation to 2009 New Jersey Core Curriculum Content Standards for Science
CPO Science Physical Science (Middle School)

Standard #: Grade level	Standard	Strand	Cumulative Progress Indicator	Volume 1 Student Text page	Volume 2 Investigation Manual page
5.2.08.A.5 7-8	Physical Science	Properties of Matter	Identify unknown substances based on data regarding their physical and chemical properties.	292	physical properties of vulcanized rubber
				293	physical properties of carbon nanotubes
				301	identify properties that influence development of everyday items
				313	physical properties influence the development of everyday materials
				316	classify materials based on physical properties
				317	classify materials based on properties
				343	explain common chemical properties of elements in relation to the periodic table
				344	chemical and physical properties
				345	common chemical properties in relation to the periodic table
348	common chemical properties of elements based on relation to periodic table				

Correlation to 2009 New Jersey Core Curriculum Content Standards for Science
CPO Science Physical Science (Middle School)

Standard #: Grade level	Standard	Strand	Cumulative Progress Indicator	Volume 1 Student Text page	Volume 2 Investigation Manual page
				349	
				explain common chemical properties in relation to placement on periodic table	
				350	
				physical and chemical properties	
				351	
				explain common chemical properties of elements in relation to periodic table	
				352	
				properties in relation to periodic table	
				353	
				chemical properties in relation to periodic table	
				354	
				properties that influence development of everyday materials	
				355	
				physical and chemical properties used to help make everyday materials	
				357	
				classify by chemical and physical properties	
				357	
				melting and boiling points	
				357	
				describe characteristics based on place in periodic table	
				358	
				physical properties of gold	
				358	
				properties that make gold useful	

Correlation to 2009 New Jersey Core Curriculum Content Standards for Science
CPO Science Physical Science (Middle School)

Standard #: Grade level	Standard	Strand	Cumulative Progress Indicator	Volume 1 Student Text page	Volume 2 Investigation Manual page
				369	
				properties of elements in relation to the periodic table	
				371	
				explain the chemical properties of elements in relation to periodic table	
				372	
				explain chemical properties based on location in periodic table	
				374	
				chemical properties based on placement in periodic table	
				397	
				identify chemical properties that influence development of everyday products	

Correlation to 2009 New Jersey Core Curriculum Content Standards for Science
CPO Science Physical Science (Middle School)

Standard #: Grade level	Standard	Strand	Cumulative Progress Indicator	Volume 1 Student Text page	Volume 2 Investigation Manual page
5.2.08.A.6 7-8	Physical Science	Properties of Matter	Determine whether a substance is a metal or nonmetal through student-designed investigations.	102 design experiments 343 explain common chemical properties of elements in relation to the periodic table 345 common chemical properties in relation to the periodic table 346 identify metals and nonmetals on the periodic table 348 common chemical properties of elements based on relation to periodic table 348 recognizing metals and nonmetals and metalloids 349 explain common chemical properties in relation to placement on periodic table 351 explain common chemical properties of elements in relation to periodic table 352 properties in relation to periodic table 353 chemical properties in relation to periodic table	13 selecting ramp and photogates 43 design scientific experiments 67 identify metals and nonmetals and metalloids

Correlation to 2009 New Jersey Core Curriculum Content Standards for Science
CPO Science Physical Science (Middle School)

Standard #: Grade level	Standard	Strand	Cumulative Progress Indicator	Volume 1 Student Text page	Volume 2 Investigation Manual page
				357 describe characteristics based on place in periodic table	
				369 properties of elements in relation to the periodic table	
				371 explain the chemical properties of elements in relation to periodic table	
				372 explain chemical properties based on location in periodic table	
				374 chemical properties based on placement in periodic table	
				401 design experiment—including choosing equipment	
				411 design experiment with appropriate equipment	

Correlation to 2009 New Jersey Core Curriculum Content Standards for Science
CPO Science Physical Science (Middle School)

Standard #: Grade level	Standard	Strand	Cumulative Progress Indicator	Volume 1 Student Text page	Volume 2 Investigation Manual page		
5.2.08.A.7 7-8	Physical Science	Properties of Matter	Determine the relative acidity and reactivity of common acids, such as vinegar or cream of tartar, through a variety of student-designed investigations.	385	differentiate between acids and bases	75	determine pH ranges of solutions
				394	acids donate H- ions	75	differentiate between acids and bases
				394	differentiate between acids and bases	76	determine pH range of solutions
				395	bases accept H- ions		
				395	differentiate between acids and bases		
				396	differentiate between strong and weak acids and bases		
				396	acids donate H- ions and bases accept H- ions		
				397	determine pH ranges of solutions		
				398	pH range		
				399	strong acids and bases		
				399	pH ranges		
				400	pH and reactivity		
				400	acids and bases		
				401	pH ranges		
				401	differentiate between acids and bases		
				401	strong and weak acids		
				402	acids and bases		

Correlation to 2009 New Jersey Core Curriculum Content Standards for Science
CPO Science Physical Science (Middle School)

Standard #: Grade level	Standard	Strand	Cumulative Progress Indicator	Volume 1 Student Text page	Volume 2 Investigation Manual page
				402 pH ranges of solutions	
				403 acids and bases	

Correlation to 2009 New Jersey Core Curriculum Content Standards for Science
CPO Science Physical Science (Middle School)

Standard #: Grade level	Standard	Strand	Cumulative Progress Indicator	Volume 1 Student Text page	Volume 2 Investigation Manual page		
5.2.08.B.1 7-8	Physical Science	Changes in Matter	Explain, using an understanding of the concept of chemical change, why the mass of reactants and the mass of products remain constant.	20	elements combine in constant proportions	79	investigate law of conservation of mass
				366	understand that atoms combine in constant proportions to form compounds	80	investigate and recognize that the chemical reactions can be represented as systems with reactants and products
				367	elements combine in certain proportions to form compounds	80	law of conservation of mass
				368	understand that elements combine in constant proportions to form compounds		
				370	understand that elements combine in constant proportions in compounds		
				371	elements combine in constant proportions in compounds		
				409	chemical reactions can be represented as systems of reactants and products		
				410	chemical reactions can be represented as systems with reactants and products		
				411	conservation of mass		

Correlation to 2009 New Jersey Core Curriculum Content Standards for Science
CPO Science Physical Science (Middle School)

Standard #: Grade level	Standard	Strand	Cumulative Progress Indicator	Volume 1 Student Text page	Volume 2 Investigation Manual page
				413 recognize that chemical reactions can be represented as systems with reactants and products	
				420 conservation of mass	

Correlation to 2009 New Jersey Core Curriculum Content Standards for Science
CPO Science Physical Science (Middle School)

Standard #: Grade level	Standard	Strand	Cumulative Progress Indicator	Volume 1 Student Text page	Volume 2 Investigation Manual page
5.2.08.B.2 7-8	Physical Science	Changes in Matter	Compare and contrast the physical properties of reactants with products after a chemical reaction, such as those that occur during photosynthesis and cellular respiration.	5 314 344 367 370 407 407 408 419 422 423 424 427	71 77
				chemical changes such as burning	new substances are formed when substances combine
				formation of NaCl crystals	
				simple chemical changes—rusting	how new substances are formed in chemical reactions
				demonstrate that when two or more substances are combined new properties are seen	
				new substances are formed when two substances combine and it has new properties	
				simple chemical changes	
				simple chemical changes	
				chemical reactions occur all around us	
				chemical reactions occur all around us—in cars	
				chemical reactions all around us	
				chemical reactions all around us	
				chemical reactions take place all around us	
				how simple molecules are rearranged into new molecules in living things	

Correlation to 2009 New Jersey Core Curriculum Content Standards for Science
CPO Science Physical Science (Middle School)

Standard #: Grade level	Standard	Strand	Cumulative Progress Indicator	Volume 1 Student Text page	Volume 2 Investigation Manual page
				<p>432 how simple molecules are rearranged into new molecules in living things</p> <p>436 simple molecules are rearranged in body</p> <p>436 simple molecules are rearranged in body</p> <p>440 how simple molecules get rearranged into new molecules</p> <p>441 how molecules are rearranged in living things</p>	
5.2.08.C.2 7-8	Physical Science	Forms of Energy	Model and explain current technologies used to capture solar energy for the purposes of converting it to electrical energy.	<p>23 using hybrid cars</p> <p>148 economic and environmental consequences of wind</p> <p>148 efficiency of energy conversions in wind power</p> <p>148 renewable resources</p> <p>149 economic and environmental impact of wind energy</p> <p>149 efficiency of wind power</p>	

Correlation to 2009 New Jersey Core Curriculum Content Standards for Science
CPO Science Physical Science (Middle School)

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5.2.08.D.1 7-8	Physical Science	Energy Transfer and Conservation	Relate the kinetic and potential energies of a roller coaster at various points on its path.	10 conservation of energy (i.e. potential and kinetic) 130 law of conservation of energy 131 conservation of energy 134 conservation of energy in a broader context	
5.2.08.D.2 7-8	Physical Science	Energy Transfer and Conservation	Describe the flow of energy from the Sun to the fuel tank of an automobile.	16 forms of energy from origination at sun to use in living things 132 different forms of energy	

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CPO Science Physical Science (Middle School)

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5.2.08.E.1 7-8	Physical Science	Forces and Motion	Calculate the speed of an object when given distance and time.	4 speed 6 speed 34 speed 35 understand and calculate speed 40 understand concept of speed 54 concept of speed 55 speed 56 speed 60 calculating speed 64 calculating speed 66 calculations for speed 75 speed 76 speed 177 concept of speed	8 determine the speed of an object 8 measurement and calculation of speed 9 determine speed of an object 9 speed calculation 10 speed calculation 13 concept of speed 15 calculate speed of a moving object 22 calculate speed 27 calculate speed of a moving object 31 calculate speed of the car

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CPO Science Physical Science (Middle School)

Standard #: Grade level	Standard	Strand	Cumulative Progress Indicator	Volume 1 Student Text page	Volume 2 Investigation Manual page
5.2.08.E.2 7-8	Physical Science	Forces and Motion	Compare the motion of an object acted on by balanced forces with the motion of an object acted on by unbalanced forces in a given specific scenario.	95 balanced and unbalanced forces 97 use concepts of balanced or unbalanced forces 98 balanced and unbalanced forces 99 unbalanced forces cause motion 117 understand and use concept of balanced and unbalanced forces to create motion 118 balanced and unbalanced forces	21 balanced or unbalanced forces causing changes in motion
5.4.06.A.1 5-6	Earth Systems Science	Objects in the Universe	Generate and analyze evidence (through simulations) that the Sun's apparent motion across the sky changes over the course of a year.	167 relationship between Earth and sun and summer and winter	

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CPO Science Physical Science (Middle School)

Standard #: Grade level	Standard	Strand	Cumulative Progress Indicator	Volume 1 Student Text page	Volume 2 Investigation Manual page
5.4.06.A.2 5-6	Earth Systems Science	Objects in the Universe	Construct and evaluate models demonstrating the rotation of Earth on its axis and the orbit of Earth around the Sun.	156 orbits of planets and moons and other bodies 157 describe orbits of planets 158 orbit of moon 164 other bodies in solar system 164 orbits of other bodies in the solar system 166 compare orbits of planets 167 relationship between Earth and sun and summer and winter 169 orbits of moons 170 orbits of other moons 171 compare orbits of planets in solar system 173 orbits on bodies in solar system	32 orbit of the moon

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CPO Science Physical Science (Middle School)

Standard #: Grade level	Standard	Strand	Cumulative Progress Indicator	Volume 1 Student Text page	Volume 2 Investigation Manual page
5.4.06.A.3 5-6	Earth Systems Science	Objects in the Universe	Predict what would happen to an orbiting object if gravity were increased, decreased, or taken away.	156 orbits of planets and moons and other bodies 157 role of gravity in solar system 157 describe orbits of planets 158 role of gravity in universe 158 orbit of moon 164 other bodies in solar system 164 orbits of other bodies in the solar system 166 compare orbits of planets 169 orbits of moons 170 orbits of other moons 171 compare orbits of planets in solar system 173 orbits on bodies in solar system	32 orbit of the moon

Correlation to 2009 New Jersey Core Curriculum Content Standards for Science
CPO Science Physical Science (Middle School)

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5.4.06.A.4 5-6	Earth Systems Science	Objects in the Universe	Compare and contrast the major physical characteristics (including size and scale) of solar system objects using evidence in the form of data tables and photographs.	156	orbits of planets and moons and other bodies	32	orbit of the moon
				157	describe orbits of planets	34	know general structure of the solar system
				158	orbit of moon		
				160	place of Earth in the solar system		
				161	general structure of the solar system		
				162	general position of Earth		
				163	general structure of solar system		
				164	other bodies in solar system		
				164	orbits of other bodies in the solar system		
				165	general structure of solar system		
				166	compare orbits of planets		
				166	classify and compare planets		
				167	classify and compare planets		
				168	classify planets		
				169	orbits of moons		
				169	classify planets		
170	orbits of other moons						

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CPO Science Physical Science (Middle School)

Standard #: Grade level	Standard	Strand	Cumulative Progress Indicator	Volume 1 Student Text page	Volume 2 Investigation Manual page
				170 classify and compare planets 171 compare orbits of planets in solar system 171 compare and classify planets 172 classify planets 173 orbits on bodies in solar system 173 classify planets	
5.4.06.D.3 5-6	Earth Systems Science	Tectonics	Apply knowledge of Earth's magnetic fields to successfully complete an orienteering challenge.	205 how a compass works 206 how a compass works	
5.4.08.A.1 7-8	Earth Systems Science	Objects in the Universe	Analyze moon-phase, eclipse, and tidal data to construct models that explain how the relative positions and motions of the Sun, Earth, and Moon cause these three phenomena.	158 phases of the moon 159 the moon's effect on tides on Earth 159 properties of the moon 167 Earth and moon relationship	

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CPO Science Physical Science (Middle School)

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5.4.08.A.2 7-8	Earth Systems Science	Objects in the Universe	Use evidence of global variations in day length, temperature, and the amount of solar radiation striking Earth's surface to create models that explain these phenomena and seasons.	167 relationship between Earth and sun and summer and winter	
5.4.08.A.3 7-8	Earth Systems Science	Objects in the Universe	Predict how the gravitational force between two bodies would differ for bodies of different masses or bodies that are different distances apart.	100 gravity 154 Newton's law of universal gravitation 157 role of gravity in solar system 158 role of gravity in universe	

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CPO Science Physical Science (Middle School)

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5.4.08.A.4 7-8	Earth Systems Science	Objects in the Universe	Analyze data regarding the motion of comets, planets, and moons to find general patterns of orbital motion.	156 orbits of planets and moons and other bodies 157 describe orbits of planets 158 orbit of moon 164 other bodies in solar system 164 orbits of other bodies in the solar system 166 compare orbits of planets 169 orbits of moons 170 orbits of other moons 171 compare orbits of planets in solar system 173 orbits on bodies in solar system	32 orbit of the moon
5.4.08.C.2 7-8	Earth Systems Science	Properties of Earth Materials	Explain how chemical and physical mechanisms (changes) are responsible for creating a variety of landforms.		
5.4.08.D.3 7-8	Earth Systems Science	Tectonics	Explain why geomagnetic north and geographic north are at different locations.	205 how a compass works 206 how a compass works	