

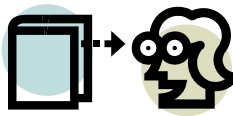


**"When all else fails,
read the instructions"**
--- Agnes Allen

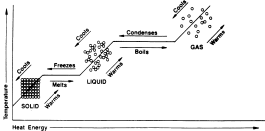
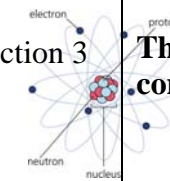
**8th Grade
Pacing Guide**

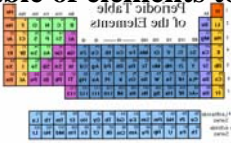

Eighth Grade Physical Science

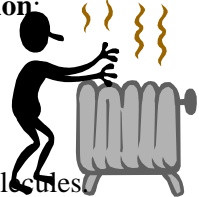
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| <p><u>SOL</u></p> <p style="text-align: center; font-size: 1.2em;">PS.1</p> <p>Essential Knowledge, Skills, and Processes</p> | <p><u>CHAPTER</u></p> <p>Embedded within all units in the textbook.</p> | <p>The student will plan and conduct investigations in which</p> <div style="display: flex; align-items: center;">  <ol style="list-style-type: none"> a) chemicals and equipment are used safely; b) length, mass, volume, density, temperature, weight, and force are accurately measured and reported using metric units (SI—International System of Units); c) conversions are made among metric units, applying appropriate prefixes; d) triple beam and electronic balances, thermometers, metric rulers, graduated cylinders, and spring scales are used to gather data; e) numbers are expressed in scientific notation where appropriate; f) research skills are utilized using a variety of resources; g) independent and dependent variables, constants, controls, and repeated trials are identified; h) data tables showing the independent and dependent variables, derived quantities, and the number of trials are constructed and interpreted; i) data tables for descriptive statistics showing specific measures of central tendency, the range of the data set, and the number of repeated trials are constructed and interpreted; j) frequency distributions, scatter-grams, line plots, and histograms are constructed and interpreted; k) valid conclusions are made after analyzing data; l) research methods are used to investigate practical problems and questions; m) experimental results are presented in appropriate written form; and n) an understanding of the nature of science is developed and reinforced. <div style="margin-left: 10px;">   </div> </div> <p>In order to meet this standard, it is expected that students should be able to:</p> <ul style="list-style-type: none"> • select appropriate equipment (triple beam balances, thermometers, metric rulers, graduated cylinders, electronic balances, or spring scales) and utilize correct techniques to measure length, mass, density, weight, volume, temperature, and force. • design a data table that includes space to organize all components of an investigation in a meaningful way, including levels of the independent variable, measured responses of the dependent variable, number of trials, and mathematical means. • record measurements, using the following metric (SI) units: liter, milliliter, grams, degrees Celsius, and Newtons. • recognize metric prefix units and make common metric conversions between the same base metric unit (for example, milligram to gram or kilometer to meter). • use a variety of graphical methods to display data; create an appropriate graph for a given set of data; and select the proper type of graph for a given set of data, identify and label the axes, and plot the data points. <i>(Note: Frequency distributions, scattergrams, line plots, and histograms are described in the Mathematics Curriculum Framework, Standard 7.17, pp. 27-29.</i> • gather, evaluate, and summarize information, using multiple and variable resources, and detect bias from a given source. • identify the key components of controlled experiments: hypotheses, independent and dependent variables, |
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| | | <p>constants, controls, and repeated trials.</p> <ul style="list-style-type: none"> • formulate conclusions that are supported by the gathered data. • apply the methodology of scientific inquiry: begin with a question, design an investigation, gather evidence, formulate an answer to the original question, and communicate the investigative process and results. • communicate in written form the following information about investigations: the purpose/problem of the investigation, procedures, materials, data and/or observations, graphs, and an interpretation of the results. • describe how creativity comes into play during various stages of scientific investigations. |
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| Resources | Chapter | Essential Skills and Knowledge |
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| Science Explorer Textbook Prentice Hall | <p><i>“What is Science”</i> pp4 –9 Ch 1 section 2 Focus on Graphing pp290-3, 306 Embedded in all labs and activities for each unit.</p> | <p>Students will be assessed as to their base level of understanding for PS 1 in the first quarter.</p> <p>PS 1 will be taught and reviewed each quarter as students learn and apply content.</p> |
| Enrichment options for Honor’s Curriculum | | <p>Students will be expected to do labs with less assistance and scaffolding than general level classes, with more detailed write-ups and data analysis. In addition, each quarter Honor’s will have an additional project:</p> <p>Quarter 1: Generating questions, inquiry based lab activities with formal write-ups. Quarter 2: Science Fair projects Quarter 3: Rube Goldberg competition/Compound machine project from text Quarter 4: Project-based learning on special topics, resources to be determined.</p> |


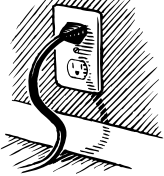

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| <p>MATTER PS.2</p> <p>Essential Knowledge, Skills, and Processes</p> | <p>CHAPTER 1-Section 1,3 2-Section 1-4 3-Section 2 6-Section 1-4</p> | <p>The student will investigate and understand the basic nature of matter. Key concepts include</p> <ol style="list-style-type: none"> the particle theory of matter; elements, compounds, mixtures, acids, bases, and salts; solids, liquids, and gases; characteristics of types of matter based on physical and chemical properties; physical properties (shape, density, solubility, odor, melting point, boiling point, color); and chemical properties (acidity, basicity, combustibility, reactivity).  <p>In order to meet this standard, it is expected that students should be able to:</p> <ul style="list-style-type: none"> describe the particle theory of matter. describe the properties of the states of matter (solid, liquid, and gas). describe how to determine whether a substance is an element, compound, or mixture. define compounds as inorganic or organic. (All organic compounds contain carbon.) distinguish between physical properties (i.e., shape, density, solubility, odor, melting point, boiling point, and color) and chemical properties (i.e., acidity, basicity, combustibility, and reactivity). find the mass and volume of substances and calculate and compare their densities. analyze the pH of a solution and classify it as acidic, basic, or neutral. describe what a salt is and explain how salts form. determine the identity of an unknown substance by comparing its properties to those of known substances. design an investigation from a testable question related to physical and chemical properties of matter. The investigation may be a complete experimental design or may focus on systematic observation, description, measurement, and/or data collection and analysis. (Students should be able to use the inquiry skills represented in PS.1 and LS.1 to compose a clear hypothesis, create an organized data table, identify variables and constants, record data correctly, construct appropriate graphs, analyze data, and draw reasonable conclusions.) |
| <p>PS.3</p> <p>Essential Knowledge, Skills, and Processes</p> | <p>1-Section 3</p>  | <p>The student will investigate and understand the modern and historical models of atomic structure. Key concepts include</p> <ol style="list-style-type: none"> the contributions of Dalton, Thomson, Rutherford, and Bohr in understanding the atom; and the modern model of atomic structure. <p>In order to meet this standard, it is expected that students should be able to:</p> <ul style="list-style-type: none"> describe the historical development of the concept of the atom and the contributions of Dalton, Thomson, Rutherford, and Bohr. use the Bohr model to differentiate among the three basic particles in the atom (proton, neutron, and electron) and their charges, relative masses, and locations. compare the Bohr atomic model to the electron cloud model with respect to their ability to represent accurately the |

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| | | three-dimensional structure of the atom. |
| <p>PS.4</p> <p>Essential Knowledge, Skills, and Processes</p> | <p>3-Sect.1 – 4 4-Section 1-3</p> | <p>The student will investigate and understand the organization and use of the periodic table of elements to obtain information. Key concepts include</p> <ol style="list-style-type: none"> symbols, atomic number, atomic mass, chemical families (groups), and periods; classification of elements as metals, metalloids, and nonmetals; and simple compounds (formulas and the nature of bonding).  <p>In order to meet this standard, it is expected that students should be able to:</p> <ul style="list-style-type: none"> use the periodic table to obtain the following information about the atom of an element: <ul style="list-style-type: none"> symbol atomic number atomic mass state of matter at room temperature number of outer energy level electrons describe the organization of the periodic table in terms of: <ul style="list-style-type: none"> atomic number metals, metalloids, and nonmetals groups/families vs. periods categorize a given element as metal, non-metal, or metalloid given a chemical formula of a compound, identify the elements and the number of atoms of each that comprise the compound. recognize that the number of electrons in the outermost energy level determines an element's chemical properties of chemical reactivity. predict what kind of bond (ionic or covalent) will likely form when metals combined chemically. describe the difference between ionic and covalent bonding. recognize that an atom's identify is related to the number of protons in its nucleus. |
| <p>PS 5</p> <p>Assess on Quarter 2 Exam</p> <p>Essential Knowledge,</p> | <p>1-Section 1</p> | <p>The student will investigate and understand changes in matter and the relationship of these changes to the Law of Conservation of Matter and Energy. Key concepts include</p> <ol style="list-style-type: none"> physical changes; nuclear reactions (products of fusion and fission and the effect of these products on humans and the environment); and chemical changes (types of reactions, reactants, and products; and balanced equations).  <p>In order to meet this standard, it is expected that students should be able to:</p> |

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| <p>Skills, and Processes</p> | | <ul style="list-style-type: none"> • compare and contrast physical, chemical and nuclear changes. • Design an investigation that illustrates physical and chemical changes. • Given chemical formulas, write and balance simple chemical equations. • Analyze experimental data to determine whether it supports the Law of Conservation of Mass. • Recognize that some types of chemical reactions require continuous input of energy (endothermic) and others release energy (exothermic). • Describe, in simple terms, the processes that release nuclear energy (i.e., nuclear fission and nuclear fusion). Create a simple diagram to summarize and compare and contrast the two types of nuclear energy. • Evaluate the positive and negative effects of using nuclear energy. |
| <p>PS 7</p> <p>Assess on Quarter 2 Exam</p> <p>2-Section 4</p> <p>Essential Knowledge, Skills, and Processes</p> | | <p>The student will investigate and understand temperature scales, heat, and heat transfer. Key concepts include</p> <ol style="list-style-type: none"> a) Celsius and Kelvin temperature scales and absolute zero; b) phase change, freezing point, melting point, boiling point, vaporization, and condensation; c) conduction, convection, and radiation; and d) applications of heat transfer (heat engines, thermostats, refrigeration, and heat pumps). <p>In order to meet this standard, it is expected that students should be able to:</p> <ul style="list-style-type: none"> • illustrate and explain the effect of the addition or subtraction of heat energy on the motion of molecules. • distinguish between heat and temperature. • compare and contrast Celsius and Kelvin temperature scales and describe absolute zero. • analyze a time/temperature graph of a phase change experiment to determine the temperature at which the phase change occurs (freezing point, melting point, or boiling point). • compare and contrast conduction, convection, and radiation and provide and explain common examples. • explain, in simple terms, how the principle of heat transfer applies to heat engines, thermostats, and refrigerators and heat pumps. • design an investigation from a testable question related to heat transfer. The investigation may be a complete experimental design or may focus on systematic observation, description, measurement, and/or data collection and analysis.  |

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| <p><u>UNITS OF STUDY</u></p> <p><u>MATTER</u></p> <p>Enrichment Options for Honor's Curriculum:</p> <ul style="list-style-type: none"> ◆ Cover this unit more quickly. ◆ Develop density and density equation using graphs and algebra ◆ Given a problem, generate questions and design an activity to test hypothesis. | <p>Resources</p> <p>Science Explorer Textbook Prentice Hall Resource Binder United Streaming Videos</p> <p>www.middleschoolscience.com physics, density: interactive. www.smv.org/pubs/PSSolutionsTOC2.pdf (Mystery Liquids)</p> <p>Science Insights lab manual:</p> <ul style="list-style-type: none"> • Investigation 3: Finding the Density of Common Objects, p. 1 • Investigation 15 Chemical Changes, p. 57 |
| <p><u>ATOMIC THEORY</u></p> <p>Enrichment Options for Honor's Curriculum:</p> <ul style="list-style-type: none"> ◆ Develop this unit with greater detail to historical development of atomic model. ◆ Describe the observations and inferences that lead to the atomic models of Dalton, Thomson, Rutherford and Bohr. ◆ Differentiate between the three basic particles of the atom and their relative masses. ◆ Introduce quarks. | <p>www.middleschoolscience.com chemistry and chemical reactions</p> <p>Enrichment Resources for Honor's: http://cse.edc.org/products/historyscience/default.asp History of chemistry. Bios of scientists. www.smv.org/pubs/index.html Madam Curie- resources on atomic theory scientists www.galaxy.net/~k12/chatom.shtml Changing an atom</p> <p>http://www.pbs.org/wgbh/aso/tryit/atom/ - Build an Atom</p> <p>http://winn.com/bs/atombomb.html Satire- how to build an atom bomb</p> |

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| <p><u>PERIODIC TABLE</u></p> <p>Enrichment for Honor's Curriculum:</p> <ul style="list-style-type: none"> ◆ Recognize that the number of electrons in the outermost energy level determines an element's chemical properties or chemical reactivity. ◆ Predict what kind of bond will likely form (ionic or covalent) when metals and non-metals combine chemically. ◆ Describe the difference between ionic and covalent bonding. ◆ additional options: ◆ Develop more of the inherent patterns in periodic table. ◆ Allow students to find repeating patterns among elements and build their own periodic table. ◆ Compare/ contrast the current periodic table with more recent proposals. ◆ Defend the position of Hydrogen as a metal or nonmetal. | <p>Resources</p> <p>Science Explorer Textbook Prentice Hall Resource Binder United Streaming Videos</p> <p>www.middleschoolscience.com</p> |
| <p>Enrichment for Honor's Curriculum:</p> <ul style="list-style-type: none"> ◆ Analyze experimental data to determine whether it supports the Law of Conservation of Mass. ◆ Given a problem, generate questions and design an activity to test hypothesis. | <p>Science Explorer Textbook Prentice Hall Resource Binder United Streaming Videos</p> <p>www.middleschoolscience.com chemistry → chemical reactions Balancing equations with colored blocks.</p> |

| ENERGY | CHAPTER | |
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| <p>PS.5</p>  <p>Essential Knowledge, Skills, and Processes</p> | <p>3 – Section 5 8 – Section 4</p> | <p>The student will investigate and understand changes in matter and the relationship of these changes to the Law of Conservation of Matter and Energy. Key concepts include</p> <ol style="list-style-type: none"> physical changes; nuclear reactions (products of fusion and fission and the effect of these products on humans and the environment); and chemical changes (types of reactions, reactants, and products; and balanced equations). <p>In order to meet this standard, it is expected that students should be able to:</p> <ul style="list-style-type: none"> compare and contrast physical, chemical and nuclear changes. design an investigation that illustrates physical and chemical changes. given chemical formulas, write and balance simple chemical equations. analyze experimental data to determine whether it supports the Law of Conservation of Mass. recognize that some types of chemical reactions require continuous input of energy (endothermic) and others release energy (exothermic). describe, in simple terms, the processes that release nuclear energy (i.e., nuclear fission and nuclear fusion). Create a simple diagram to summarize and compare and contrast the two types of nuclear energy. evaluate the positive and negative effects of using nuclear energy. |
| <p>PS.6</p>  <p>Essential Knowledge, Skills, and Processes</p> | <p>13-Section 1-2 21-Section 1</p> | <p>The student will investigate and understand states and forms of energy and how energy is transferred and transformed. Key concepts include:</p> <ol style="list-style-type: none"> potential and kinetic energy; mechanical, chemical, and electrical energy; and heat, light, and sound.  <p>In order to meet this standard, it is expected that students should be able to:</p> <ul style="list-style-type: none"> differentiate between potential and kinetic energy. use diagrams or concrete examples to compare relative amounts of potential and kinetic energy. identify and give examples of common forms of energy. design an investigation or create a diagram to illustrate energy transformations. |

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| <p>PS.7</p> <p>Essential Knowledge, Skills, and Processes</p> | <p>14-Section 1-4</p> | <p>The student will investigate and understand temperature scales, heat, and heat transfer. Key concepts include:</p> <ol style="list-style-type: none"> Celsius and Kelvin temperature scales and absolute zero; phase change, freezing point, melting point, boiling point, vaporization, and condensation; conduction, convection, and radiation; and applications of heat transfer (heat engines, thermostats, refrigeration, and heat pumps). <p>In order to meet this standard, it is expected that students should be able to:</p> <ul style="list-style-type: none"> illustrate and explain the effect of the addition or subtraction of heat energy on the motion of molecules. distinguish between heat and temperature. compare and contrast Celsius and Kelvin temperature scales and describe absolute zero. analyze a time/temperature graph of a phase change experiment to determine the temperature . compare and contrast conduction, convection, and radiation and provide and explain common examples. explain, in simple terms, how the principle of heat transfer applies to heat engines, thermostats, and refrigerators and heat pumps. design an investigation from a testable question related to heat transfer. The investigation may be a complete experimental design or may focus on systematic observation, description, measurement, and /or data collection and analysis. |
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UNITS OF STUDY

LAW OF CONSERVATION OF ENERGY

Enrichment options for Honor’s Curriculum:

- ◆ Do Simple Machines - do now instead of 4th quarter. Develop Power and Efficiency with Energy.
- ◆ Take a historical approach to Conservation of Energy. Read Biography of E=Mc² by David Bodanis
- ◆ Have students map size of atoms vs. elements in periodic table and relate mass to energy

Resources

Science Explorer Textbook Prentice Hall Resource Binder
 United Streaming Videos
www.middleschoolscience.com
www.smv.org/pubs/PSSolutionsTOC2.pdf
 Physical Science Solutions (Paddle boats, Don’t lose your Marbles)
<http://imagers.gsfc.nasa.gov/teachersite/UL3.htm> Lab: Invisible light sources
 Movie: A is for Atom (nuclear fission) On web. Easiest to find by Googling “A is for Atom”. Download before watching. Plan in advance for Mac.
 Buckle Down pp 106-112.

HEAT ENERGY

Enrichment options for Honor's Curriculum:


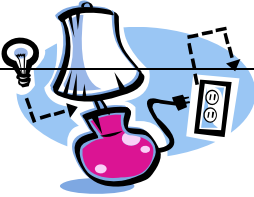
- ◆ Explain, in simple terms, how the principle of heat transfer applies to heat engines, thermostats, and refrigerators.
- ◆ Design an investigation from a testable question related to heat transfer. The investigation may be a complete experimental design or may focus on systematic observation, description, measurement, and/or data collection and analysis.

Science Explorer textbook
Resource binder
United Streaming Videos

Demo/Lab Alka Seltzer Tablet and Calcium Chloride in water to demonstrate endothermic and exothermic reactions.

Science Insights Enrichment worksheet 9.3.
p.50 of Section Activities

SOL standards are listed in numerical order. Unit grouping and resources are on separate pages. **QUARTER THREE**

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| <p>PS.8</p> <p>Essential Knowledge, Skills, and Processes</p> | <p>15-Section 1-3 16-Section 1-3</p> | <p>The student will investigate and understand characteristics of sound and technological applications of sound waves. Key concepts include:</p> <ul style="list-style-type: none"> a) wavelength, frequency, speed, and amplitude; b) resonance; c) the nature of mechanical waves; and d) technological applications of sound. <p>In order to meet this standard, it is expected that students should be able to:</p> <ul style="list-style-type: none"> • model a compression (longitudinal) wave and diagram, label, and describe the basic components: wavelength, compression, rarefaction, and frequency. • Determine the relationship between frequency and wavelength. • Analyze factors that determine the speed of sound through various materials and interpret graphs and charts that display this information. • Describe technological applications of sound waves and generally how each application functions. • Design an investigation from a testable question related to sound. The investigation may be a complete experimental design or may focus on systematic observation, analysis. (Students should be able to use the inquiry skills represented in PS.1 and LS.1 to compost a clear hypothesis, create an organized data table, identify variables and constants, record data correctly, construct appropriate graphs, analyze data, and dray reasonable conclusions.) |
| <p>PS.9</p> <p>Essential Knowledge, Skills, and Processes</p> | <p>17-Section 1-3 18-Section 1-2</p> | <p>The student will investigate and understand the nature and technological applications of light. Key concepts include:</p> <ul style="list-style-type: none"> a) the wave behavior of light (reflection, refraction, diffraction, and interference) b) images formed by lenses and mirrors; and c) the electromagnetic spectrum. <p>In order to meet this standard, it is expected that students should be able to:</p> <ul style="list-style-type: none"> • design an investigation to illustrate the behavior of visible light – reflection and refraction. Describe how reflection and refraction occur. • describe the wave theories of light. • model a transverse wave and draw and label the basic components. Explain wavelength, amplitude, and frequency. • compare the various types of electromagnetic waves in terms of wavelength, frequency, and energy. • describe an everyday application of each of the major forms of electromagnetic energy.  |
| <p>PS. 11</p> | <p>1 9-Section 1-4 20-Section 1-3 21-Secton 1-3</p> | <p>The student will investigate and understand basic principles of electricity and magnetism. Key concepts include:</p> <ul style="list-style-type: none"> a) static electricity, current electricity, and circuits;  |

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| Essential Knowledge, Skills, and Processes | | <p>b) magnetic fields and electromagnets; and c) motors and generators.</p> <p>In order to meet this standard, it is expected that student should be able to:</p> <ul style="list-style-type: none"> • explain the relationship between a magnetic field and an electric current. • design an investigation to illustrate the effects of static electricity. • construct and compare series and parallel circuits. • create an electromagnet and explain how it works. • construct simple circuits to determine the relationship between voltage, resistance, and current. • compare and contrast generators and motors and how they function. • identify situations in everyday life in which motors and generators are used. |
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| <p><u>UNITS OF STUDY</u></p> <p><u>LIGHT</u></p> <p>Enrichment for Honor’s Curriculum:</p> <ul style="list-style-type: none"> ◆ Provide more in-depth experiments for reflection, refraction and diffraction. Trace path of a beam of light for each, make predictions for the path of light using various lenses and mirrors. ◆ Develop electromagnetic spectrum, allowing students to discover some of the “invisible” wavelengths. | <p>Resources</p> <p>Science Explorer Textbook Prentice Hall Resource Binder United Streaming Videos www.middleschoolscience.com www.phys.virginia.edu/education/outreadh/8thgradeSOL/soundstations/htm</p> |
| <p><u>MECHANICAL WAVES AND SOUND</u></p> <p>Enrichment for Honor’s Curriculum:</p> <ul style="list-style-type: none"> ◆ Relate sound waves to musical instruments. ◆ Investigate earthquakes, tsunamis and the waves formed. ◆ Design an investigation from a testable question related to sound waves. | <p>Science Explorer Textbook Prentice Hall Resource Binder United Streaming Videos http://imagers.gsfc.nasa.gov/teachersite/UL3.htm Intro to EM spectrum- Wavestown http://www.phys.virginia.edu/education/outreach/8thgradesol/home.htm Lab: Invisible Light Sources and Detectors*</p> |

ELECTRICITY AND MAGNETISM

Enrichment for Honor's Curriculum:

- ◆ Create an electromagnet and explain how it works.
- ◆ Compare and contrast generators and motors and how they function.
- ◆ Identify situations in everyday life where motors and generators are used.



Science Explorer Textbook Prentice Hall
Resource Binder
United Streaming Videos

www.charlesedisonfund.org/experiments/experiments.html Ch IX: Static Electricity
Ch VII. Lewis Howard Latimer: A black inventor (series, parallel circuits)

<http://www.pen.k12.va.us/VDOE/Assessment/soltests/science8.html>

(In 1995 standards, this is a 6th grade standard, 2003 moves it to 8th grade. The list to the left includes both)

QUARTER FOUR

| <u>MOTION</u> | <u>CHAPTER</u> | | | | | | | | | |
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| <p>PS.10</p> | <p>9-Section 1-3 10-Section 1-4 12-Section 1-3 13-Section 4</p> | <p>The student will investigate and understand scientific principles and technological applications of work, force, and motion. Key concepts include</p> <ul style="list-style-type: none"> a) speed, velocity, and acceleration; b) Newton’s laws of motion; c) work, force, mechanical advantage, efficiency, and power; and d) applications (simple machines, compound machines, powered vehicles, rockets, and restraining devices).  <p>In order to meet this standard, it is expected that students should be able to:</p> <ul style="list-style-type: none"> a) Make measurements to calculate the speed of a moving object. b) Apply the concepts of speed, velocity, and acceleration when describing motion. c) Explain how force, mass, and acceleration are related. d) Differentiate between mass and weight. e) Identify situations that illustrate each Law of Motion. f) Apply the concept of mechanical advantage to test and explain how a machine makes work easier. g) Make measurements to calculate the power of an object h) Explain how the concepts of work, force, and motion apply to car safety technology, machines, and rockets. i) Solve basic problems given the following formulas: <div style="border: 2px dashed red; padding: 5px; margin: 10px 0;"> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Speed = distance/time</td> <td style="padding: 2px;">S=D/T</td> </tr> <tr> <td style="padding: 2px;">Force = mass x acceleration</td> <td style="padding: 2px;">F=MA</td> </tr> <tr> <td style="padding: 2px;">Work = force x distance</td> <td style="padding: 2px;">W = FD</td> </tr> <tr> <td style="padding: 2px;">Power = work /time</td> <td style="padding: 2px;">P = W/T</td> </tr> </table> </div>  | Speed = distance/time | S=D/T | Force = mass x acceleration | F=MA | Work = force x distance | W = FD | Power = work /time | P = W/T |
| Speed = distance/time | S=D/T | | | | | | | | | |
| Force = mass x acceleration | F=MA | | | | | | | | | |
| Work = force x distance | W = FD | | | | | | | | | |
| Power = work /time | P = W/T | | | | | | | | | |
| <p>Essential Knowledge, Skills, and Processes</p> <p>REVIEW OF ALL SCIENCE SOLs</p> | | <p>6TH, 7TH, AND 8TH GRADE SCIENCE STANDARDS. See 1995 SOL Standards Blueprint for 8th grade: http://www.pen.k12.va.us/VDOE/Assessment/soltests/science8.html (2006-07 is the final year with this blueprint before 2003 standards take effect)</p> | | | | | | | | |

SOL REVIEW

- Review of all SOL topics.
- Reading nonfiction prose.
- Reading diagrams and charts.

Enrichment options for Honor's Curriculum:

- ◆ Honor's students will spend less class time preparing for the SOL.
- ◆ Assign SOL practice websites such as the Jefferson Lab site.
- ◆ Individual projects creating practice quizzes, or reviewing SOL material. (e.g. PowerPoint or website quizzes that provide background for incorrect answers, circuit boards that allow students to test themselves, digital videos reviewing content).

Resources

See SOL Blueprint

<http://www.pen.k12.va.us/VDOE/Assessment/soltests/science8.html>

Science Explorer Textbook Prentice Hall
Resource Binder
United Streaming Videos

www.middleschoolscience.com

Review SOL tests on-line at

www.jlab.org or www.pen.k12.va.us

www.middleschoolscience.com

chemistry → chemical reactions

Buckle Down pp113-131

<http://www.pbs.org/teachersource/mathline/concepts/space2/activity2.shtm>

Other--

Movie—October Sky

www.smv.org/pubs/PSSolutionsTOC2.pdf

Physical Science Solutions

Motion

- Make measurements to calculate the speed of a moving object.
- Apply the concepts of speed, velocity, and acceleration when describing motion.
- Explain how force, mass, and acceleration are related.
- Differentiate between mass and weight.
- Identify situations that illustrate each Law of Motion.
- Apply the concept of mechanical advantage to test and explain how a machine makes work easier.
- Make measurements to calculate the power of an object
- Explain how the concepts of work, force, and motion apply to car safety technology, machines, and rockets.
- Solve basic problems given the following formulas:

| | |
|-----------------------------|-----------|
| Speed = distance/time | $S=D/T$ |
| Force = mass x acceleration | $F=MA$ |
| Work = force x distance | $W = FD$ |
| Power = work /time | $P = W/T$ |

Enrichment options for Honor's Curriculum

- ◆ Higher level of mathematical concept building and applications.
- ◆ Assign projects that allow students to apply Newton's laws and vocabulary to everyday motion (amusement parks, sports, etc.)
- ◆ There are a variety of resources developing Motion in flight, sports, amusement parks and other situations requiring greater fluency in science and math than the general classes.