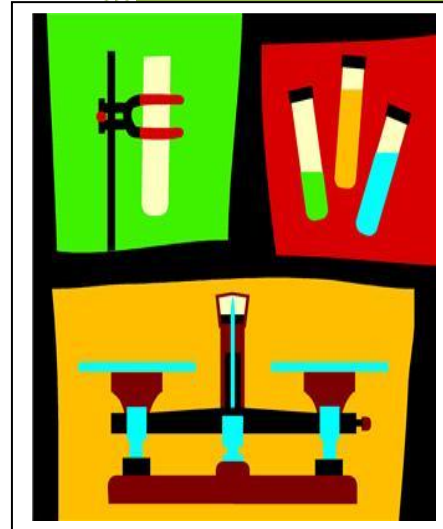


2011

SCIENCE CURRICULUM GRADE 9



Curriculum Writers: Britany Coleman, Gregory Decoteaux, Rebecca Dumont, Kimberly Laliberte, Kevin Lendrum, Keith Martinous, Dennis Nobrega, Erin Schwab, and Emily Zilly

East Providence, Middletown and Newport School Districts

6/1/2011

SCIENCE CURRICULUM GRADE 9 (Physics First or Physical and Earth and Space Science)

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GSEs/ STANDARDS	BENCHMARKS East Providence, Middletown and Newport	INSTRUCTIONAL STRATEGIES	RESOURCES	ASSESSMENT EVIDENCE
<p>1. PHYSICAL SCIENCE</p> <p>1.1. Properties of Matter</p> <p>Enduring Knowledge</p> <ul style="list-style-type: none"> PS1 - All living and nonliving things are composed of matter having characteristic properties that distinguish one substance from another (independent of size or amount of substance). 	<p>PS1 (9-11) -1 Students demonstrate an understanding of characteristic properties of matter by ...</p> <p>1.1.1 Understanding and using the metric system to measure: volume, distance, mass, and temperature.</p> <p>1.1.2 Utilizing appropriate data (related to chemical and physical properties), to <u>distinguish</u> one substance from another or identify an unknown substance. 1a COVERED IN CHEMISTRY</p> <p>1.1.3 Beginning to identify the degree of change in pressure of a given volume of gas when the temperature changes incrementally (doubles, triples, etc.). 1b</p> <ul style="list-style-type: none"> e.g. rock cycle, exploding aerosol cans, floating balloons, weather balloons <p>1.1.4 BENCHMARK PROBLEMS</p> <ul style="list-style-type: none"> PS1 (9-11) INQ -1 Use physical and chemical properties as determined through an investigation to identify a substance (ASSESSMENT TARGET) COVERED IN CHEMISTRY MCAS 2008, Chemistry, p. 492, #23 (S) 	<p>Facilitates the scientific inquiry method</p> <ul style="list-style-type: none"> collect data communicate understanding and ideas design, conduct, and critique investigations represent, analyze, and interpret data experimental design observe predict question and hypothesize use evidence to draw conclusions use tools, and techniques <p>Facilitates the learning cycle of science through the 5 E's of</p> <ul style="list-style-type: none"> engagement exploration explanation elaboration evaluation 	<p>Textbook</p> <p>Physical Science Concepts in Action with Earth and Space Science, Prentice Hall</p> <p>Supplementary books/material</p> <ul style="list-style-type: none"> Bill Nye 100 Greatest Discovery Series Chemistry a Natural Approach, Hsu Chemistry Concepts and Applications, Glencoe Chemistry Matter and Change, Glencoe Current science magazines Motion Forces and Energy, Prentice Hall Physical Science - Concepts and Challenges, Pearson Physics a First Course, CPO <p>Technology</p> <ul style="list-style-type: none"> Beyond Question Software Computer lab Gizmos™ Laptops LCD projectors Scientific calculators Googledocs.com http://dsc.discovery.com/ http://mw.concord.org/modeler/ http://ri.itest.portal.concord.org/preview/ http://science-class.net/ http://sciencespot.net/index.html http://scilinks.nasa.gov/ http://smithsonianeducation.org/educators http://www.howstuffworks.com/ nces.ed.gov/nagtionsreportcard/itmrls Tweentribune.com (student responding) www.windowstowonderland.org (virtual fieldtrips) www.acs.org www.acs.org/chemmatters www.beaconlearningcenter.com (lessons) www.brainpop.com www.discovery.com www.ebecri.org www.educationworld.com/ (Laws of Motion) www.efieldtrips.org (energy field trips) www.funderstanding.com/coaster (force and motion) www.lessoncorner.com/science (lesson corner) www.nbclearn.com/olympics (force & motion) www.polleverywhere.com www.ride.ri.gov www.sciencenetlinks.com (benchmarks and 	<p>COMMON ASSESSMENTS</p> <ul style="list-style-type: none"> Assessments Target Benchmark Problems Common Tasks Formative and Summative Assessments <p>SUGGESTED FORMATIVE/SUMMATIVE ASSESSMENTS</p> <ul style="list-style-type: none"> Anecdotal records Exhibits Interviews Graphic organizers Journals Multiple Intelligences assessments e.g. role playing - bodily kinesthetic, graphic organizing - visual, collaboration- interpersonal Oral presentations Performance/problem-based tasks Rubrics <ul style="list-style-type: none"> Inquiry Informational writing Tests and quizzes Writing (ELA Common Core: arguments, informational, responding to informational text)

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			lessons) <ul style="list-style-type: none"> • www.sciencespot.net • www.thinkfinity.org • www.unitedstreaming.com <p>Materials</p> <ul style="list-style-type: none"> • CPO equipment • Flinn: Electromagnet Kit 	
1 PHYSICAL SCIENCE 1.2. Properties of Matter Enduring Knowledge <ul style="list-style-type: none"> • PS1 - All living and nonliving things are composed of matter having characteristic properties that distinguish one substance from another (independent of size or amount of substance). 	<p>PS1 (9-11)-1 Students demonstrate an understanding of characteristic properties of matter by ...</p> <p>1.2.1 <u>Using given data (diagrams, charts, narratives, etc.) and advances in technology to explain how the understanding of atomic structure has changed over time.</u> 2a</p> <p>1.2.2 Identifying how atomic theories have changed over time through</p> <ul style="list-style-type: none"> • Democritus • Dalton's Atomic Theory • Thomson • Rutherford • Bohr <p>1.2.3 BENCHMARK PROBLEMS PS1 (9-11) MAS+ NOS -2 Scientific thought about atoms has changed over time. Using information (narratives or models of atoms) provided, cite evidence that has changed our understanding of the atom and the development of atomic theory. (ASSESSMENT TARGET)</p> <ul style="list-style-type: none"> • MCAS 2007, Chemistry, p. 496, #25 (S) modify • MCAS 2007, Chemistry, p. 499, #29 (S) modify 	<p>Facilitates the scientific inquiry method</p> <ul style="list-style-type: none"> • collect data • communicate understanding and ideas • design, conduct, and critique investigations • represent, analyze, and interpret data • experimental design • observe • predict • question and hypothesize • use evidence to draw conclusions • use tools, and techniques <p>Facilitates the learning cycle of science through the 5 E's of</p> <ul style="list-style-type: none"> • engagement • exploration • explanation • elaboration • evaluation 	<p>Textbook Physical Science Concepts in Action with Earth and Space Science, Prentice Hall</p> <p>Supplementary books/material</p> <ul style="list-style-type: none"> • Bill Nye 100 Greatest Discovery Series • Chemistry a Natural Approach, Hsu • Chemistry Concepts and Applications, Glencoe • Chemistry Matter and Change, Glencoe • Current science magazines • Motion Forces and Energy, Prentice Hall • Physical Science - Concepts and Challenges, Pearson • Physics a First Course, CPO <p>Technology</p> <ul style="list-style-type: none"> • Beyond Question Software • Computer lab • Gizmos™ • Laptops • LCD projectors • Scientific calculators • Googledocs.com • http://dsc.discovery.com/ • http://mw.concord.org/modeler/ • http://ri.itest.portal.concord.org/preview/ • http://science-class.net/ • http://sciencspot.net/index.html • http://scilinks.nasa.gov/ • http://smithsonianeducation.org/educators • http://www.howstuffworks.com/ • nces.ed.gov/nagtionsreportcard/itmrls • Tweentribune.com (student responding) • www.windowsintowonderland.org (virtual fieldtrips) • www.acs.org • www.acs.org/chemmatters • www.beaconlearningcenter.com (lessons) • www.brainpop.com • www.discovery.com • www.ebecri.org 	<p>COMMON ASSESSMENTS</p> <ul style="list-style-type: none"> • Assessments Target • Benchmark Problems • Common Tasks • Formative and Summative Assessments <p>SUGGESTED FORMATIVE/SUMMATIVE ASSESSMENTS</p> <ul style="list-style-type: none"> • Anecdotal records • Exhibits • Interviews • Graphic organizers • Journals • Multiple Intelligences assessments e.g. role playing - bodily kinesthetic, graphic organizing - visual, collaboration- interpersonal • Oral presentations • Performance/problem-based tasks • Rubrics <ul style="list-style-type: none"> • Inquiry • Informational

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GSEs/ STANDARDS	BENCHMARKS East Providence, Middletown and Newport	INSTRUCTIONAL STRATEGIES	RESOURCES	ASSESSMENT EVIDENCE
			<ul style="list-style-type: none"> www.educationworld.com/ (Laws of Motion) www.efieldtrips.org (energy field trips) www.funderstanding.com/coaster (force and motion) www.lessoncorner.com/science (lesson corner) www.nbclearn.com/olympics (force & motion) www.polleverywhere.com www.ride.ri.gov www.sciencenetlinks.com (benchmarks and lessons) www.sciencespot.net www.thinkfinity.org www.unitedstreaming.com <p>Materials</p> <ul style="list-style-type: none"> CPO equipment Flinn: Electromagnet Kit 	<p>writing</p> <ul style="list-style-type: none"> Tests and quizzes Writing (ELA Common Core: arguments, informational, responding to informational text)
<p>1. PHYSICAL SCIENCE</p> <p>1.3. Properties of Matter</p> <p>Enduring Knowledge</p> <ul style="list-style-type: none"> PS1 - All living and nonliving things are composed of matter having characteristic properties that distinguish one substance from another (independent of size or amount of substance). 	<p>PS1 (9-11) -3 Students demonstrate an understanding of characteristic properties of matter by ...</p> <p>1.3.1 Defining valence electrons and determining the number of valence electrons in a given element. (Physics First only)</p> <p>1.3.2 Identifying and explaining the basis for the arrangement of the elements within the periodic table e.g.</p> <ul style="list-style-type: none"> metals and non- metals, metalloids (grade 9) trends (grade 9) valence electrons (grade 9) reactivity COVERED IN CHEMISTRY electronegativity, ionization COVERED IN CHEMISTRY 3a <p>1.3.3 Predicting the relative physical and chemical properties of an element based on its location within the Periodic Table. 3b COVERED IN CHEMISTRY</p> <p>1.3.4 BENCHMARK PROBLEMS PS1 (9-11) POC -3 Explain how properties of elements and the location of elements on the periodic table are related. (ASSESSMENT TARGET)</p> <ul style="list-style-type: none"> NECAP 2009, p. 1, #1 (F) modify 	<p>Facilitates the scientific inquiry method</p> <ul style="list-style-type: none"> collect data communicate understanding and ideas design, conduct, and critique investigations represent, analyze, and interpret data experimental design observe predict question and hypothesize use evidence to draw conclusions use tools, and techniques <p>Facilitates the learning cycle of</p>	<p>Textbook Physical Science Concepts in Action with Earth and Space Science, Prentice Hall</p> <p>Supplementary books/material</p> <ul style="list-style-type: none"> Bill Nye 100 Greatest Discovery Series Chemistry a Natural Approach, Hsu Chemistry Concepts and Applications, Glencoe Chemistry Matter and Change, Glencoe Current science magazines Motion Forces and Energy, Prentice Hall Physical Science - Concepts and Challenges, Pearson Physics a First Course, CPO <p>Technology</p> <ul style="list-style-type: none"> Beyond Question Software Computer lab Gizmos™ Laptops LCD projectors Scientific calculators Googledocs.com http://dsc.discovery.com/ http://mw.concord.org/modeler/ http://ri.itest.portal.concord.org/preview/ http://science-class.net/ http://sciencespot.net/index.html http://scilinks.nasa.gov/ http://smithsonianeducation.org/educators http://www.howstuffworks.com/ nces.ed.gov/nagtionsreportcard/itmrls 	<p>COMMON ASSESSMENTS</p> <ul style="list-style-type: none"> Assessments Target Benchmark Problems Common Tasks Formative and Summative Assessments <p>SUGGESTED FORMATIVE/ SUMMATIVE ASSESSMENTS</p> <ul style="list-style-type: none"> Anecdotal records Exhibits Interviews Graphic organizers Journals Multiple Intelligences assessments e.g. role playing - bodily kinesthetic, graphic organizing - visual, collaboration- interpersonal

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	<ul style="list-style-type: none"> • NECAP 2009, p. 1, #2 (S) modify • MCAS 2008, Chemistry, p. 502, #45 (S) (East Providence and Middletown only) • GIZMO™ (East Providence and Middletown only), <i>Element Builder</i> 	<p>science through the 5 E's of</p> <ul style="list-style-type: none"> • engagement • exploration • explanation • elaboration • evaluation 	<ul style="list-style-type: none"> • Tweentribune.com (student responding) • www.windowstowonderland.org (virtual fieldtrips) • www.acs.org • www.acs.org/chemmatters • www.beaconlearningcenter.com (lessons) • www.brainpop.com • www.discovery.com • www.ebecri.org • www.educationworld.com/ (Laws of Motion) • www.efieldtrips.org (energy field trips) • www.funderstanding.com/coaster (force and motion) • www.lessoncorner.com/science (lesson corner) • www.nbclearn.com/olympics (force & motion) • www.polvereverywhere.com • www.ride.ri.gov • www.sciencenetlinks.com (benchmarks and lessons) • www.sciencespot.net • www.thinkfinity.org • www.unitedstreaming.com <p>Materials</p> <ul style="list-style-type: none"> • CPO equipment • Flinn: Electromagnet Kit 	<ul style="list-style-type: none"> • Oral presentations • Performance/problem-based tasks • Rubrics <ul style="list-style-type: none"> • Inquiry • Informational writing • Tests and quizzes • Writing (ELA Common Core: arguments, informational, responding to informational text)
<p>1 PHYSICAL SCIENCE</p> <p>1.4 States of Matter</p> <p>Enduring Knowledge</p> <ul style="list-style-type: none"> • PS1 - All living and nonliving things are composed of matter having characteristic properties that distinguish one substance from another (independent of size or amount of substance). 	<p>PS1 (9-11) - 4 Students demonstrate an understanding of the structure of matter by ...</p> <p>1.4.1 <u>Comparing the three subatomic particles of atoms</u></p> <ul style="list-style-type: none"> • <u>protons</u> • <u>electrons</u> • <u>neutrons</u> • <u>and their location within an atom, their relative mass, and their charge.</u> 4a <p>1.4.2 <u>Distinguishing between atomic number, mass number, and atomic mass.</u></p> <p>1.4.3 <u>Writing formulae for compounds and developing basic (excluding transition elements) models using electron structure.</u> 4b COVERED IN CHEMISTRY</p> <p>1.4.4 <u>Explaining or modeling how the electron configuration of atoms governs how atoms interact with one another (e.g.</u></p>	<p>Facilitates the scientific inquiry method</p> <ul style="list-style-type: none"> • collect data • communicate understanding and ideas • design, conduct, and critique investigations • represent, analyze, and interpret data • experimental design • observe • predict • question and hypothesize 	<p>Textbook Physical Science Concepts in Action with Earth and Space Science, Prentice Hall</p> <p>Supplementary books/material</p> <ul style="list-style-type: none"> • Bill Nye 100 Greatest Discovery Series • Chemistry a Natural Approach, Hsu • Chemistry Concepts and Applications, Glencoe • Chemistry Matter and Change, Glencoe • Current science magazines • Motion Forces and Energy, Prentice Hall • Physical Science - Concepts and Challenges, Pearson • Physics a First Course, CPO <p>Technology</p> <ul style="list-style-type: none"> • Beyond Question Software • Computer lab • Gizmos™ • Laptops • LCD projectors • Scientific calculators • Googledocs.com 	<p>COMMON ASSESSMENTS</p> <ul style="list-style-type: none"> • Assessments Target • Benchmark Problems • Common Tasks • Formative and Summative Assessments <p>SUGGESTED FORMATIVE/SUMMATIVE ASSESSMENTS</p> <ul style="list-style-type: none"> • Anecdotal records • Exhibits • Interviews • Graphic organizers • Journals

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	<ul style="list-style-type: none"> • <u>covalent</u> • <u>hydrogen</u> • <u>ionic bonding</u>. 4c COVERED IN CHEMISTRY <p>1.4.5 BENCHMARK PROBLEMS PS1 (9-11) MAS+ FAF - 4 Model and explain the structure of an atom (grade 9) or explain how an atom's electron configuration, particularly the outermost electron(s), determines how that atom can interact with other atoms (chemistry). (ASSESSMENT TARGET)</p> <ul style="list-style-type: none"> • MCAS 2006, Chemistry, p. 456, #25 a,b (S) • MCAS 2007, Chemistry, p. 496, #25 (S) • MCAS 2008, Chemistry, p. 495, #29 (F) modify • GIZMO™ (East Providence and Middletown only), <i>Covalent Bonding and Ionic Bonding</i> 	<ul style="list-style-type: none"> • use evidence to draw conclusions • use tools, and techniques <p>Facilitates the learning cycle of science through the 5 E's of</p> <ul style="list-style-type: none"> • engagement • exploration • explanation • elaboration • evaluation 	<ul style="list-style-type: none"> • http://dsc.discovery.com/ • http://mw.concord.org/modeler/ • http://ri.itest.portal.concord.org/preview/ • http://science-class.net/ • http://sciencespot.net/index.html • http://scilinks.nasa.gov/ • http://smithsonianeducation.org/educators • http://www.howstuffworks.com/ • nces.ed.gov/nagtionsreportcard/itmrls • Tweentribune.com (student responding) • www.windowstowonderland.org (virtual fieldtrips) • www.acs.org • www.acs.org/chemmatters • www.beaconlearningcenter.com (lessons) • www.brainpop.com • www.discovery.com • www.ebecri.org • www.educationworld.com/ (Laws of Motion) • www.efieldtrips.org (energy field trips) • www.funderstanding.com/coaster (force and motion) • www.lessoncorner.com/science (lesson corner) • www.nbclearn.com/olympics (force & motion) • www.polleverywhere.com • www.ride.ri.gov • www.sciencenetlinks.com (benchmarks and lessons) • www.sciencespot.net • www.thinkfinity.org • www.unitedstreaming.com <p>Materials</p> <ul style="list-style-type: none"> • CPO equipment • Flinn: Electromagnet Kit 	<ul style="list-style-type: none"> • Multiple Intelligences assessments e.g. role playing - bodily kinesthetic, graphic organizing - visual, collaboration- interpersonal • Oral presentations • Performance/problem-based tasks • Rubrics <ul style="list-style-type: none"> • Inquiry • Informational writing • Tests and quizzes • Writing (ELA Common Core: arguments, informational, responding to informational text)
<p>1. PHYSICAL SCIENCE</p> <p>1.5 Energy</p> <p>Enduring Knowledge</p> <ul style="list-style-type: none"> • PS 2 - Energy is necessary for change to occur in matter. Energy can be stored, 	<p>PS2 (9-11)-5 Students demonstrate an understanding of energy by...</p> <p>1.5.1 <u>Describing or diagraming the changes in energy (transformation) that occur in different systems.</u> eg.</p> <ul style="list-style-type: none"> • <u>chemical = exo and endo thermic reactions</u> • <u>biological = food webs</u> • <u>physical = phase changes.</u>_5a <p>1.5.2 <u>Understanding the forms of energy:</u></p> <ul style="list-style-type: none"> • kinetic 	<p>Facilitates the scientific inquiry method</p> <ul style="list-style-type: none"> • collect data • communicate understanding and ideas • design, conduct, and critique investigations • represent, analyze, 	<p>Textbook</p> <p>Physical Science Concepts in Action with Earth and Space Science, Prentice Hall</p> <p>Supplementary books/material</p> <ul style="list-style-type: none"> • Bill Nye 100 Greatest Discovery Series • Chemistry a Natural Approach, Hsu • Chemistry Concepts and Applications, Glencoe • Chemistry Matter and Change, Glencoe • Current science magazines • Motion Forces and Energy, Prentice Hall • Physical Science - Concepts and Challenges, Pearson • Physics a First Course, CPO 	<p>COMMON ASSESSMENTS</p> <ul style="list-style-type: none"> • Assessments Target • Benchmark Problems • Common Tasks • Formative and Summative Assessments <p>SUGGESTED FORMATIVE/ SUMMATIVE ASSESSMENTS</p>

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<p>transferred, and transformed, but cannot be destroyed.</p>	<ul style="list-style-type: none"> • gravitational potential • elastic potential • mechanical • thermal • chemical • nuclear • electrical • electromagnetic <p>1.5.3 Calculating the kinetic and potential energy of an object</p> <ul style="list-style-type: none"> • $KE = \frac{1}{2} mv^2$ • $GPE = mgh$ <p>1.5.4 Understanding that energy continually changes forms.</p> <p>1.5.5 <u>Explaining the Law of Conservation of Energy as it relates to the efficiency (loss of heat) of a system.</u> 5b</p> <p>1.5.6 BENCHMARK PROBLEMS PS2 (9-11) POC+SAE -5 Demonstrate how transformations of energy produce some energy in the form of heat and therefore the efficiency of the system is reduced (chemical, biological, and physical systems). (ASSESSMENT TARGET)</p> <ul style="list-style-type: none"> • NECAP 2009, p. 1, #2 (S) modify • MCAS 2006, Intro Physics, p. 480, #23 (I) modify • MCAS 2006, Intro Physics, p. 477, #14 (F) modify • MCAS 2006, Intro Physics, p. 480, #24 (F) modify • MCAS 2006, Intro Physics, p. 490, #45 (F) modify • MCAS 2006, Intro Physics, p. 484, #31 (S) modify • MCAS 2007, Intro Physics p. 515, #8 (I) modify • MCAS 2008, Intro Physics, p. 512 #12 (S) • MCAS 2009, Intro Physics, p. 305, #32 (F, S) • GIZMO™ (East Providence and Middletown only), <i>Energy Conversions in a System</i> 	<p>and interpret data</p> <ul style="list-style-type: none"> • experimental design • observe • predict • question and hypothesize • use evidence to draw conclusions • use tools, and techniques <p>Facilitates the learning cycle of science through the 5 E's of</p> <ul style="list-style-type: none"> • engagement • exploration • explanation • elaboration • evaluation 	<p>Technology</p> <ul style="list-style-type: none"> • Beyond Question Software • Computer lab • Gizmos™ • Laptops • LCD projectors • Scientific calculators • Googledocs.com • http://dsc.discovery.com/ • http://mw.concord.org/modeler/ • http://ri.itest.portal.concord.org/preview/ • http://science-class.net/ • http://sciencespot.net/index.html • http://scilinks.nasa.gov/ • http://smithsonianeducation.org/educators • http://www.howstuffworks.com/ • nces.ed.gov/nagtionsreportcard/itmrls • Tweentribune.com (student responding) • www.windowstowonderland.org (virtual fieldtrips) • www.acs.org • www.acs.org/chemmatters • www.beaconlearningcenter.com (lessons) • www.brainpop.com • www.discovery.com • www.ebecri.org • www.educationworld.com/ (Laws of Motion) • www.efieldtrips.org (energy field trips) • www.funderstanding.com/coaster (force and motion) • www.lessoncorner.com/science (lesson corner) • www.nbclearn.com/olympics (force & motion) • www.polleverywhere.com • www.ride.ri.gov • www.sciencenetlinks.com (benchmarks and lessons) • www.sciencespot.net • www.thinkfinity.org • www.unitedstreaming.com <p>Materials</p> <ul style="list-style-type: none"> • CPO equipment • Flinn: Electromagnet Kit 	<ul style="list-style-type: none"> • Anecdotal records • Exhibits • Interviews • Graphic organizers • Journals • Multiple Intelligences assessments e.g. role playing - bodily kinesthetic, graphic organizing - visual, collaboration- interpersonal • Oral presentations • Performance/problem-based tasks • Rubrics <ul style="list-style-type: none"> • Inquiry • Informational writing • Tests and quizzes • Writing (ELA Common Core: arguments, informational, responding to informational text)
1. PHYSICAL	PS2 (9-11) -6 Students demonstrate an understanding of physical, chemical,	Facilitates the	Textbook	COMMON

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GSEs/ STANDARDS	BENCHMARKS East Providence, Middletown and Newport	INSTRUCTIONAL STRATEGIES	RESOURCES	ASSESSMENT EVIDENCE
<p>SCIENCE</p> <p>1.6 Physical, chemical, and nuclear changes</p> <p>Enduring Knowledge</p> <ul style="list-style-type: none"> PS 2 - Energy is necessary for change to occur in matter. Energy can be stored, transferred, and transformed, but cannot be destroyed. 	<p>and <u>nuclear changes</u> by ...</p> <p>1.6.1 <u>Begins to balance simple chemical equations to represent chemical reactions and illustrate the conservation of matter. (Physics First only) 6a</u></p> <p>1.6.2 <u>Identifying whether a given chemical reaction or a biological process will release or consume energy (endothermic and exothermic) based on the information provided (e.g. given a table of energy values for reactants and products or an energy diagram). 6b</u></p> <p>1.6.3 <u>Identifying and/or modeling how the nuclear make-up of atoms governs alpha and beta emissions creating changes in the nucleus of an atom results in the formation of new elements. 6c</u></p> <p>1.6.4 Explaining the concept of half-life and using the half-life principle to predict the approximate age of a material. 6d</p> <p>1.6.5 <u>Differentiating between fission and fusion in nuclear reactions and their relation to element changes and energy formation. 6e</u></p> <p>1.6.6 BENCH MARK PROBLEMS PS2 (9-11) INQ+SAE -6 Using information provided about chemical changes, draw conclusions about and explain the energy flow in a given chemical reaction (e.g., exothermic reactions, endothermic reactions). (ASSESSMENT TARGET)</p> <ul style="list-style-type: none"> NECAP 2008, p. 4, #6 (S) modify NECAP 2009, p. 3, #5 (S) modify NECAP 2009, p. 1, #2 (I) modify MCAS 2008, Chemistry, p. 488 #15 (F) MCAS 2008, Chemistry, p. 497 #34 (F) MCAS 2008, Chemistry, p. 497 # 36 (F) MCAS 2008, Chemistry, p. 499 #40 (S) GIZMO™ (East Providence and Middletown only), <i>Half Life, Nuclear Decay</i> 	<p>scientific inquiry method</p> <ul style="list-style-type: none"> collect data communicate understanding and ideas design, conduct, and critique investigations represent, analyze, and interpret data experimental design observe predict question and hypothesize use evidence to draw conclusions use tools, and techniques <p>Facilitates the learning cycle of science through the 5 E's of</p> <ul style="list-style-type: none"> engagement exploration explanation elaboration evaluation 	<p><u>Physical Science Concepts in Action with Earth and Space Science</u>, Prentice Hall</p> <p>Supplementary books/material</p> <ul style="list-style-type: none"> Bill Nye 100 Greatest Discovery Series <u>Chemistry a Natural Approach</u>, Hsu <u>Chemistry Concepts and Applications</u>, Glencoe <u>Chemistry Matter and Change</u>, Glencoe Current science magazines <u>Motion Forces and Energy</u>, Prentice Hall <u>Physical Science - Concepts and Challenges</u>, Pearson <u>Physics a First Course</u>, CPO <p>Technology</p> <ul style="list-style-type: none"> Beyond Question Software Computer lab Gizmos™ Laptops LCD projectors Scientific calculators <u>Googledocs.com</u> <u>http://dsc.discovery.com/</u> <u>http://mw.concord.org/modeler/</u> <u>http://ri.itest.portal.concord.org/preview/</u> <u>http://science-class.net/</u> <u>http://sciencespot.net/index.html</u> <u>http://scilinks.nasa.gov/</u> <u>http://smithsonianeducation.org/educators</u> <u>http://www.howstuffworks.com/</u> <u>nces.ed.gov/nagtionsreportcard/itmrls</u> <u>Tweentribune.com</u> (student responding) <u>www.windowstowonderland.org</u> (virtual fieldtrips) <u>www.acs.org</u> <u>www.acs.org/chemmatters</u> <u>www.beaconlearningcenter.com</u> (lessons) <u>www.brainpop.com</u> <u>www.discovery.com</u> <u>www.ebecri.org</u> <u>www.educationworld.com/</u> (Laws of Motion) <u>www.efieldtrips.org</u> (energy field trips) <u>www.funderstanding.com/coaster</u> (force and motion) <u>www.lessoncorner.com/science</u> (lesson corner) <u>www.nbclearn.com/olympics</u> (force & motion) <u>www.polleverywhere.com</u> <u>www.ride.ri.gov</u> <u>www.sciencenetlinks.com</u> (benchmarks and lessons) <u>www.sciencespot.net</u> <u>www.thinkfinity.org</u> 	<p>ASSESSMENTS</p> <ul style="list-style-type: none"> Assessments Target Benchmark Problems Common Tasks Formative and Summative Assessments <p>SUGGESTED FORMATIVE/ SUMMATIVE ASSESSMENTS</p> <ul style="list-style-type: none"> Anecdotal records Exhibits Interviews Graphic organizers Journals Multiple Intelligences assessments e.g. role playing - bodily kinesthetic, graphic organizing - visual, collaboration- interpersonal Oral presentations Performance/problem-based tasks Rubrics <ul style="list-style-type: none"> Inquiry Informational writing Tests and quizzes Writing (ELA Common Core: arguments, informational, responding to informational text)

SCIENCE CURRICULUM GRADE 9 (Physics First or Physical and Earth and Space Science)

Curriculum Writers: Britany Coleman, Gregory Decoteaux, Rebecca Dumont, Kimberly Laliberte, Kevin Lendrum, Keith Martinous, Dennis Nobrega, Erin Schwab, and Emily Zilly

GSEs/ STANDARDS	BENCHMARKS East Providence, Middletown and Newport	INSTRUCTIONAL STRATEGIES	RESOURCES	ASSESSMENT EVIDENCE
			<ul style="list-style-type: none"> www.unitedstreaming.com <p>Materials</p> <ul style="list-style-type: none"> CPO equipment Flinn: Electromagnet Kit 	
<p>1. PHYSICAL SCIENCE</p> <p>1.7 Electro-magnetism</p> <p>Enduring Knowledge</p> <ul style="list-style-type: none"> PS 2 - Energy is necessary for change to occur in matter. Energy can be stored, transferred, and transformed, but cannot be destroyed. 	<p>PS2 (9-11) -7 Students demonstrate an understanding of electromagnetism by...</p> <p>1.7.1 Determining what causes an electric charge.</p> <p>1.7.2 <u>Explaining through words, diagrams, models, or electrostatic demonstrations the principle that like charges repel and unlike charges attract.</u> 7a</p> <p>1.7.3 <u>Explaining through words, charts, diagrams, and models the effects of distance and the amount of charge on the strength of the electrical force</u> present. 7b</p> <p>1.7.4 Describing how electric charge can be transferred</p> <ul style="list-style-type: none"> friction conduction (contact) induction <p>1.7.5 <u>Describing the relationship between moving electric charges and magnetic fields.</u> 7c</p> <p>1.7.6 BENCHMARK PROBLEMS PS2 (9-11) -SAE - 7 Explain relationships between and among electric charges, magnetic fields, electromagnetic forces, and atomic particles.</p> <ul style="list-style-type: none"> NECAP 2008, p. 2, #3 (F) modify MCAS 2006, Intro. Physics, p. 486, #33 (I) modify MCAS 2006, Intro. Physics, p. 477, #12 (F) modify MCAS 2006, Intro. Physics, p. 483, #28 (F) modify MCAS 2007, Intro. Physics, p. 516, #11 (I,S) MCAS 2009, Intro. Physics, p. 300, #23 (F,S) NY Regents Jan. 2009, Physics, p. 11, # 61-63 (I, F) (East 	<p>Facilitates the scientific inquiry method</p> <ul style="list-style-type: none"> collect data communicate understanding and ideas design, conduct, and critique investigations represent, analyze, and interpret data experimental design observe predict question and hypothesize use evidence to draw conclusions use tools, and techniques <p>Facilitates the learning cycle of science through the 5 E's of</p> <ul style="list-style-type: none"> engagement exploration explanation elaboration evaluation 	<p>Textbook Physical Science Concepts in Action with Earth and Space Science, Prentice Hall</p> <p>Supplementary books/material</p> <ul style="list-style-type: none"> Bill Nye 100 Greatest Discovery Series Chemistry a Natural Approach, Hsu Chemistry Concepts and Applications, Glencoe Chemistry Matter and Change, Glencoe Current science magazines Motion Forces and Energy, Prentice Hall Physical Science - Concepts and Challenges, Pearson Physics a First Course, CPO <p>Technology</p> <ul style="list-style-type: none"> Beyond Question Software Computer lab Gizmos™ Laptops LCD projectors Scientific calculators Googledocs.com http://dsc.discovery.com/ http://mw.concord.org/modeler/ http://ri.itest.portal.concord.org/preview/ http://science-class.net/ http://sciencespot.net/index.html http://scilinks.nasa.gov/ http://smithsonianeducation.org/educators http://www.howstuffworks.com/ nces.ed.gov/nagtionsreportcard/itmrls Tweentribune.com (student responding) www.windowsintowonderland.org (virtual fieldtrips) www.acs.org www.acs.org/chemmatters www.beaconlearningcenter.com (lessons) www.brainpop.com www.discovery.com www.ebecri.org www.educationworld.com/ (Laws of Motion) www.efieldtrips.org (energy field trips) www.funderstanding.com/coaster (force and 	<p>COMMON ASSESSMENTS</p> <ul style="list-style-type: none"> Assessments Target Benchmark Problems Common Tasks Formative and Summative Assessments <p>SUGGESTED FORMATIVE/ SUMMATIVE ASSESSMENTS</p> <ul style="list-style-type: none"> Anecdotal records Exhibits Interviews Graphic organizers Journals Multiple Intelligences assessments e.g. role playing - bodily kinesthetic, graphic organizing - visual, collaboration- interpersonal Oral presentations Performance/problem-based tasks Rubrics <ul style="list-style-type: none"> Inquiry Informational writing Tests and quizzes

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GSEs/ STANDARDS	BENCHMARKS East Providence, Middletown and Newport	INSTRUCTIONAL STRATEGIES	RESOURCES	ASSESSMENT EVIDENCE
	<p style="color: red;">Providence and Middletown only)</p> <ul style="list-style-type: none"> • GIZMO™ (East Providence and Middletown only), <i>Coulomb's Force</i> 		<p>motion)</p> <ul style="list-style-type: none"> • www.lessoncorner.com/science (lesson corner) • www.nbclearn.com/olympics (force & motion) • www.polleverywhere.com • www.ride.ri.gov • www.sciencenetlinks.com (benchmarks and lessons) • www.sciencespot.net • www.thinkfinity.org • www.unitedstreaming.com <p>Materials</p> <ul style="list-style-type: none"> • CPO equipment • Flinn: Electromagnet Kit 	<ul style="list-style-type: none"> • Writing (ELA Common Core: arguments, informational, responding to informational text)
<p>1 PHYSICAL SCIENCE</p> <p>1.8 Motion</p> <p>Enduring Knowledge</p> <ul style="list-style-type: none"> • PS 3 - The motion of an object is affected by forces. 	<p>PS3 (9-11) - 8 Students demonstrate an understanding of forces and motion by...</p> <p>1.8.1 Predicting and/or graphing the path of an object in different reference planes (frame of reference) and explain how and why (forces) it occurs. 8a, e.g. passenger on a train vs. observer</p> <p>1.8.2 Using modeling, illustrating, graphing explain how distance and velocity change over time for a free falling object. 8b</p> <p>1.8.3 Solving problems using the speed and acceleration equations $v=d/t$ $a=(v_f - v_i)/t$ $d= \frac{1}{2} at^2$</p> <p>1.8.4 Using a quantitative representation of how distance and velocity change over time for a free falling object. 8aa</p> <p>1.8.5 BENCH MARK PROBLEMS PS3 (9-11) POC+ INQ 8 Given information (e.g., graphs, data, diagrams), use the relationships between or among force, mass, velocity, momentum, and acceleration to predict and explain the motion of objects. (ASSESSMENT TARGET)</p> <ul style="list-style-type: none"> • NECAP 2008, p. 3, #4 (S) • NECAP 2008, p. 6-7, #11-17 (I, F, S) 	<p>Facilitates the scientific inquiry method</p> <ul style="list-style-type: none"> • collect data • communicate understanding and ideas • design, conduct, and critique investigations • represent, analyze, and interpret data • experimental design • observe • predict • question and hypothesize • use evidence to draw conclusions • use tools, and techniques <p>Facilitates the learning cycle of science through the 5 E's of</p>	<p>Textbook Physical Science Concepts in Action with Earth and Space Science, Prentice Hall</p> <p>Supplementary books/material</p> <ul style="list-style-type: none"> • Bill Nye 100 Greatest Discovery Series • Chemistry a Natural Approach, Hsu • Chemistry Concepts and Applications, Glencoe • Chemistry Matter and Change, Glencoe • Current science magazines • Motion Forces and Energy, Prentice Hall • Physical Science - Concepts and Challenges, Pearson • Physics a First Course, CPO <p>Technology</p> <ul style="list-style-type: none"> • Beyond Question Software • Computer lab • Gizmos™ • Laptops • LCD projectors • Scientific calculators • Googledocs.com • http://dsc.discovery.com/ • http://mw.concord.org/modeler/ • http://ri.itest.portal.concord.org/preview/ • http://science-class.net/ • http://sciencespot.net/index.html • http://scilinks.nasa.gov/ • http://smithsonianeducation.org/educators • http://www.howstuffworks.com/ • nces.ed.gov/nagtionsreportcard/itmrls • Tweentribune.com (student responding) • www.windowstowonderland.org (virtual fieldtrips) 	<p>COMMON ASSESSMENTS</p> <ul style="list-style-type: none"> • Assessments Target • Benchmark Problems • Common Tasks • Formative and Summative Assessments <p>SUGGESTED FORMATIVE/ SUMMATIVE ASSESSMENTS</p> <ul style="list-style-type: none"> • Anecdotal records • Exhibits • Interviews • Graphic organizers • Journals • Multiple Intelligences assessments e.g. role playing - bodily kinesthetic, graphic organizing - visual, collaboration- interpersonal • Oral presentations

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GSEs/ STANDARDS	BENCHMARKS East Providence, Middletown and Newport	INSTRUCTIONAL STRATEGIES	RESOURCES	ASSESSMENT EVIDENCE
	<ul style="list-style-type: none"> • MCAS 2006, Intro. Physics, p. 473, #3 (I) modify • MCAS 2006, Intro. Physics, p. 473, #6 (F) modify • MCAS 2006, Intro. Physics, p. 475 #9 (F) modify • MCAS 2006, Intro. Physics, p. 481, #25 (F) • MCAS 2006, Intro. Physics, p. 487, #38 (F) modify • MCAS 2007, Intro. Physics, p. 529, #39 (F,S) • MCAS 2008, Intro Physics, p. 522, #32 (I) • NY Regents Jan. 2008, Physics, p. 12, # 63-66 (I,S) • GIZMO™ (East Providence and Middletown only), Fan Cart, Free Fall Tower 	<ul style="list-style-type: none"> • engagement • exploration • explanation • elaboration • evaluation 	<ul style="list-style-type: none"> • www.acs.org • www.acs.org/chemmatters • www.beaconlearningcenter.com (lessons) • www.brainpop.com • www.discovery.com • www.ebecri.org • www.educationworld.com/ (Laws of Motion) • www.efieldtrips.org (energy field trips) • www.funderstanding.com/coaster (force and motion) • www.lessoncorner.com/science (lesson corner) • www.nbclearn.com/olympics (force & motion) • www.polleverywhere.com • www.ride.ri.gov • www.sciencenetlinks.com (benchmarks and lessons) • www.sciencespot.net • www.thinkfinity.org • www.unitedstreaming.com <p>Materials</p> <ul style="list-style-type: none"> • CPO equipment • Flinn: Electromagnet Kit 	<ul style="list-style-type: none"> • Performance/problem-based tasks • Rubrics <ul style="list-style-type: none"> • Inquiry • Informational writing • Tests and quizzes • Writing (ELA Common Core: arguments, informational, responding to informational text)
<p>1 PHYSICAL SCIENCE</p> <p>1.9 Forces of Motion</p> <p>Enduring Knowledge</p> <ul style="list-style-type: none"> • PS 3 - The motion of an object is affected by forces. 	<p>PS3 (9-11)-9 Students demonstrate an understanding of forces and motion by...</p> <p>1.9.1 Solving problems using Newton's Law: $F=ma$.</p> <p>1.9.2 Distinguishing between weight, mass, and inertia.</p> <p>1.9.3 Understanding the causes of momentum (speed and mass).</p> <p>1.9.4 Explaining <u>through words, charts, diagrams, and models the effects of distance and the amount of mass on the gravitational force between objects (e.g. Universal Gravitation Law)</u>. 9a (revisit again in Chemistry, East Providence only)</p> <p>1.9.5 <u>Using Newton's Laws of Motion and the Law of Conservation of Momentum to predict the effect on the motion of objects.</u> 9b</p> <p>1.9.6 BENCHMARK PROBLEMS PS3 (9-11) POC -9 Apply the concepts of inertia, motion, and momentum to predict and explain situations involving forces and motion, including</p>	<p>Facilitates the scientific inquiry method</p> <ul style="list-style-type: none"> • collect data • communicate understanding and ideas • design, conduct, and critique investigations • represent, analyze, and interpret data • experimental design • observe • predict • question and hypothesize • use evidence to draw conclusions 	<p>Textbook Physical Science Concepts in Action with Earth and Space Science, Prentice Hall</p> <p>Supplementary books/material</p> <ul style="list-style-type: none"> • Bill Nye 100 Greatest Discovery Series • Chemistry a Natural Approach, Hsu • Chemistry Concepts and Applications, Glencoe • Chemistry Matter and Change, Glencoe • Current science magazines • Motion Forces and Energy, Prentice Hall • Physical Science - Concepts and Challenges, Pearson • Physics a First Course, CPO <p>Technology</p> <ul style="list-style-type: none"> • Beyond Question Software • Computer lab • Gizmos™ • Laptops • LCD projectors • Scientific calculators • Googledocs.com • http://dsc.discovery.com/ • http://mw.concord.org/modeler/ • http://ri.itest.portal.concord.org/preview/ 	<p>COMMON ASSESSMENTS</p> <ul style="list-style-type: none"> • Assessments Target • Benchmark Problems • Common Tasks • Formative and Summative Assessments <p>SUGGESTED FORMATIVE/SUMMATIVE ASSESSMENTS</p> <ul style="list-style-type: none"> • Anecdotal records • Exhibits • Interviews • Graphic organizers • Journals • Multiple Intelligences assessments e.g.

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GSEs/ STANDARDS	BENCHMARKS East Providence, Middletown and Newport	INSTRUCTIONAL STRATEGIES	RESOURCES	ASSESSMENT EVIDENCE
	<p style="color: red;">stationary objects and collisions. (ASSESSMENT TARGET)</p> <ul style="list-style-type: none"> • NECAP 2008, Inquiry: Driver's Education <ul style="list-style-type: none"> ▪ p. 6-7, # 11 and 12 (I) ▪ p. 8-9, # 13-16 (F) ▪ p. 10, # 17 (S) • NECAP 2009, p. 2, #3 (S) modify • NECAP 2010, p.2, #4 (I,F) • MCAS 2006, Intro Physics, p. 483, #29 (S) • MCAS 2006, Intro Physics, p. 472, #1 (F) modify • MCAS 2006, Intro Physics, p. 473, #4 (F) modify • MCAS 2006, Intro Physics, p. 479, # 22 (F) modify • MCAS 2006, Intro Physics, p. 481, #25 (F) • MCAS 2006, Intro Physics, p. 482, #26 (I) • MCAS 2008, Intro Physics, p. 520, #29 (F) modify • MCAS 2007, Intro Physics, p. 522, #25 (S) • MCAS 2007, Intro Physics, p. 514, #7 (I,F) modify • MCAS 2009, Intro Physics, p. 295, #12 (S) • NY Regents Jan. 2004, Physics, p. 12, # 73 (F,I) • NY Regents Jan. 2004, Physics, p. 12, # 65, 66, 69 (I) • GIZMO™ (East Providence and Middletown only), <i>Air Track and Gravitational Force</i> 	<ul style="list-style-type: none"> • use tools, and techniques <p>Facilitates the learning cycle of science through the 5 E's of</p> <ul style="list-style-type: none"> • engagement • exploration • explanation • elaboration • evaluation 	<ul style="list-style-type: none"> • http://science-class.net/ • http://sciencespot.net/index.html • http://scilinks.nasa.gov/ • http://smithsonianeducation.org/educators • http://www.howstuffworks.com/ • nces.ed.gov/nagtionsreportcard/itmrls • Tweentribune.com (student responding) • www.windowsintowonderland.org (virtual fieldtrips) • www.acs.org • www.acs.org/chemmatters • www.beaconlearningcenter.com (lessons) • www.brainpop.com • www.discovery.com • www.ebecri.org • www.educationworld.com/ (Laws of Motion) • www.efieldtrips.org (energy field trips) • www.funderstanding.com/coaster (force and motion) • www.lessoncorner.com/science (lesson corner) • www.nbclearn.com/olympics (force & motion) • www.polleverywhere.com • www.ride.ri.gov • www.sciencenetlinks.com (benchmarks and lessons) • www.sciencespot.net • www.thinkfinity.org • www.unitedstreaming.com <p>Materials</p> <ul style="list-style-type: none"> • CPO equipment • Flinn: Electromagnet Kit 	<ul style="list-style-type: none"> • role playing - bodily kinesthetic, graphic organizing - visual, collaboration- interpersonal • Oral presentations • Performance/problem-based tasks • Rubrics <ul style="list-style-type: none"> • Inquiry • Informational writing • Tests and quizzes • Writing (ELA Common Core: arguments, informational, responding to informational text)
<p>PHYSICAL SCIENCE</p> <p>1.10 Forces of Motion</p> <p>Enduring Knowledge</p> <ul style="list-style-type: none"> • PS 3 - The motion of an object is affected by forces. 	<p>PS3 (9-11)-10 Students demonstrate an understanding of waves by ...</p> <p>1.10.1 Understanding that energy travels in the form of waves.</p> <p>1.10.2 Identifying the parts of a wave.</p> <ul style="list-style-type: none"> • amplitude • wavelength • period • frequency • crest • trough 	<p>Facilitates the scientific inquiry method</p> <ul style="list-style-type: none"> • collect data • communicate understanding and ideas • design, conduct, and critique investigations • represent, analyze, and interpret data 	<p>Textbook</p> <p>Physical Science Concepts in Action with Earth and Space Science, Prentice Hall</p> <p>Supplementary books/material</p> <ul style="list-style-type: none"> • Bill Nye 100 Greatest Discovery Series • Chemistry a Natural Approach, Hsu • Chemistry Concepts and Applications, Glencoe • Chemistry Matter and Change, Glencoe • Current science magazines • Motion Forces and Energy, Prentice Hall • Physical Science - Concepts and Challenges, Pearson • Physics a First Course, CPO 	<p>COMMON ASSESSMENTS</p> <ul style="list-style-type: none"> • Assessments Target • Benchmark Problems • Common Tasks • Formative and Summative Assessments <p>SUGGESTED FORMATIVE/SUMMATIVE ASSESSMENTS</p> <ul style="list-style-type: none"> • Anecdotal records

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GSEs/ STANDARDS	BENCHMARKS East Providence, Middletown and Newport	INSTRUCTIONAL STRATEGIES	RESOURCES	ASSESSMENT EVIDENCE
	<ul style="list-style-type: none"> • equilibrium/rest position • compression • rarefaction • node • antinode <p>1.10.3 Differentiating between transverse, longitudinal, and surface waves.</p> <p>1.10.4 <u>Investigating examples of wave phenomena (e.g. ripples in water, sound waves, seismic waves).</u> 10a</p> <p>1.10.5 Distinguishing between different behaviors of waves</p> <ul style="list-style-type: none"> • reflection • refraction • diffraction • interference • constructive • destructive <p>1.10.6 <u>Comparing and contrasting electromagnetic waves to mechanical waves.</u> 10b</p> <p>1.10.7 Describing and providing examples of the different waves included in the electromagnetic spectrum.</p> <p>1.10.8 Understanding the basis of visible light and color.</p> <p>1.10.9 <u>Qualifying the relationship between frequency and wavelength of any wave.</u> 10c $v = \lambda f$</p> <p>1.10.10 BENCHMARK PROBLEMS PS3 (9-11) SAE -10 Explain the effects on wavelength and frequency as electromagnetic waves interact with matter (e.g., light diffraction, blue sky). (ASSESSMENT TARGET)</p> <ul style="list-style-type: none"> • MCAS 2006, Intro Physics, p. 472, #2 (I) modify • MCAS 2006, Intro Physics, p. 486, #35 (F) modify • MCAS 2006, Intro Physics, p. 476, #11 (F) 	<ul style="list-style-type: none"> • experimental design • observe • predict • question and hypothesize • use evidence to draw conclusions • use tools, and techniques <p>Facilitates the learning cycle of science through the 5 E's of</p> <ul style="list-style-type: none"> • engagement • exploration • explanation • elaboration • evaluation 	<p>Technology</p> <ul style="list-style-type: none"> • Beyond Question Software • Computer lab • Gizmos™ • Laptops • LCD projectors • Scientific calculators • Googledocs.com • http://dsc.discovery.com/ • http://mw.concord.org/modeler/ • http://ri.itest.portal.concord.org/preview/ • http://science-class.net/ • http://sciencespot.net/index.html • http://scilinks.nasa.gov/ • http://smithsonianeducation.org/educators • http://www.howstuffworks.com/ • nces.ed.gov/nagtionsreportcard/itmrls • Tweentribune.com (student responding) • www.windowstowonderland.org (virtual fieldtrips) • www.acs.org • www.acs.org/chemmatters • www.beaconlearningcenter.com (lessons) • www.brainpop.com • www.discovery.com • www.ebecri.org • www.educationworld.com/ (Laws of Motion) • www.efieldtrips.org (energy field trips) • www.funderstanding.com/coaster (force and motion) • www.lessoncorner.com/science (lesson corner) • www.nbclearn.com/olympics (force & motion) • www.polleverywhere.com • www.ride.ri.gov • www.sciencenetlinks.com (benchmarks and lessons) • www.sciencespot.net • www.thinkfinity.org • www.unitedstreaming.com <p>Materials</p> <ul style="list-style-type: none"> • CPO equipment • Flinn: Electromagnet Kit 	<ul style="list-style-type: none"> • Exhibits • Interviews • Graphic organizers • Journals • Multiple Intelligences assessments e.g. role playing - bodily kinesthetic, graphic organizing - visual, collaboration-interpersonal • Oral presentations • Performance/problem-based tasks • Rubrics <ul style="list-style-type: none"> • Inquiry • Informational writing • Tests and quizzes • Writing (ELA Common Core: arguments, informational, responding to informational text)

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GSEs/ STANDARDS	BENCHMARKS East Providence, Middletown and Newport	INSTRUCTIONAL STRATEGIES	RESOURCES	ASSESSMENT EVIDENCE
	<ul style="list-style-type: none"> • MCAS 2006, Intro Physics, p. 483, #27 (F) modify • MCAS 2006, Intro Physics, p. 477, #13 (S) modify • MCAS 2006, Intro Physics, p. 479, #19 (S) modify • MCAS 2006, Intro Physics, p. 478, #18 (F) modify • MCAS 2007, Intro Physics, p. 514, #7 (I,F) modify • MCAS 2007, Intro Physics, p. 523, #26 (S) • MCAS 2008, Intro Physics, p. 527, #44 (I) • MCAS 2009, Intro Physics, p.312, #45 (I) • MCAS 2010, Intro Physics, p. 352, #32 (I) • GIZMO™ (East Providence and Middletown only), <i>Refraction</i> 			
<p>3. EARTH AND SPACE SCIENCE</p> <p>3.1 Processes and Change</p> <p>Enduring Knowledge</p> <ul style="list-style-type: none"> • ESS1 - The earth and earth materials as we know them today have developed over long periods of time, through continual change processes. 	<p>ESS1 (9-11)- 1 Students demonstrate an understanding of processes and change over time within earth systems by ...</p> <p>3.1.1 Understanding plate tectonics and plate boundaries.</p> <p>3.1.2 Understanding structures of the Earth and geological events that may include:</p> <ul style="list-style-type: none"> • layers of the Earth's interior <ul style="list-style-type: none"> ○ core ○ mantle <ul style="list-style-type: none"> ▪ asthenosphere ▪ lithosphere ▪ mesosphere ○ crust <ul style="list-style-type: none"> ▪ continental ▪ oceanic • earthquake • mountain ranges • seismic waves <ul style="list-style-type: none"> ○ P and S waves • fault • focus • epicenter • volcano (parts and types of volcanoes) 	<p>Facilitates the scientific inquiry method</p> <ul style="list-style-type: none"> • collect data • communicate understanding and ideas • design, conduct, and critique investigations • represent, analyze, and interpret data • experimental design • observe • predict • question and hypothesize • use evidence to draw conclusions • use tools, and techniques <p>Facilitates the learning cycle of science through the</p>	<p>Textbook</p> <p>Physical Science Concepts in Action with Earth and Space Science, Prentice Hall</p> <p>Supplementary books/material</p> <ul style="list-style-type: none"> • AGS Earth Science, Prentice Hall • Bill Nye 100 Greatest Discovery Series • Chemistry a Natural Approach, Hsu • Chemistry Concepts and Applications, Glencoe • Chemistry Matter and Change, Glencoe • Current science magazines • Earth Science Concepts and Challenges, Pearson • Earth Science, Prentice Hall • Earth's Changing Surface, Prentice Hall • Inside Earth, Prentice Hall • Level trade books, e.g. National Geographic • Motion Forces and Energy, Prentice Hall • Physical Science - Concepts and Challenges, Pearson • Physics a First Course, CPO • The Discovery Channel DVDs: <i>Cosmic Collisions</i>, <i>Cosmos Carl Sagan</i> • The Illustrated Brief History of Time, Stephen Hawkins, updated and expanded edition, (class set of books) <p>Technology</p> <ul style="list-style-type: none"> • Beyond Question Software • Computer lab • Gizmos™ • Laptops • LCD projectors • Scientific calculators 	<p>COMMON ASSESSMENTS</p> <ul style="list-style-type: none"> • Assessments Target • Benchmark Problems • Common Tasks • Formative and Summative Assessments <p>SUGGESTED FORMATIVE/ SUMMATIVE ASSESSMENTS</p> <ul style="list-style-type: none"> • Anecdotal records • Exhibits • Interviews • Graphic organizers • Journals • Multiple Intelligences assessments e.g. role playing - bodily kinesthetic, graphic organizing - visual, collaboration- interpersonal • Oral presentations

SCIENCE CURRICULUM GRADE 9 (Physics First or Physical and Earth and Space Science)

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GSEs/ STANDARDS	BENCHMARKS East Providence, Middletown and Newport	INSTRUCTIONAL STRATEGIES	RESOURCES	ASSESSMENT EVIDENCE
	<p>3.1.3 <u>Plotting the location of mountain ranges and recent earthquakes and volcanic eruptions to identify any existing patterns.</u> 1a.</p> <p>3.1.4 BENCHMARK PROBLEMS</p> <p>ESS1 (9-11) INQ+POC- 1 Provided with geologic data (including movement of plates) on a given locale, predict the likelihood for an earth event (e.g., volcanoes, mountain ranges, islands, earthquakes). (ASSESSMENT TARGET)</p> <ul style="list-style-type: none"> • NECAP 2009, Released Science Inquiry Task: Location <ul style="list-style-type: none"> ▪ p. 1-2, #1 (I) ▪ p. 3-7, # 2-5 (F) ▪ p. 8, # 6-8 (S) • NECAP 2009, p. 2, #4 (S) • MCAS 2006, Intro Physics, p. 488, #39 (I,F) • MCAS 2006, Intro Physics, p. 478, #18 (F) • NY Regents Jan. 2009, Physical Science, p. 23, # 77-79 (I,S) • Extended Portfolio Task: "Nuclear Waste Storage" (East Providence only) • GIZMO™ (East Providence and Middletown only), <i>Plate Tectonics, Pangaea</i> 	<p>5 E's of</p> <ul style="list-style-type: none"> • engagement • exploration • explanation • elaboration • evaluation 	<ul style="list-style-type: none"> • Googledocs.com • http://dsc.discovery.com/ • http://mw.concord.org/modeler/ • http://ri.itest.portal.concord.org/preview/ • http://science-class.net/ • http://sciencespot.net/index.html • http://scilinks.nasa.gov/ • http://smithsonianeducation.org/educators • http://www.howstuffworks.com/ • nces.ed.gov/nagtionsreportcard/itmrls • Tweentribune.com (student responding) • www.windowstowonderland.org (virtual fieldtrips) • www.acs.org • www.acs.org/chemmatters • www.beaconlearningcenter.com (lessons) • www.brainpop.com • www.discovery.com • www.ebecri.org • www.educationworld.com/ (Laws of Motion) • www.efieldtrips.org (energy field trips) • www.funderstanding.com/coaster (force and motion) • www.lessoncorner.com/science (lesson corner) • www.nbclearn.com/olympics (force & motion) • www.polleverywhere.com • www.ride.ri.gov • www.sciencenetlinks.com (benchmarks and lessons) • www.sciencespot.net • www.thinkfinity.org • www.unitedstreaming.com <p>Materials</p> <ul style="list-style-type: none"> • CPO equipment • Flinn: Electromagnet Kit 	<ul style="list-style-type: none"> • Performance/problem-based tasks • Rubrics <ul style="list-style-type: none"> • Inquiry • Informational writing • Tests and quizzes • Writing (ELA Common Core: arguments, informational, responding to informational text)
<p>3 EARTH AND SPACE SCIENCE</p> <p>3.2 Processes and Change</p> <p>Enduring Knowledge</p> <ul style="list-style-type: none"> • ESS1 - The 	<p>ESS1 (9-11)-2 Students demonstrate an understanding of processes and change over time within earth systems by ...</p> <p>3.2.1 <u>Using given data (diagrams, charts, narratives, etc.) and advances in technology to explain how scientific knowledge regarding plate tectonics has changed over time.</u> 2a</p> <p>3.2.2 Distinguishing between continental drift and plate tectonics including</p> <ul style="list-style-type: none"> • Alfred Wegener's hypothesis (continental drift) • Pangaea 	<p>Facilitates the scientific inquiry method</p> <ul style="list-style-type: none"> • collect data • communicate understanding and ideas • design, conduct, and critique investigations • represent, analyze, 	<p>Textbook</p> <p>Physical Science Concepts in Action with Earth and Space Science, Prentice Hall</p> <p>Supplementary books/material</p> <ul style="list-style-type: none"> • AGS Earth Science, Prentice Hall • Bill Nye 100 Greatest Discovery Series • Chemistry a Natural Approach, Hsu • Chemistry Concepts and Applications, Glencoe • Chemistry Matter and Change, Glencoe • Current science magazines • Earth Science Concepts and Challenges, Pearson • Earth Science, Prentice Hall 	<p>COMMON ASSESSMENTS</p> <ul style="list-style-type: none"> • Assessments Target • Benchmark Problems • Common Tasks • Formative and Summative Assessments <p>SUGGESTED FORMATIVE/SUMMATIVE</p>

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GSEs/ STANDARDS	BENCHMARKS East Providence, Middletown and Newport	INSTRUCTIONAL STRATEGIES	RESOURCES	ASSESSMENT EVIDENCE
<p>earth and earth materials as we know them today have developed over long periods of time, through continual change processes.</p>	<p>3.2.3 Evaluating the evidence for plate tectonics theory including:</p> <ul style="list-style-type: none"> • sea-floor spreading • plate boundaries <ul style="list-style-type: none"> • transform • divergent • convergent • collisional • mid-ocean ridges • formation of oceanic crust • subduction of ocean plates <p>3.2.4 BENCHMARK PROBLEMS</p> <p>ESS1 (9-11) NOS-2 Trace the development of the theory of plate tectonics or provide supporting geologic/geographic evidence that supports the validity of the theory of plate tectonics. (ASSESSMENT TARGET)</p> <ul style="list-style-type: none"> • NECAP 2008, p. 4, #5 (F) modify • NECAP 2010, p. 2, #5 (S) modify • NY Regents, Aug. 2007, Physical Science/Earth Science, p. 19, # 63-64 (F,S) • NY Regents June 2007, Physical Science/Earth Science p.24, # 77-80 (I) 	<p>and interpret data</p> <ul style="list-style-type: none"> • experimental design • observe • predict • question and hypothesize • use evidence to draw conclusions • use tools, and techniques <p>Facilitates the learning cycle of science through the 5 E's of</p> <ul style="list-style-type: none"> • engagement • exploration • explanation • elaboration • evaluation 	<ul style="list-style-type: none"> • Earth's Changing Surface, Prentice Hall • Inside Earth, Prentice Hall • Level trade books, e.g. National Geographic • Motion Forces and Energy, Prentice Hall • Physical Science - Concepts and Challenges, Pearson • Physics a First Course, CPO • The Discovery Channel DVDs: Cosmic Collisions, Cosmos Carl Sagan • The Illustrated Brief History of Time, Stephen Hawkins, updated and expanded edition, (class set of books) <p>Technology</p> <ul style="list-style-type: none"> • Beyond Question Software • Computer lab • Gizmos™ • Laptops • LCD projectors • Scientific calculators • Googledocs.com • http://dsc.discovery.com/ • http://mw.concord.org/modeler/ • http://ri.itest.portal.concord.org/preview/ • http://science-class.net/ • http://sciencespot.net/index.html • http://scilinks.nasa.gov/ • http://smithsonianeducation.org/educators • http://www.howstuffworks.com/ • nces.ed.gov/nagtionsreportcard/itmrls • Tweentribune.com (student responding) • www.windowsintowonderland.org (virtual fieldtrips) • www.acs.org • www.acs.org/chemmatters • www.beaconlearningcenter.com (lessons) • www.brainpop.com • www.discovery.com • www.ebecri.org • www.educationworld.com/ (Laws of Motion) • www.efieldtrips.org (energy field trips) • www.funderstanding.com/coaster (force and motion) • www.lessoncorner.com/science (lesson corner) • www.nbcllearn.com/olympics (force & motion) • www.polleverywhere.com • www.ride.ri.gov • www.sciencenetlinks.com (benchmarks and lessons) • www.sciencespot.net • www.thinkfinity.org • www.unitedstreaming.com 	<p>ASSESSMENTS</p> <ul style="list-style-type: none"> • Anecdotal records • Exhibits • Interviews • Graphic organizers • Journals • Multiple Intelligences assessments e.g. role playing - bodily kinesthetic, graphic organizing - visual, collaboration-interpersonal • Oral presentations • Performance/problem-based tasks • Rubrics <ul style="list-style-type: none"> • Inquiry • Informational writing • Tests and quizzes • Writing (ELA Common Core: arguments, informational, responding to informational text)

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GSEs/ STANDARDS	BENCHMARKS East Providence, Middletown and Newport	INSTRUCTIONAL STRATEGIES	RESOURCES	ASSESSMENT EVIDENCE
			<p>Materials</p> <ul style="list-style-type: none"> • CPO equipment • Flinn: Electromagnet Kit 	
<p>3 EARTH AND SPACE SCIENCE</p> <p>3.3 Processes and Change</p> <p>Enduring Knowledge</p> <ul style="list-style-type: none"> • ESS1 - The earth and earth materials as we know them today have developed over long periods of time, through continual change processes. 	<p>ESS1 (9-11)-3 Students demonstrate an understanding of processes and change over time within earth systems by ...</p> <p>3.3.1 Understanding the Rock Cycle and types of rocks</p> <ul style="list-style-type: none"> • igneous • sedimentary • metamorphic <p>3.3.2 <u>Explaining how heat (produced by friction, radioactive decay and pressure) affects the Rock Cycle.</u> 3a</p> <p>3.3.3 <u>Explaining how convection circulations of the mantle initiate the movement of the crustal plates which then cause plate movement and seismic activity.</u> 3b</p> <p>3.3.4 <u>Investigating and using evidence to explain that conservation in the amount of earth materials occurs during the Rock Cycle.</u> 3c</p> <p>3.3.5 <u>Explaining how the physical and chemical processes of the Earth alter the crust (e.g. seafloor spreading, hydrologic cycle, weathering, element cycling).</u> 3d</p> <p>3.3.6 BENCHMARK PROBLEMS ESS1 (9-11) SAE+ POC-3 Explain how internal and external sources of heat (energy) fuel geologic processes (e.g., rock cycle, plate tectonics, sea floor spreading). (ASSESSMENT TARGET)</p> <ul style="list-style-type: none"> • NECAP 2008, p. 4, #5 (I,F,S) modify • NECAP 2009, p. 3 #5 (S) modify • NECAP 2010, p. 3, #6 (F) modify • NY Regents June 2007, Physical Science/Earth Science, p. 24, # 77-80 (I,S) • NY Regents June 2009, Physical Science/Earth Science, p. 9, # 33 	<p>Facilitates the scientific inquiry method</p> <ul style="list-style-type: none"> • collect data • communicate understanding and ideas • design, conduct, and critique investigations • represent, analyze, and interpret data • experimental design • observe • predict • question and hypothesize • use evidence to draw conclusions • use tools, and techniques <p>Facilitates the learning cycle of science through the 5 E's of</p> <ul style="list-style-type: none"> • engagement • exploration • explanation • elaboration • evaluation 	<p>Textbook</p> <p><u>Physical Science Concepts in Action with Earth and Space Science</u>, Prentice Hall</p> <p>Supplementary books/material</p> <ul style="list-style-type: none"> • <u>AGS Earth Science</u>, Prentice Hall • Bill Nye 100 Greatest Discovery Series • <u>Chemistry a Natural Approach</u>, Hsu • <u>Chemistry Concepts and Applications</u>, Glencoe • <u>Chemistry Matter and Change</u>, Glencoe • Current science magazines • <u>Earth Science Concepts and Challenges</u>, Pearson • <u>Earth Science</u>, Prentice Hall • <u>Earth's Changing Surface</u>, Prentice Hall • <u>Inside Earth</u>, Prentice Hall • Level trade books, e.g. National Geographic • <u>Motion Forces and Energy</u>, Prentice Hall • <u>Physical Science - Concepts and Challenges</u>, Pearson • <u>Physics a First Course</u>, CPO • The Discovery Channel DVDs: Cosmic Collisions, Cosmos Carl Sagan • <u>The Illustrated Brief History of Time</u>, Stephen Hawkins, updated and expanded edition, (class set of books) <p>Technology</p> <ul style="list-style-type: none"> • Beyond Question Software • Computer lab • Gizmos™ • Laptops • LCD projectors • Scientific calculators • http://dsc.discovery.com/ • http://mw.concord.org/modeler/ • http://ni.itest.portal.concord.org/preview/ • http://science-class.net/ • http://sciencespot.net/index.html • http://scilinks.nasa.gov/ • http://smithsonianeducation.org/educators • http://www.howstuffworks.com/ • nces.ed.gov/nagtionsreportcard/itmrls • Tweentribune.com (student responding) • www.windowsintowonderland.org (virtual fieldtrips) 	<p>COMMON ASSESSMENTS</p> <ul style="list-style-type: none"> • Assessments Target • Benchmark Problems • Common Tasks • Formative and Summative Assessments <p>SUGGESTED FORMATIVE/ SUMMATIVE ASSESSMENTS</p> <ul style="list-style-type: none"> • Anecdotal records • Exhibits • Interviews • Graphic organizers • Journals • Multiple Intelligences assessments e.g. role playing - bodily kinesthetic, graphic organizing - visual, collaboration- interpersonal • Oral presentations • Performance/problem-based tasks • Rubrics <ul style="list-style-type: none"> • Inquiry • Informational writing • Tests and quizzes • Writing (ELA Common

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GSEs/ STANDARDS	BENCHMARKS East Providence, Middletown and Newport	INSTRUCTIONAL STRATEGIES	RESOURCES	ASSESSMENT EVIDENCE
	<p>(I,F,S) modify</p> <ul style="list-style-type: none"> GIZMO™ (East Providence and Middletown only), <i>Rock Cycle</i> 		<ul style="list-style-type: none"> www.acs.org www.acs.org/chemmatters www.beaconlearningcenter.com (lessons) www.brainpop.com www.discovery.com www.ebecri.org www.educationworld.com/ (Laws of Motion) www.efieldtrips.org (energy field trips) www.funderstanding.com/coaster (force and motion) www.lessoncorner.com/science (lesson corner) www.nbclearn.com/olympics (force & motion) www.polleverywhere.com www.ride.ri.gov www.sciencenetlinks.com (benchmarks and lessons) www.sciencespot.net www.thinkfinity.org www.unitedstreaming.com <p>Materials</p> <ul style="list-style-type: none"> CPO equipment Flinn: Electromagnet Kit 	<p>Core: arguments, informational, responding to informational text)</p>
<p>3 EARTH AND SPACE SCIENCE</p> <p>3.4 Processes and change</p> <p>Enduring Knowledge</p> <ul style="list-style-type: none"> ESS1 - The earth and earth materials as we know them today have developed over long periods of time, through continual change processes. 	<p>ESS1 (9-11)–4 Students demonstrate an understanding of processes and change over time by ...</p> <p>3.4.1 <u>Describing various dating methods to determine the age of different rock structures.</u></p> <ul style="list-style-type: none"> carbon-14 <p>3.4.2 BENCHMARK PROBLEMS ESS1 (9-11) INQ+POC+ MAS–4 Relate how geologic time is determined using various dating methods (e.g. radioactive decay, rock sequences, fossil records). (ASSESSMENT TARGET)</p> <ul style="list-style-type: none"> NECAP 2008, p. 4 #6 (S) modify NECAP 2009, p. 3 #5 (S) modify NECAP 2010, p. 3, #6 (I,F,S) modify NY Regents June 2008, Physical Science/Earth Science, p. 20, # 66-67 (S) 	<p>Facilitates the scientific inquiry method</p> <ul style="list-style-type: none"> collect data communicate understanding and ideas design, conduct, and critique investigations represent, analyze, and interpret data experimental design observe predict question and hypothesize use evidence to draw conclusions 	<p>Textbook Physical Science Concepts in Action with Earth and Space Science, Prentice Hall</p> <p>Supplementary books/material</p> <ul style="list-style-type: none"> AGS Earth Science, Prentice Hall Bill Nye 100 Greatest Discovery Series Chemistry a Natural Approach, Hsu Chemistry Concepts and Applications, Glencoe Chemistry Matter and Change, Glencoe Current science magazines Earth Science Concepts and Challenges, Pearson Earth Science, Prentice Hall Earth's Changing Surface, Prentice Hall Inside Earth, Prentice Hall Level trade books, e.g. National Geographic Motion Forces and Energy, Prentice Hall Physical Science - Concepts and Challenges, Pearson Physics a First Course, CPO The Discovery Channel DVDs: Cosmic Collisions, Cosmos Carl Sagan The Illustrated Brief History of Time, Stephen Hawkins, updated and expanded edition, (class set of books) 	<p>COMMON ASSESSMENTS</p> <ul style="list-style-type: none"> Assessments Target Benchmark Problems Common Tasks Formative and Summative Assessments <p>SUGGESTED FORMATIVE/ SUMMATIVE ASSESSMENTS</p> <ul style="list-style-type: none"> Anecdotal records Exhibits Interviews Graphic organizers Journals Multiple Intelligences assessments e.g.

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GSEs/ STANDARDS	BENCHMARKS East Providence, Middletown and Newport	INSTRUCTIONAL STRATEGIES	RESOURCES	ASSESSMENT EVIDENCE
	<ul style="list-style-type: none"> <i>GIZMO™ (East Providence and Middletown only), Half Life</i> 	<ul style="list-style-type: none"> use tools, and techniques <p>Facilitates the learning cycle of science through the 5 E's of</p> <ul style="list-style-type: none"> engagement exploration explanation elaboration evaluation 	<p>Technology</p> <ul style="list-style-type: none"> Beyond Question Software Computer lab Gizmos™ Laptops LCD projectors Scientific calculators Googledocs.com http://dsc.discovery.com/ http://mw.concord.org/modeler/ http://ri.itest.portal.concord.org/preview/ http://science-class.net/ http://sciencespot.net/index.html http://scilinks.nasa.gov/ http://smithsonianeducation.org/educators http://www.howstuffworks.com/ nces.ed.gov/nagtionsreportcard/itmrls Tweentribune.com (student responding) www.windowsintowonderland.org (virtual fieldtrips) www.acs.org www.acs.org/chemmatters www.beaconlearningcenter.com (lessons) www.brainpop.com www.discovery.com www.ebecri.org www.educationworld.com/ (Laws of Motion) www.efieldtrips.org (energy field trips) www.funderstanding.com/coaster (force and motion) www.lessoncorner.com/science (lesson corner) www.nbclearn.com/olympics (force & motion) www.polleverywhere.com www.ride.ri.gov www.sciencenetlinks.com (benchmarks and lessons) www.sciencespot.net www.thinkfinity.org www.unitedstreaming.com <p>Materials</p> <ul style="list-style-type: none"> CPO equipment Flinn: Electromagnet Kit 	<ul style="list-style-type: none"> role playing - bodily kinesthetic, graphic organizing - visual, collaboration- interpersonal Oral presentations Performance/problem-based tasks Rubrics <ul style="list-style-type: none"> Inquiry Informational writing Tests and quizzes Writing (ELA Common Core: arguments, informational, responding to informational text)
<p>3. EARTH AND SPACE SCIENCE</p> <p>3.5 Evolution of</p>	<p>ESS3 (9-11)-5 Students demonstrate an understanding of the origins and evolution of galaxies and the universe by...</p> <p>3.5.1 <u>Using appropriate prompts (diagrams, charts, narratives, etc.) students</u></p>	<p>Facilitates the scientific inquiry method</p> <ul style="list-style-type: none"> collect data communicate 	<p>Textbook</p> <p>Physical Science Concepts in Action with Earth and Space Science, Prentice Hall</p> <p>Supplementary books/material</p> <ul style="list-style-type: none"> AGS Earth Science, Prentice Hall 	<p>COMMON ASSESSMENTS</p> <ul style="list-style-type: none"> Assessments Target Benchmark Problems Common Tasks Formative and

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GSEs/ STANDARDS	BENCHMARKS East Providence, Middletown and Newport	INSTRUCTIONAL STRATEGIES	RESOURCES	ASSESSMENT EVIDENCE
<p>galaxies and the universe</p> <p>Enduring Knowledge</p> <ul style="list-style-type: none"> ESS3 - The origin and evolution of galaxies and the universe demonstrate fundamental principles of physical science across vast distances and time 	<p><u>will explain how scientific knowledge regarding the structure of the universe has changed over time due to advances in technology which accumulates new evidence to redefine scientific theories and ideas.</u> 5a</p> <p>3.5.2 BENCHMARK PROBLEMS</p> <p>ESS3 (9-11) NOS-5 Explain how scientific theories about the structure of the universe have been advanced through the use of sophisticated technology (e.g., space probes; visual, radio and x-ray telescopes. (ASSESSMENT TARGET)</p> <ul style="list-style-type: none"> NECAP 2008, p. 4, #7 (I) modify 	<p>understanding and ideas</p> <ul style="list-style-type: none"> design, conduct, and critique investigations represent, analyze, and interpret data experimental design observe predict question and hypothesize use evidence to draw conclusions use tools, and techniques <p>Facilitates the learning cycle of science through the 5 E's of</p> <ul style="list-style-type: none"> engagement exploration explanation elaboration evaluation 	<ul style="list-style-type: none"> Bill Nye 100 Greatest Discovery Series Chemistry a Natural Approach, Hsu Chemistry Concepts and Applications, Glencoe Chemistry Matter and Change, Glencoe Current science magazines Earth Science Concepts and Challenges, Pearson Earth Science, Prentice Hall Earth's Changing Surface, Prentice Hall Inside Earth, Prentice Hall Level trade books, e.g. National Geographic Motion Forces and Energy, Prentice Hall Physical Science - Concepts and Challenges, Pearson Physics a First Course, CPO The Discovery Channel DVDs: Cosmic Collisions, Cosmos Carl Sagan The Illustrated Brief History of Time, Stephen Hawkins, updated and expanded edition, (class set of books) <p>Technology</p> <ul style="list-style-type: none"> Beyond Question Software Computer lab Gizmos™ Laptops LCD projectors Scientific calculators Googledocs.com http://dsc.discovery.com/ http://mw.concord.org/modeler/ http://ri.itest.portal.concord.org/preview/ http://science-class.net/ http://sciencespot.net/index.html http://scilinks.nasa.gov/ http://smithsonianeducation.org/educators http://www.howstuffworks.com/ nces.ed.gov/nagtionsreportcard/itmrls Tweentribune.com (student responding) www.windowsintowonderland.org (virtual fieldtrips) www.acs.org www.acs.org/chemmatters www.beaconlearningcenter.com (lessons) www.brainpop.com www.discovery.com www.ebecri.org www.educationworld.com/ (Laws of Motion) www.efieldtrips.org (energy field trips) www.funderstanding.com/coaster (force and motion) www.lessoncorner.com/science (lesson corner) 	<p style="text-align: center;">Summative Assessments</p> <p>SUGGESTED FORMATIVE/SUMMATIVE ASSESSMENTS</p> <ul style="list-style-type: none"> Anecdotal records Exhibits Interviews Graphic organizers Journals Multiple Intelligences assessments e.g. role playing - bodily kinesthetic, graphic organizing - visual, collaboration- interpersonal Oral presentations Performance/problem-based tasks Rubrics <ul style="list-style-type: none"> Inquiry Informational writing Tests and quizzes Writing (ELA Common Core: arguments, informational, responding to informational text)

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GSEs/ STANDARDS	BENCHMARKS East Providence, Middletown and Newport	INSTRUCTIONAL STRATEGIES	RESOURCES	ASSESSMENT EVIDENCE
			<ul style="list-style-type: none"> • www.nbclearn.com/olympics (force & motion) • www.polleverywhere.com • www.ride.ri.gov • www.sciencenetlinks.com (benchmarks and lessons) • www.sciencespot.net • www.thinkfinity.org • www.unitedstreaming.com <p>Materials</p> <ul style="list-style-type: none"> • CPO equipment • Flinn: Electromagnet Kit 	
<p>3. EARTH AND SPACE SCIENCE</p> <p>3.6 "Big Bang" Theory</p> <p>Enduring Knowledge</p> <ul style="list-style-type: none"> • ESS3 - The origin and evolution of galaxies and the universe demonstrate fundamental principles of physical science across vast distances and time 	<p><i>ESS3 (9-11)-6 Students demonstrate an understanding of the formation of the universe by...</i></p> <p>3.6.1 Explaining the cause and reason for the Doppler Effect.</p> <p>3.6.2 Relating the electromagnetic spectrum to Hubble's Law.</p> <p>3.6.3 Interpreting blue and red shift data.</p> <p>3.6.4 Using <u>data (diagrams, charts, narratives, etc.) to explain how the "Big Bang" theory has developed over time citing evidence to support its occurrence (Doppler Effect/red shift).</u> 6a</p> <p>3.6.5 BENCHMARK PROBLEMS ESS3 (9-11) NOS-6 Provide scientific evidence that supports or refutes the "Big Bang" theory of how the universe was formed. (ASSESSMENT TARGET)</p> <ul style="list-style-type: none"> • NECAP 2010, p.3, #7 (S) modify • NECAP 2008, Practice Test, p.5, #11 (S) modify • MCAS 2006, Intro to Physics, p. 477, #13 (F) modify 	<p>Facilitates the scientific inquiry method</p> <ul style="list-style-type: none"> • collect data • communicate understanding and ideas • design, conduct, and critique investigations • represent, analyze, and interpret data • experimental design • observe • predict • question and hypothesize • use evidence to draw conclusions • use tools, and techniques <p>Facilitates the learning cycle of science through the 5 E's of</p> <ul style="list-style-type: none"> • engagement • exploration 	<p>Textbook Physical Science Concepts in Action with Earth and Space Science, Prentice Hall</p> <p>Supplementary books/material</p> <ul style="list-style-type: none"> • AGS Earth Science, Prentice Hall • Bill Nye 100 Greatest Discovery Series • Chemistry a Natural Approach, Hsu • Chemistry Concepts and Applications, Glencoe • Chemistry Matter and Change, Glencoe • Current science magazines • Earth Science Concepts and Challenges, Pearson • Earth Science, Prentice Hall • Earth's Changing Surface, Prentice Hall • Inside Earth, Prentice Hall • Level trade books, e.g. National Geographic • Motion Forces and Energy, Prentice Hall • Physical Science - Concepts and Challenges, Pearson • Physics a First Course, CPO • The Discovery Channel DVDs: Cosmic Collisions, Cosmos Carl Sagan • The Illustrated Brief History of Time, Stephen Hawking, updated and expanded edition, (class set of books) <p>Technology</p> <ul style="list-style-type: none"> • Beyond Question Software • Computer lab • Gizmos™ • Laptops • LCD projectors • Scientific calculators • Googledocs.com • http://dsc.discovery.com/ • http://mw.concord.org/modeler/ 	<p>COMMON ASSESSMENTS</p> <ul style="list-style-type: none"> • Assessments Target • Benchmark Problems • Common Tasks • Formative and Summative Assessments <p>SUGGESTED FORMATIVE/SUMMATIVE ASSESSMENTS</p> <ul style="list-style-type: none"> • Anecdotal records • Exhibits • Interviews • Graphic organizers • Journals • Multiple Intelligences assessments e.g. role playing - bodily kinesthetic, graphic organizing - visual, collaboration- interpersonal • Oral presentations • Performance/problem-based tasks

SCIENCE CURRICULUM GRADE 9 (Physics First or Physical and Earth and Space Science)

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GSEs/ STANDARDS	BENCHMARKS East Providence, Middletown and Newport	INSTRUCTIONAL STRATEGIES	RESOURCES	ASSESSMENT EVIDENCE
		<ul style="list-style-type: none"> • explanation • elaboration • evaluation 	<ul style="list-style-type: none"> • http://ri.itest.portal.concord.org/preview/ • http://science-class.net/ • http://sciencespot.net/index.html • http://scilinks.nasa.gov/ • http://smithsonianeducation.org/educators • http://www.howstuffworks.com/ • nces.ed.gov/nagtionsreportcard/itmrls • Tweentribune.com (student responding) • www.windowsintowonderland.org (virtual fieldtrips) • www.acs.org • www.acs.org/chemmatters • www.beaconlearningcenter.com (lessons) • www.brainpop.com • www.discovery.com • www.ebecri.org • www.educationworld.com/ (Laws of Motion) • www.efieldtrips.org (energy field trips) • www.funderstanding.com/coaster (force and motion) • www.lessoncorner.com/science (lesson corner) • www.nbclearn.com/olympics (force & motion) • www.polvereverywhere.com • www.ride.ri.gov • www.sciencenetlinks.com (benchmarks and lessons) • www.sciencespot.net • www.thinkfinity.org • www.unitedstreaming.com <p>Materials</p> <ul style="list-style-type: none"> • CPO equipment • Flinn: Electromagnet Kit 	<ul style="list-style-type: none"> • Rubrics <ul style="list-style-type: none"> • Inquiry • Informational writing • Tests and quizzes • Writing (ELA Common Core: arguments, informational, responding to informational text)
<p>3. EARTH AND SPACE SCIENCE</p> <p>3.7 Waves</p> <p>Enduring Knowledge</p> <ul style="list-style-type: none"> • ESS3 - The origin and evolution of galaxies and the universe 	<p>ESS3 (9-11)-7 Students demonstrate an understanding of processes and change over time within the system of the universe (Scale, Distances, Star Formation, Theories, Instrumentation) by...</p> <p>3.7.1 Understanding the electromagnetic waves and how they relate to cosmic background radiation</p> <p>3.7.2 Describing the parts and behaviors of waves, e.g.</p> <ul style="list-style-type: none"> • parts <ul style="list-style-type: none"> ○ amplitude ○ frequency ○ wave lengths 	<p>Facilitates the scientific inquiry method</p> <ul style="list-style-type: none"> • collect data • communicate understanding and ideas • design, conduct, and critique investigations • represent, analyze, and interpret data • experimental 	<p>Textbook</p> <p><u>Physical Science Concepts in Action with Earth and Space Science</u>, Prentice Hall</p> <p>Supplementary books/material</p> <ul style="list-style-type: none"> • <u>AGS Earth Science</u>, Prentice Hall • Bill Nye 100 Greatest Discovery Series • <u>Chemistry a Natural Approach</u>, Hsu • <u>Chemistry Concepts and Applications</u>, Glencoe • <u>Chemistry Matter and Change</u>, Glencoe • Current science magazines • <u>Earth Science Concepts and Challenges</u>, Pearson • <u>Earth Science</u>, Prentice Hall • <u>Earth's Changing Surface</u>, Prentice Hall • <u>Inside Earth</u>, Prentice Hall • Level trade books, e.g. National Geographic 	<p>COMMON ASSESSMENTS</p> <ul style="list-style-type: none"> • Assessments Target • Benchmark Problems • Common Tasks • Formative and Summative Assessments <p>SUGGESTED FORMATIVE/SUMMATIVE ASSESSMENTS</p> <ul style="list-style-type: none"> • Anecdotal records

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<p>demonstrate fundamental principles of physical science across vast distances and time</p>	<ul style="list-style-type: none"> • behaviors <ul style="list-style-type: none"> ○ diffraction ○ refraction ○ reflection ○ interference <p>3.7.3 <u>Applying the properties of waves/particles to explain the movement, location, and composition of the stars and other bodies in the universe.</u> 7a</p> <p>3.7.4 BENCHMARK PROBLEMS ESS3 (9-11) SAE -7 Based on the nature of electromagnetic waves, explain the movement and location of objects in the universe or their composition (e.g., red shift, blue shift, line spectra) (ASSESSMENT TARGET)</p> <ul style="list-style-type: none"> • NECAP 2010, p. 3, #7 (S) modify • GIZMO™ (East Providence and Middletown only), <i>Star Spectra</i> 	<p>design</p> <ul style="list-style-type: none"> • observe • predict • question and hypothesize • use evidence to draw conclusions • use tools, and techniques <p>Facilitates the learning cycle of science through the 5 E's of</p> <ul style="list-style-type: none"> • engagement • exploration • explanation • elaboration • evaluation 	<ul style="list-style-type: none"> • Motion Forces and Energy, Prentice Hall • Physical Science - Concepts and Challenges, Pearson • Physics a First Course, CPO • The Discovery Channel DVDs: Cosmic Collisions, Cosmos Carl Sagan • The Illustrated Brief History of Time, Stephen Hawkins, updated and expanded edition, (class set of books) <p>Technology</p> <ul style="list-style-type: none"> • Beyond Question Software • Computer lab • Gizmos™ • Laptops • LCD projectors • Scientific calculators • Googledocs.com • http://dsc.discovery.com/ • http://mw.concord.org/modeler/ • http://ri.itest.portal.concord.org/preview/ • http://science-class.net/ • http://sciencespot.net/index.html • http://scilinks.nasa.gov/ • http://smithsonianeducation.org/educators • http://www.howstuffworks.com/ • nces.ed.gov/nagtionsreportcard/itmrls • www.twentribune.com (student responding) • www.windowstowonderland.org (virtual fieldtrips) • www.acs.org • www.acs.org/chemmatters • www.beaconlearningcenter.com (lessons) • www.brainpop.com • www.discovery.com • www.ebecri.org • www.educationworld.com/ (Laws of Motion) • www.efieldtrips.org (energy field trips) • www.funderstanding.com/coaster (force and motion) • www.lessoncorner.com/science (lesson corner) • www.nbclearn.com/olympics (force & motion) • www.polleverywhere.com • www.ride.ri.gov • www.sciencenetlinks.com (benchmarks and lessons) • www.sciencespot.net • www.thinkfinity.org • www.unitedstreaming.com <p>Materials</p> <ul style="list-style-type: none"> • CPO equipment 	<ul style="list-style-type: none"> • Exhibits • Interviews • Graphic organizers • Journals • Multiple Intelligences assessments e.g. role playing - bodily kinesthetic, graphic organizing - visual, collaboration- interpersonal • Oral presentations • Performance/problem-based tasks • Rubrics <ul style="list-style-type: none"> • Inquiry • Informational writing • Tests and quizzes • Writing (ELA Common Core: arguments, informational, responding to informational text)

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GSEs/ STANDARDS	BENCHMARKS East Providence, Middletown and Newport	INSTRUCTIONAL STRATEGIES	RESOURCES	ASSESSMENT EVIDENCE
			<ul style="list-style-type: none"> • Flinn: Electromagnet Kit 	
<p>3. EARTH AND SPACE SCIENCE</p> <p>3.8 Life cycle of stars</p> <p>Enduring Knowledge</p> <ul style="list-style-type: none"> • ESS3 - The origin and evolution of galaxies and the universe demonstrate fundamental principles of physical science across vast distances and time 	<p>ESS3 (9-11)-8 Students demonstrate an understanding of the life cycle of stars by ...</p> <p>3.8.1 Relating the process of star formation to the size of the star and including the interaction of the force of gravity, fusion, and energy release in the development of the star identifying and describing the characteristics common to most stars in the universe. 8a</p> <p>3.8.2 Describing the ongoing processes involved in star formation, their life cycles and their destruction. 8b</p> <p>3.8.3 BENCHMARK PROBLEMS ESS3 (9-11) POC+SAE - 8 Explain the relationships between or among the energy produced from nuclear reactions, the origin of elements, and the life cycle of stars. (ASSESSMENT TARGET)</p> <ul style="list-style-type: none"> • NECAP 2008, p. 4, #7 (I,F) modify • NECAP 2009, p. 3, #6 (I) modify 	<p>Facilitates the scientific inquiry method</p> <ul style="list-style-type: none"> • collect data • communicate understanding and ideas • design, conduct, and critique investigations • represent, analyze, and interpret data • experimental design • observe • predict • question and hypothesize • use evidence to draw conclusions • use tools, and techniques <p>Facilitates the learning cycle of science through the 5 E's of</p> <ul style="list-style-type: none"> • engagement • exploration • explanation • elaboration • evaluation 	<p>Textbook Physical Science Concepts in Action with Earth and Space Science, Prentice Hall</p> <p>Supplementary books/material</p> <ul style="list-style-type: none"> • AGS Earth Science, Prentice Hall • Bill Nye 100 Greatest Discovery Series • Chemistry a Natural Approach, Hsu • Chemistry Concepts and Applications, Glencoe • Chemistry Matter and Change, Glencoe • Current science magazines • Earth Science Concepts and Challenges, Pearson • Earth Science, Prentice Hall • Earth's Changing Surface, Prentice Hall • Inside Earth, Prentice Hall • Level trade books, e.g. National Geographic • Motion Forces and Energy, Prentice Hall • Physical Science - Concepts and Challenges, Pearson • Physics a First Course, CPO • The Discovery Channel DVDs: Cosmic Collisions, Cosmos Carl Sagan • The Illustrated Brief History of Time, Stephen Hawkins, updated and expanded edition, (class set of books) <p>Technology</p> <ul style="list-style-type: none"> • Beyond Question Software • Computer lab • Gizmos™ • Laptops • LCD projectors • Scientific calculators • Googledocs.com • http://dsc.discovery.com/ • http://mw.concord.org/modeler/ • http://ri.itest.portal.concord.org/preview/ • http://science-class.net/ • http://sciencespot.net/index.html • http://scilinks.nasa.gov/ • http://smithsonianeducation.org/educators • http://www.howstuffworks.com/ • nces.ed.gov/nagtionsreportcard/itmrls • Tweentribune.com (student responding) • www.windowstowonderland.org (virtual fieldtrips) • www.acs.org 	<p>COMMON ASSESSMENTS</p> <ul style="list-style-type: none"> • Assessments Target • Benchmark Problems • Common Tasks • Formative and Summative Assessments <p>SUGGESTED FORMATIVE/ SUMMATIVE ASSESSMENTS</p> <ul style="list-style-type: none"> • Anecdotal records • Exhibits • Interviews • Graphic organizers • Journals • Multiple Intelligences assessments e.g. role playing - bodily kinesthetic, graphic organizing - visual, collaboration- interpersonal • Oral presentations • Performance/problem-based tasks • Rubrics <ul style="list-style-type: none"> • Inquiry • Informational writing • Tests and quizzes • Writing (ELA Common Core: arguments,

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GSEs/ STANDARDS	BENCHMARKS East Providence, Middletown and Newport	INSTRUCTIONAL STRATEGIES	RESOURCES	ASSESSMENT EVIDENCE
			<ul style="list-style-type: none"> • www.acs.org/chemmatters • www.beaconlearningcenter.com (lessons) • www.brainpop.com • www.discovery.com • www.ebecri.org • www.educationworld.com/ (Laws of Motion) • www.efieldtrips.org (energy field trips) • www.funderstanding.com/coaster (force and motion) • www.lessoncorner.com/science (lesson corner) • www.nbclearn.com/olympics (force & motion) • www.polleverywhere.com • www.ride.ri.gov • www.sciencenetlinks.com (benchmarks and lessons) • www.sciencespot.net • www.thinkfinity.org • www.unitedstreaming.com <p>Materials</p> <ul style="list-style-type: none"> • CPO equipment • Flinn: Electromagnet Kit 	<p>informational, responding to informational text)</p>
<p>4 CONSTRUCT OF INQUIRY</p> <p>4.1 Formulating Questions and Hypothesizing</p>	<p>Students demonstrate an understanding of the scientific inquiry method by:</p> <p>4.1.1 Analyze information from observations, research, or experimental data for the purpose of formulating a question, hypothesis, or prediction.</p> <ul style="list-style-type: none"> • analyze scientific data and use that information to generate a testable question, hypothesis, or prediction that includes a cause and effect relationship generate a question, hypothesis or a prediction which is reasonable in terms of available evidence • show connections between hypothesis or prediction and scientific knowledge, observations, or research • support their question, hypothesis, or prediction with a scientific explanation • refine or refocus a question or hypothesis using experimental data, research, or scientific knowledge <p>4.1.2 Construct a coherent argument in support of a question, hypothesis, prediction</p> <ul style="list-style-type: none"> • identify evidence that supports or does not support a question, hypothesis or prediction • explain the cause and effect relationship within the hypothesis 	<p>Facilitates the scientific inquiry method</p> <ul style="list-style-type: none"> • collect data • communicate understanding and ideas • design, conduct, and critique investigations • represent, analyze, and interpret data • experimental design • observe • predict • question and hypothesize • use evidence to draw conclusions • use tools, and 	<p>Textbook Physical Science Concepts in Action with Earth and Space Science, Prentice Hall</p> <p>Supplementary books/material</p> <ul style="list-style-type: none"> • AGS Earth Science, Prentice Hall • Bill Nye 100 Greatest Discovery Series • Chemistry a Natural Approach, Hsu • Chemistry Concepts and Applications, Glencoe • Chemistry Matter and Change, Glencoe • Current science magazines • Earth Science Concepts and Challenges, Pearson • Earth Science, Prentice Hall • Earth's Changing Surface, Prentice Hall • Inside Earth, Prentice Hall • Level trade books, e.g. National Geographic • Motion Forces and Energy, Prentice Hall • Physical Science - Concepts and Challenges, Pearson • Physics a First Course, CPO • The Discovery Channel DVDs: Cosmic Collisions, Cosmos Carl Sagan • The Illustrated Brief History of Time, Stephen Hawking, updated and expanded edition, (class set of books) 	<p>COMMON ASSESSMENTS</p> <ul style="list-style-type: none"> • Assessments Target • Benchmark Problems • Common Tasks • Formative and Summative Assessments <p>SUGGESTED FORMATIVE/SUMMATIVE ASSESSMENTS</p> <ul style="list-style-type: none"> • Anecdotal records • Exhibits • Interviews • Graphic organizers • Journals • Multiple Intelligences assessments e.g. role playing -

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	<p>or prediction</p> <ul style="list-style-type: none"> use a logical argument to support the hypothesis or prediction using scientific concepts, principles, or observations <p>4.1.3 Make and describe observations in order to ask questions, hypothesize, make predictions related to topic.</p> <ul style="list-style-type: none"> connect observations and data to a question, hypothesis, or prediction 	<p>techniques</p> <p>Facilitates the learning cycle of science through the 5 E's of</p> <ul style="list-style-type: none"> engagement exploration explanation elaboration evaluation 	<p>Technology</p> <ul style="list-style-type: none"> Beyond Question Software Computer lab Gizmos™ Laptops LCD projectors Scientific calculators Googledocs.com http://dsc.discovery.com/ http://mw.concord.org/modeler/ http://ri.itest.portal.concord.org/preview/ http://science-class.net/ http://sciencespot.net/index.html http://scilinks.nasa.gov/ http://smithsonianeducation.org/educators http://www.howstuffworks.com/ nces.ed.gov/nagtionsreportcard/itmrls Tweentribune.com (student responding) www.windowsintowonderland.org (virtual fieldtrips) www.acs.org www.acs.org/chemmatters www.beaconlearningcenter.com (lessons) www.brainpop.com www.discovery.com www.ebecri.org www.educationworld.com/ (Laws of Motion) www.efieldtrips.org (energy field trips) www.funderstanding.com/coaster (force and motion) www.lessoncorner.com/science (lesson corner) www.nbclearn.com/olympics (force & motion) www.polleverywhere.com www.ride.ri.gov www.sciencenetlinks.com (benchmarks and lessons) www.sciencespot.net www.thinkfinity.org www.unitedstreaming.com <p>Materials</p> <ul style="list-style-type: none"> CPO equipment Flinn: Electromagnet Kit 	<p>bodily kinesthetic, graphic organizing - visual, collaboration-interpersonal</p> <ul style="list-style-type: none"> Oral presentations Performance/problem-based tasks Rubrics <ul style="list-style-type: none"> Inquiry Informational writing Tests and quizzes Writing (ELA Common Core: arguments, informational, responding to informational text)
<p>4 CONSTRUCT OF INQUIRY</p> <p>4.2 Planning and Critiquing</p>	<p>Students demonstrate an understanding of the scientific inquiry method by:</p> <p>4.2.1 Identify information/evidence that needs to be collected in order to answer the question, hypothesis, prediction</p>	<p>Facilitates the scientific inquiry method</p> <ul style="list-style-type: none"> collect data communicate 	<p>Textbook <i>Physical Science Concepts in Action with Earth and Space Science</i>, Prentice Hall</p> <p>Supplementary books/material</p> <ul style="list-style-type: none"> AGS Earth Science, Prentice Hall 	<p>COMMON ASSESSMENTS</p> <ul style="list-style-type: none"> Assessments Target Benchmark Problems Common Tasks Formative and

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GSEs/ STANDARDS	BENCHMARKS East Providence, Middletown and Newport	INSTRUCTIONAL STRATEGIES	RESOURCES	ASSESSMENT EVIDENCE
<p>Investigations</p>	<ul style="list-style-type: none"> • answer the question, or support or refute the hypothesis or prediction • identify the variables that may affect the outcome of the experiment or investigation • design an appropriate format for recording data and include relevant technology • evaluate multiple data sets to determine which data are relevant to the question, hypothesis or prediction <p>4.2.2 Develop an organized and logical approach to investigating the question, including controlling variables</p> <ul style="list-style-type: none"> • develop a procedure to gather sufficient evidence (including multiple trials) to answer the question, or test the hypothesis, or prediction; • develop a procedure that lists steps sequentially and logically and incorporates the use of appropriate technology • explain which variable will be manipulated or changed (independent) and which variable will be affected by those changes (dependent) • identify variables that will be kept constant throughout the investigation • distinguish between the control group and the experimental group in an investigation • use scientific terminology that supports the identified procedures • evaluate the organization and logical approach of a given procedure including variables, controls, materials, and tools. • evaluate investigation design, including opportunities to collect appropriate and sufficient data <p>4.2.3 Provide reasoning for appropriateness of materials, tools, procedures, and scale used in the investigation</p> <ul style="list-style-type: none"> • explain why the materials, tools, procedure, or scale for a task are appropriate or inappropriate for the investigation • evaluate the investigation for the safe and ethical considerations of the materials, tools, and procedures. 	<p>understanding and ideas</p> <ul style="list-style-type: none"> • design, conduct, and critique investigations • represent, analyze, and interpret data • experimental design • observe • predict • question and hypothesize • use evidence to draw conclusions • use tools, and techniques <p>Facilitates the learning cycle of science through the 5 E's of</p> <ul style="list-style-type: none"> • engagement • exploration • explanation • elaboration • evaluation 	<ul style="list-style-type: none"> • Bill Nye 100 Greatest Discovery Series • Chemistry a Natural Approach, Hsu • Chemistry Concepts and Applications, Glencoe • Chemistry Matter and Change, Glencoe • Current science magazines • Earth Science Concepts and Challenges, Pearson • Earth Science, Prentice Hall • Earth's Changing Surface, Prentice Hall • Inside Earth, Prentice Hall • Level trade books, e.g. National Geographic • Motion Forces and Energy, Prentice Hall • Physical Science - Concepts and Challenges, Pearson • Physics a First Course, CPO • The Discovery Channel DVDs: Cosmic Collisions, Cosmos Carl Sagan • The Illustrated Brief History of Time, Stephen Hawkins, updated and expanded edition, (class set of books) <p>Technology</p> <ul style="list-style-type: none"> • Beyond Question Software • Computer lab • Gizmos™ • Laptops • LCD projectors • Scientific calculators • Googledocs.com • http://dsc.discovery.com/ • http://mw.concord.org/modeler/ • http://ri.itest.portal.concord.org/preview/ • http://science-class.net/ • http://sciencespot.net/index.html • http://scilinks.nasa.gov/ • http://smithsonianeducation.org/educators • http://www.howstuffworks.com/ • nces.ed.gov/nagtionsreportcard/itmrls • Tweentribune.com (student responding) • www.windowsintowonderland.org (virtual fieldtrips) • www.acs.org • www.acs.org/chemmatters • www.beaconlearningcenter.com (lessons) • www.brainpop.com • www.discovery.com • www.ebecri.org • www.educationworld.com/ (Laws of Motion) • www.efieldtrips.org (energy field trips) • www.funderstanding.com/coaster (force and motion) • www.lessoncorner.com/science (lesson corner) 	<p style="text-align: center;">Summative Assessments</p> <p>SUGGESTED FORMATIVE/ SUMMATIVE ASSESSMENTS</p> <ul style="list-style-type: none"> • Anecdotal records • Exhibits • Interviews • Graphic organizers • Journals • Multiple Intelligences assessments e.g. role playing - bodily kinesthetic, graphic organizing - visual, collaboration- interpersonal • Oral presentations • Performance/problem-based tasks • Rubrics <ul style="list-style-type: none"> • Inquiry • Informational writing • Tests and quizzes • Writing (ELA Common Core: arguments, informational, responding to informational text)

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GSEs/ STANDARDS	BENCHMARKS East Providence, Middletown and Newport	INSTRUCTIONAL STRATEGIES	RESOURCES	ASSESSMENT EVIDENCE
			<ul style="list-style-type: none"> • www.nbclearn.com/olympics (force & motion) • www.polleverywhere.com • www.ride.ri.gov • www.sciencenetlinks.com (benchmarks and lessons) • www.sciencespot.net • www.thinkfinity.org • www.unitedstreaming.com <p>Materials</p> <ul style="list-style-type: none"> • CPO equipment • Flinn: Electromagnet Kit 	
<p>4 CONSTRUCT OF INQUIRY</p> <p>4.3 Conducting Investigations</p>	<p>Students demonstrate an understanding of the scientific inquiry method by:</p> <p>4.3.1 Follow procedures for collecting and recording qualitative or quantitative data, using equipment or measurement devices accurately</p> <ul style="list-style-type: none"> • record precise data and observations that are consistent with the procedure of the investigation • include appropriate units of all measurements • use appropriate measurement tools correctly to collect data • record and label relevant details within a scientific drawing <p>4.3.1 Use accepted methods for organizing, representing, and manipulating data</p> <ul style="list-style-type: none"> • represent data accurately in an appropriate graph/table/chart; • include titles, labels, keys or symbols as needed • select a scale appropriate for the range of data to be plotted; • use scientific terminology to label representations • identify relationships among variables based upon evidence <p>4.3.2 Collect sufficient data to study question, hypothesis, or relationships</p> <ul style="list-style-type: none"> • show understanding of the value of multiple trials • relate data to original question, hypothesis or prediction • determine if the quantity of data is sufficient to answer the question or support or refute the hypothesis or prediction <p>4.3.3 Summarize results based on data</p> <ul style="list-style-type: none"> • consider all data when developing an explanation/conclusion • identify patterns and trends in data 	<p>Facilitates the scientific inquiry method</p> <ul style="list-style-type: none"> • collect data • communicate understanding and ideas • design, conduct, and critique investigations • represent, analyze, and interpret data • experimental design • observe • predict • question and hypothesize • use evidence to draw conclusions • use tools, and techniques <p>Facilitates the learning cycle of science through the 5 E's of</p> <ul style="list-style-type: none"> • engagement • exploration 	<p>Textbook</p> <p>Physical Science Concepts in Action with Earth and Space Science, Prentice Hall</p> <p>Supplementary books/material</p> <ul style="list-style-type: none"> • AGS Earth Science, Prentice Hall • Bill Nye 100 Greatest Discovery Series • Chemistry a Natural Approach, Hsu • Chemistry Concepts and Applications, Glencoe • Chemistry Matter and Change, Glencoe • Current science magazines • Earth Science Concepts and Challenges, Pearson • Earth Science, Prentice Hall • Earth's Changing Surface, Prentice Hall • Inside Earth, Prentice Hall • Level trade books, e.g. National Geographic • Motion Forces and Energy, Prentice Hall • Physical Science - Concepts and Challenges, Pearson • Physics a First Course, CPO • The Discovery Channel DVDs: Cosmic Collisions, Cosmos Carl Sagan • The Illustrated Brief History of Time, Stephen Hawking, updated and expanded edition, (class set of books) <p>Technology</p> <ul style="list-style-type: none"> • Beyond Question Software • Computer lab • Gizmos™ • Laptops • LCD projectors • Scientific calculators • Googledocs.com • http://dsc.discovery.com/ • http://mw.concord.org/modeler/ 	<p>COMMON ASSESSMENTS</p> <ul style="list-style-type: none"> • Assessments Target • Benchmark Problems • Common Tasks • Formative and Summative Assessments <p>SUGGESTED FORMATIVE/SUMMATIVE ASSESSMENTS</p> <ul style="list-style-type: none"> • Anecdotal records • Exhibits • Interviews • Graphic organizers • Journals • Multiple Intelligences assessments e.g. role playing - bodily kinesthetic, graphic organizing - visual, collaboration- interpersonal • Oral presentations • Performance/problem-based tasks

SCIENCE CURRICULUM GRADE 9 (Physics First or Physical and Earth and Space Science)

Curriculum Writers: Britany Coleman, Gregory Decoteaux, Rebecca Dumont, Kimberly Laliberte, Kevin Lendrum, Keith Martinous, Dennis Nobrega, Erin Schwab, and Emily Zilly

GSEs/ STANDARDS	BENCHMARKS East Providence, Middletown and Newport	INSTRUCTIONAL STRATEGIES	RESOURCES	ASSESSMENT EVIDENCE
		<ul style="list-style-type: none"> • explanation • elaboration • evaluation 	<ul style="list-style-type: none"> • http://ri.itest.portal.concord.org/preview/ • http://science-class.net/ • http://sciencespot.net/index.html • http://scilinks.nasa.gov/ • http://smithsonianeducation.org/educators • http://www.howstuffworks.com/ • nces.ed.gov/nagtionsreportcard/itmrls • Tweentribune.com (student responding) • www.windowsintowonderland.org (virtual fieldtrips) • www.acs.org • www.acs.org/chemmatters • www.beaconlearningcenter.com (lessons) • www.brainpop.com • www.discovery.com • www.ebecri.org • www.educationworld.com/ (Laws of Motion) • www.efieldtrips.org (energy field trips) • www.funderstanding.com/coaster (force and motion) • www.lessoncorner.com/science (lesson corner) • www.nbclearn.com/olympics (force & motion) • www.polleverywhere.com • www.ride.ri.gov • www.sciencenetlinks.com (benchmarks and lessons) • www.sciencespot.net • www.thinkfinity.org • www.unitedstreaming.com <p>Materials</p> <ul style="list-style-type: none"> • CPO equipment • Flinn: Electromagnet Kit 	<ul style="list-style-type: none"> • Rubrics <ul style="list-style-type: none"> • Inquiry • Informational writing • Tests and quizzes • Writing (ELA Common Core: arguments, informational, responding to informational text)
<p>4 CONSTRUCT OF INQUIRY</p> <p>4.4 Developing and Evaluating Explanations</p>	<p>Students demonstrate an understanding of the scientific inquiry method by:</p> <p>4.4.1 Analyze data, including determining if data are relevant, artifact, irrelevant, or anomalous</p> <ul style="list-style-type: none"> • identify data relevant to the task or question • identify factors that may affect experimental results (e.g. variables, experimental error, environmental conditions) • analyze data and sort into meaningful categories • compare experimental data to accepted scientific data provided as part of the task • use mathematical and statistical techniques to analyze data • provide a reasonable explanation that accurately reflects data 	<p>Facilitates the scientific inquiry method</p> <ul style="list-style-type: none"> • collect data • communicate understanding and ideas • design, conduct, and critique investigations • represent, analyze, and interpret data • experimental 	<p>Textbook</p> <p>Physical Science Concepts in Action with Earth and Space Science, Prentice Hall</p> <p>Supplementary books/material</p> <ul style="list-style-type: none"> • AGS Earth Science, Prentice Hall • Bill Nye 100 Greatest Discovery Series • Chemistry a Natural Approach, Hsu • Chemistry Concepts and Applications, Glencoe • Chemistry Matter and Change, Glencoe • Current science magazines • Earth Science Concepts and Challenges, Pearson • Earth Science, Prentice Hall • Earth's Changing Surface, Prentice Hall • Inside Earth, Prentice Hall • Level trade books, e.g. National Geographic 	<p>COMMON ASSESSMENTS</p> <ul style="list-style-type: none"> • Assessments Target • Benchmark Problems • Common Tasks • Formative and Summative Assessments <p>SUGGESTED FORMATIVE/SUMMATIVE ASSESSMENTS</p> <ul style="list-style-type: none"> • Anecdotal records

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GSEs/ STANDARDS	BENCHMARKS East Providence, Middletown and Newport	INSTRUCTIONAL STRATEGIES	RESOURCES	ASSESSMENT EVIDENCE
	<ul style="list-style-type: none"> use content understanding to question data that might seem inaccurate evaluate the significance of experimental data <p>4.4.2 Use evidence to support and justify interpretations and conclusions or explain how the evidence refutes the hypothesis</p> <ul style="list-style-type: none"> identify and explain data, interpretations or conclusions that seem inaccurate use evidence to support or refute question or hypothesis use evidence to justify an interpretation of data or trend identify and explain differences or similarities between hypothesis and predictions and experimental data use evidence to justify a conclusion or explanation based on experimental data use mathematical computations to determine or support conclusions; evaluate potential bias in the interpretation of evidence. <p>4.4.3 Communicate how scientific knowledge applies to explain results, propose further investigations, or construct and analyze alternative explanations</p> <ul style="list-style-type: none"> explain how experimental results compare to accepted scientific understanding recommend changes to procedures to produce data that would provide sufficient data and more accurate analysis identify and justify additional data that would strengthen an investigation connect the investigation or model to an authentic situation; propose and evaluate new questions, predictions, next steps or technology for further investigations or alternative explanations account for limitations and/or sources of error within the experimental design apply experimental results to a new problem or situation; consider the impact (safety, ethical, social, civic, economic ,environmental) of additional investigations 	<p>design</p> <ul style="list-style-type: none"> observe predict question and hypothesize use evidence to draw conclusions use tools, and techniques <p>Facilitates the learning cycle of science through the 5 E's of</p> <ul style="list-style-type: none"> engagement exploration explanation elaboration evaluation 	<ul style="list-style-type: none"> Motion Forces and Energy, Prentice Hall Physical Science - Concepts and Challenges, Pearson Physics a First Course, CPO The Discovery Channel DVDs: Cosmic Collisions, Cosmos Carl Sagan The Illustrated Brief History of Time, Stephen Hawkins, updated and expanded edition, (class set of books) <p>Technology</p> <ul style="list-style-type: none"> Beyond Question Software Computer lab Gizmos™ Laptops LCD projectors Scientific calculators Googledocs.com http://dsc.discovery.com/ http://mw.concord.org/modeler/ http://ri.itest.portal.concord.org/preview/ http://science-class.net/ http://sciencespot.net/index.html http://scilinks.nasa.gov/ http://smithsonianeducation.org/educators http://www.howstuffworks.com/ nces.ed.gov/nagtionsreportcard/itmrls Tweentribune.com (student responding) www.windowsintowonderland.org (virtual fieldtrips) www.acs.org www.acs.org/chemmatters www.beaconlearningcenter.com (lessons) www.brainpop.com www.discovery.com www.ebecri.org www.educationworld.com/ (Laws of Motion) www.efieldtrips.org (energy field trips) www.funderstanding.com/coaster (force and motion) www.lessoncorner.com/science (lesson corner) www.nbclearn.com/olympics (force & motion) www.pollerywhere.com www.ride.ri.gov www.sciencenetlinks.com (benchmarks and lessons) www.sciencespot.net www.thinkfinity.org www.unitedstreaming.com <p>Materials</p> <ul style="list-style-type: none"> CPO equipment 	<ul style="list-style-type: none"> Exhibits Interviews Graphic organizers Journals Multiple Intelligences assessments e.g. role playing - bodily kinesthetic, graphic organizing - visual, collaboration- interpersonal Oral presentations Performance/problem-based tasks Rubrics <ul style="list-style-type: none"> Inquiry Informational writing Tests and quizzes Writing (ELA Common Core: arguments, informational, responding to informational text)

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GSEs/ STANDARDS	BENCHMARKS East Providence, Middletown and Newport	INSTRUCTIONAL STRATEGIES	RESOURCES	ASSESSMENT EVIDENCE
			<ul style="list-style-type: none"> • Flinn: Electromagnet Kit 	
<p>5 LITERACY IN SCIENCE/ READING</p> <p>5.1 Key Ideas and Details</p>	<p>Students</p> <p>5.1.1 Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.</p> <ul style="list-style-type: none"> • using claims and evidence • two column notes • MVP (most valuable points) • determining importance, highlighting <p>5.1.2 Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.</p> <ul style="list-style-type: none"> • two column notes • graphic organizers • concept maps <p>5.1.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks attending to special cases or exceptions defined in the text.</p> <ul style="list-style-type: none"> • labs 	<p>Facilitates the scientific inquiry method</p> <ul style="list-style-type: none"> • collect data • communicate understanding and ideas • design, conduct, and critique investigations • represent, analyze, and interpret data • experimental design • observe • predict • question and hypothesize • use evidence to draw conclusions • use tools, and techniques <p>Facilitates the learning cycle of science through the 5 E's of</p> <ul style="list-style-type: none"> • engagement • exploration • explanation • elaboration • evaluation 	<p>Textbook Physical Science Concepts in Action with Earth and Space Science, Prentice Hall</p> <p>Supplementary books/material</p> <ul style="list-style-type: none"> • AGS Earth Science, Prentice Hall • Bill Nye 100 Greatest Discovery Series • Chemistry a Natural Approach, Hsu • Chemistry Concepts and Applications, Glencoe • Chemistry Matter and Change, Glencoe • Current science magazines • Earth Science Concepts and Challenges, Pearson • Earth Science, Prentice Hall • Earth's Changing Surface, Prentice Hall • Inside Earth, Prentice Hall • Level trade books, e.g. National Geographic • Motion Forces and Energy, Prentice Hall • Physical Science - Concepts and Challenges, Pearson • Physics a First Course, CPO • The Discovery Channel DVDs: Cosmic Collisions, Cosmos Carl Sagan • The Illustrated Brief History of Time, Stephen Hawkins, updated and expanded edition, (class set of books) <p>Technology</p> <ul style="list-style-type: none"> • Beyond Question Software • Computer lab • Gizmos™ • Laptops • LCD projectors • Scientific calculators • Googledocs.com • http://dsc.discovery.com/ • http://mw.concord.org/modeler/ • http://ri.itest.portal.concord.org/preview/ • http://science-class.net/ • http://sciencespot.net/index.html • http://scilinks.nasa.gov/ • http://smithsonianeducation.org/educators • http://www.howstuffworks.com/ • nces.ed.gov/nagtionsreportcard/itmrls • Tweentribune.com (student responding) • www.windowstowonderland.org (virtual fieldtrips) • www.acs.org 	<p>COMMON ASSESSMENTS</p> <ul style="list-style-type: none"> • Assessments Target • Benchmark Problems • Common Tasks • Formative and Summative Assessments <p>SUGGESTED FORMATIVE/ SUMMATIVE ASSESSMENTS</p> <ul style="list-style-type: none"> • Anecdotal records • Exhibits • Interviews • Graphic organizers • Journals • Multiple Intelligences assessments e.g. role playing - bodily kinesthetic, graphic organizing - visual, collaboration- interpersonal • Oral presentations • Performance/problem-based tasks • Rubrics <ul style="list-style-type: none"> • Inquiry • Informational writing • Tests and quizzes • Writing (ELA Common Core: arguments,

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GSEs/ STANDARDS	BENCHMARKS East Providence, Middletown and Newport	INSTRUCTIONAL STRATEGIES	RESOURCES	ASSESSMENT EVIDENCE
			<ul style="list-style-type: none"> • www.acs.org/chemmatters • www.beaconlearningcenter.com (lessons) • www.brainpop.com • www.discovery.com • www.ebecri.org • www.educationworld.com/ (Laws of Motion) • www.efieldtrips.org (energy field trips) • www.funderstanding.com/coaster (force and motion) • www.lessoncorner.com/science (lesson corner) • www.nbclearn.com/olympics (force & motion) • www.polleverywhere.com • www.ride.ri.gov • www.sciencenetlinks.com (benchmarks and lessons) • www.sciencespot.net • www.thinkfinity.org • www.unitedstreaming.com <p>Materials</p> <ul style="list-style-type: none"> • CPO equipment • Flinn: Electromagnet Kit 	informational, responding to informational text)
<p>5 LITERACY IN SCIENCE/ READING</p> <p>5.2 Craft and Structure</p>	<p>Students</p> <p>5.2.1 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 9-10 texts and topics</i>.</p> <ul style="list-style-type: none"> • Frayer model/KIM • memory cue • prefix. suffix • word maps <p>5.2.2 Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., <i>force, friction, reaction force, energy</i>).</p> <ul style="list-style-type: none"> • two column notes • graphic organizers • concept maps <p>5.2.3 Analyze the author's purpose in providing an explanation, describing a</p>	<p>Models the use of graphic organizers:</p> <ul style="list-style-type: none"> • sequence organizers (chains, cycle), • concept development (mind map), • compare/contrast organizers (Venn diagrams, comparison charts), • organizers (word web, concept map), • evaluation organizers (charts, scales), • categorize/classify organizers 	See resources in 5.1.1	See assessments in 5.1.1

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GSEs/ STANDARDS	BENCHMARKS East Providence, Middletown and Newport	INSTRUCTIONAL STRATEGIES	RESOURCES	ASSESSMENT EVIDENCE
	procedure, or discussing an experiment in a text, defining the question the author seeks to address	(categories, tree) • relational organizers (fish bone, pie chart)		
5 LITERACY IN SCIENCE/ READING 5.3 Integration of Knowledge and Ideas	Students 5.3.1 Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words. • visuals to words • words to visuals 5.3.2 Assess the extent to which the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem. • formulating questions and hypothesis • developing and evaluating explanations 5.3.3 Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts. • video vs. reading • simulations vs. reading • researched	See instructional strategies in 5.1.1	See resources in 5.1.1	See assessments in 5.1.1
5 LITERACY IN SCIENCE/ READING 5.4 Range and Level of Text Complexity	Students 5.4.1 Read and comprehend science/technical texts in the grades 9-10 text complexity band independently and proficiently.	See instructional strategies in 5.1.1	See resources in 5.1.1	See assessments in 5.1.1
6. WRITING	Students		Textbook	COMMON

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GSEs/ STANDARDS	BENCHMARKS East Providence, Middletown and Newport	INSTRUCTIONAL STRATEGIES	RESOURCES	ASSESSMENT EVIDENCE
6.1 Text Types and Purposes	<p>6.1.1 Write arguments using the scientific inquiry method</p> <ul style="list-style-type: none"> • formulating questions and hypothesis • planning and critiquing investigations • conducting investigations • developing and evaluating explanations <ul style="list-style-type: none"> • Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among the claim(s), counterclaims, reasons, and evidence. • Develop claim(s) and counterclaims fairly, supplying data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form and in a manner that anticipates the audience's knowledge level and concerns. • Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. • Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. • Provide a concluding statement or section that follows from or supports the argument presented. <p>6.1.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.</p> <ul style="list-style-type: none"> • Introduce a topic and organize ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension. • Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information 	<p>Models the writing process: prewriting, drafting, revising, editing, and publishing</p> <p>Models the use of graphic organizers:</p> <ul style="list-style-type: none"> • sequence organizers (chains, cycle), • concept development (mind map), • compare/contrast organizers (Venn diagrams, comparison charts), • organizers (word web, concept map), • evaluation organizers (charts, scales), • categorize/classify organizers (categories, tree) • relational organizers (fish bone, pie chart) 	<p>Physical Science Concepts in Action with Earth and Space Science, Prentice Hall</p> <p>Supplementary books/material</p> <ul style="list-style-type: none"> • AGS Earth Science, Prentice Hall • Bill Nye 100 Greatest Discovery Series • Chemistry a Natural Approach, Hsu • Chemistry Concepts and Applications, Glencoe • Chemistry Matter and Change, Glencoe • Current science magazines • Earth Science Concepts and Challenges, Pearson • Earth Science, Prentice Hall • Earth's Changing Surface, Prentice Hall • Inside Earth, Prentice Hall • Level trade books, e.g. National Geographic • Motion Forces and Energy, Prentice Hall • Physical Science - Concepts and Challenges, Pearson • Physics a First Course, CPO • The Discovery Channel DVDs: <i>Cosmic Collisions</i>, <i>Cosmos</i> Carl Sagan • The Illustrated Brief History of Time, Stephen Hawkins, updated and expanded edition, (class set of books) <p>Technology</p> <ul style="list-style-type: none"> • Beyond Question Software • Computer lab • Gizmos™ • Laptops • LCD projectors • Scientific calculators • Googledocs.com • http://dsc.discovery.com/ • http://mw.concord.org/modeler/ • http://ri.itest.portal.concord.org/preview/ • http://science-class.net/ • http://sciencespot.net/index.html • http://scilinks.nasa.gov/ • http://smithsonianeducation.org/educators • http://www.howstuffworks.com/ • nces.ed.gov/nagtionsreportcard/itmrls • Tweentribune.com (student responding) • www.windowstowonderland.org (virtual fieldtrips) • www.acs.org • www.acs.org/chemmatters • www.beaconlearningcenter.com (lessons) • www.brainpop.com • www.discovery.com • www.ebecri.org 	<p>ASSESSMENTS</p> <ul style="list-style-type: none"> • Assessments Target • Benchmark Problems • Common Tasks • Formative and Summative Assessments <p>SUGGESTED FORMATIVE/ SUMMATIVE ASSESSMENTS</p> <ul style="list-style-type: none"> • Anecdotal records • Exhibits • Interviews • Graphic organizers • Journals • Multiple Intelligences assessments e.g. role playing - bodily kinesthetic, graphic organizing - visual, collaboration- interpersonal • Oral presentations • Performance/problem-based tasks • Rubrics <ul style="list-style-type: none"> • Inquiry • Informational writing • Tests and quizzes • Writing (ELA Common Core: arguments, informational, responding to informational text)

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	<p>and examples appropriate to the audience's knowledge of the topic.</p> <ul style="list-style-type: none"> Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among ideas and concepts. Use precise language and domain-specific vocabulary to manage the complexity of the topic and convey a style appropriate to the discipline and context as well as to the expertise of likely readers. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic). 		<ul style="list-style-type: none"> www.educationworld.com/ (Laws of Motion) www.efieldtrips.org (energy field trips) www.funderstanding.com/coaster (force and motion) www.lessoncorner.com/science (lesson corner) www.nbclearn.com/olympics (force & motion) www.polleverywhere.com www.ride.ri.gov www.sciencenetlinks.com (benchmarks and lessons) www.sciencespot.net www.thinkfinity.org www.unitedstreaming.com <p>Materials</p> <ul style="list-style-type: none"> CPO equipment Flinn: Electromagnet Kit 	
<p>6. WRITING</p> <p>6.2 Production and Distribution of Writing</p>	<p>Students</p> <p>6.2.1 Produce writing in which the organization, development, substance, and style are appropriate to task, purpose, and audience, e.g. lab reports.</p> <p>6.2.2 Develop and strengthen writing as needed by</p> <ul style="list-style-type: none"> planning revising editing rewriting trying a new approach, <p>focusing on addressing what is most significant for a specific purpose and audience</p> <p>6.2.3 Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically. e.g.</p> <ul style="list-style-type: none"> Power Point™ Photo stories Spread sheets Excel 	<p>Models the writing process: prewriting, drafting, revising, editing, and publishing</p> <p>Models the use of graphic organizers:</p> <ul style="list-style-type: none"> sequence organizers (chains, cycle), concept development (mind map), compare/contrast organizers (Venn diagrams, comparison charts), organizers (word web, concept map), 	<p>See resources in 6.1.1</p>	<p>See assessments in 6.1.1</p>

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GSEs/ STANDARDS	BENCHMARKS East Providence, Middletown and Newport	INSTRUCTIONAL STRATEGIES	RESOURCES	ASSESSMENT EVIDENCE
	<ul style="list-style-type: none"> • Tweentribune.com (student responding) • Googledocs.com • www.polleverywhere.com 	<ul style="list-style-type: none"> • evaluation organizers (charts, scales), • categorize/classify organizers (categories, tree) • relational organizers (fish bone, pie chart) 		
<p>6. WRITING</p> <p>6.3 Research to Build Knowledge</p>	<p>Students</p> <p>6.3.1 Conduct short as well as more sustained research projects to</p> <ul style="list-style-type: none"> • answer a question (including a self generated question) or solve a problem • narrow or broaden the inquiry when appropriate • synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation <p>6.3.2 Gather relevant information from multiple authoritative print and digital sources</p> <ul style="list-style-type: none"> • using advanced searches effectively • assessing the usefulness of each source in answering the research question • integrating information into the text selectively to maintain the flow of ideas • avoiding plagiarism and following a standard format for citation. <p>6.3.3 Draw evidence from informational texts to support analysis, reflection, and research.</p>	<p>Models the writing process: prewriting, drafting, revising, editing, and publishing</p> <p>Models the use of graphic organizers:</p> <ul style="list-style-type: none"> • sequence organizers (chains, cycle), • concept development (mind map), • compare/contrast organizers (Venn diagrams, comparison charts), • organizers (word web, concept map), • evaluation organizers (charts, scales), • categorize/classify organizers (categories, tree) • relational organizers (fish 	See resources in 6.1.1	See assessments in 6.1.1

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GSEs/ STANDARDS	BENCHMARKS East Providence, Middletown and Newport	INSTRUCTIONAL STRATEGIES	RESOURCES	ASSESSMENT EVIDENCE
		bone, pie chart)		
6. WRITING 6.4 Range of Writing	Students 6.4.1 Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	See instructional strategies in 6.1.1	See resources in 6.1.1	See assessments in 6.1.1