

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop abilities to do scientific inquiry. (2)		
<b>OBJECTIVE (S):</b>		
1. Design and conduct a scientific experiment that identifies the problem, distinguishes between dependent and independent variables, collects, analyzes and communicates data, and makes valid inferences and conclusions. (QCC 1.1)		
<b>PACING:</b>	8 class periods and throughout the course	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 4-12 Chapter 1; Section 1.1	<p><b>Title: <u>Gummy Bears Lab</u></b>  <b>Annotation:</b> Here is a "sweet" lab that your students are sure to enjoy. This lab teaches science process skills and math measurement skills. <i>(Entered 6/22/01 11:47:48 AM)</i></p> <p><b>Title: <u>Scientific Concepts</u></b>  <b>Annotation:</b> This link meet 2.1 of this objective. The lesson plan uses the Internet and the scientific method to teach the value of science in the students' everyday life. Text, images, animations and links to other great sites make this an excellent site. <i>(Entered 7/17/2000 4:03:34 PM)</i></p> <p><b>URL:</b> <a href="http://www-sci.lib.uci.edu/SEP/CTS99/concepts.html">http://www-sci.lib.uci.edu/SEP/CTS99/concepts.html</a></p>	
<b>TECHNOLOGY INTEGRATION:</b>		
<b>Title: <u>Scientific Concepts</u></b> <b>Annotation:</b> This link meets 1.1 and 1.2 of this objective. The lesson plan uses the Internet and the scientific method to teach the value of science in the students' everyday life. Text, images, animations and links to other great sites make this an excellent site. <i>(Entered 6/25/01 9:42:46 AM)</i>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		

**SAMPLE ASSESSMENTS:**

1. For any laboratory experiment, what should be the first step?
- A. form a hypothesis
  - B. state the problem
  - C. perform the experiment
  - D. write the conclusion

(B is the correct answer. Source for this item is GHSGT Content Description- Science 1998)

2. A tropical fish hobbyist wants to see whether a new, more expensive fish food causes fish to grow faster. She sets up an experiment using three groups of ten fish each. The fish in group A receive a diet of the new fish food. Fish in group B receive the old fish food. Fish in group C receive a mixture containing two parts new food and one part old food. The length of each fish is measured weekly. What is the control group in this experiment?
- A. group A
  - B. group B
  - C. group C
  - D. none of the above

(B is the correct answer. Source for this item is GHSGT Content Description- Science 1998)

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<b>National Standard(s):</b> Develop abilities to do scientific inquiry. (2)		
<b>OBJECTIVE (S):</b>		
2. Analyze, evaluate, and present information using the three types of graphs. (QCC 1.2)		
<b>PACING:</b>	7 class periods and throughout the course	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 20-27 Chapter 1; Section 1.3 <b>TECHNOLOGY INTEGRATION:</b>	<b>Title:</b> <b>Tasty Solution</b> <b>Annotation:</b> The Tasty Solution Lab helps students identify the different parts of a solution and to determine that exposing more surface area of a solution speeds up the dissolving time. This site offers skills in observing, communicating, experimenting, <b>graphing</b> and applying. Lesson can be used as a lab. (Entered 7/29/1999) <b>URL:</b> <a href="http://ofcn.org/cyber.serv/academy/ace/sci/cecsci/cecsci109.html">http://ofcn.org/cyber.serv/academy/ace/sci/cecsci/cecsci109.html</a>	
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Holt Science Spectrum- A Physical Approach pp. 5 Assign worksheet 1.1: Connection to Biology- Serendipity and Science. Integration Enrichment Resources		

**SAMPLE ASSESSMENTS:**

1. You have been collecting data to determine average monthly rainfall for a particular year. You have 25 random samples recorded in millimeters for each month. You want to show rainfall trends over the year. What would be the best way to represent your data to illustrate each month's average rainfall?
- A. on a calendar, with the sample written on the days
  - B. on a bar graph, with each bar representing the average of 25 samples for a particular month.
  - C. In a brief but descriptive paragraph that includes your methods and general findings.
  - D. On a data table, with the months labeled along the top and 25 samples written below each, averaged at the last row.

(B is the correct answer. Source for this item is GHSGT Content Description- Science 1998)

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<b>National Standard(s):</b> Develop abilities to do scientific inquiry. (2)		
<b>OBJECTIVE(S):</b>		
3. Use traditional and current reference materials (traditional print and non-print, CD-ROM, Internet, and on-line data) to explore background and historical information regarding a scientific concept. (QCC 2.1)		
<b>PACING:</b>	1 class periods and throughout the course	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 4-12 Chapter 1; Section 1.1	<b>Title:</b> <a href="#">Lab Safety</a> <b>Annotation:</b> This link meets part 3.1 of this objective. Information on equipment, clean up, first aid and potential hazards as well as sample lab contracts. (Entered 6/14/2000 11:12:22 AM) <b>URL:</b> <a href="http://www.edu.gov.mb.ca/metks4/docs/support/scisafe/chapter4.html">http://www.edu.gov.mb.ca/metks4/docs/support/scisafe/chapter4.html</a>	
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Holt Science Spectrum- A Physical Approach pp. 5 Assign worksheet 1.1: Connection to Biology- Serendipity and Science. Integration Enrichment Resources		

**SAMPLE ASSESSMENTS:**

1. A student wishes to find a diagram of the earth's interior in the science textbook. Which part of a science textbook is likely to be most useful?

- A. Appendix
- B. Bibliography
- C. Glossary
- D. Index

(D is the correct answer. Source for this item is GHSGT Content Description- Science 1998)

2. In which part of a science textbook are definitions of science terms most likely to be found?

- A. Table of contents
- B. Index
- C. Appendix
- D. Glossary

(D is the correct answer. Source for this item is GHSGT Content Description- Science 1998)

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<b>National Standard(s):</b> Develop abilities to do scientific inquiry. (2)		
<b>OBJECTIVE (S):</b>		
4. Learn and use on a regular basis standard safety practices for laboratory or field investigations. (QCC 3.1)		
<b>PACING:</b>	2 class periods and throughout the course	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 206, 442, 469, 444-445, 220, 222, 236. Throughout the Book <b>TECHNOLOGY INTEGRATION:</b>	<b>Title:</b> <a href="#">General Laboratory Safety Practices</a> <b>Annotation:</b> Lab rules and survival manual and <b>safety</b> quiz ( <i>Entered 7/28/1999</i> ) <b>URL:</b> <a href="http://www.virginia.edu/~enhealth/lsm/glsp.html">http://www.virginia.edu/~enhealth/lsm/glsp.html</a>	
<b>INTERDISCIPLINARY CONNECTIONS:</b>		

**SAMPLE ASSESSMENTS:**

1. What is the proper procedure for determining whether an unknown liquid has a characteristic odor?
- A. Place a container of the liquid under your nose, remove the cover, and sniff it.
  - B. Pour a sample of the liquid into water, place the beaker of water under your nose, and then sniff it.
  - C. Hold the container away from your body, remove the cover, allow some fumes to escape, and wave the fume toward your face with your free hand.
  - D. Insert a piece of glass tubing into the liquid, allow a small amount of the liquid to rise in the tube through the capillary action, hold the tube near your nose, and sniff it.

(C is the correct answer. Source for this item is GHSGT Content Description- Science 1998)

2. Today, Major's lab work involves working with bases. Which type of safety equipment is Major most likely to need?
- A. gloves and safety glasses
  - B. safety glasses and litmus paper
  - C. fire extinguisher and blanket
  - D. litmus paper and an apron

(D is the correct answer. Source for this item is GHSGT Content Description- Science 1998)

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<b>National Standard(s):</b> Develop understanding and abilities aligned with constancy, change, and measurement. (1)		
<b>OBJECTIVE (S):</b>		
5. Define standard of measurement and identify its need. Understand the SI standard. (QCC 1.1)		
<b>PACING:</b>	1 class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 12-20 Chapter 1; Section 1.2	<b>Title: <u>The NIST Reference on Constants, Units and Uncertainty</u></b> <b>Annotation:</b> The National Institute of Standards homepage. There is an extensive, detailed listing of physical constants, <b>SI units</b> and other measurement data. Useful for reference information. (Entered 9/25/2000 4:13:59 PM) <b>URL:</b> <a href="http://physics.nist.gov/cuu/Units/index.html">http://physics.nist.gov/cuu/Units/index.html</a>	
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Holt Science Spectrum- A Physical Approach pp. 15 Assign worksheet 1.2: Connection to Language Arts- Medical Terminology Integration Enrichment Resources		
<b>SAMPLE ASSESSMENTS:</b>		
1. A measurement standard is defined as _____. A. A system of prefixes B. The distance between two points C. The exact quantity people agree to use for comparison D. The interval between two events (C is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)		
2. The correct symbol for the S.I unit of temperature is _____. A. °C B. °F C. K D. S E. T (C is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)		

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<b>National Standard(s):</b> To understand the importance of a measuring standard.		
<b>OBJECTIVE (S):</b>		
6. Understand the metric system, do various conversions, write in scientific notation, and take measurements. (QCC 1.1)		
<b>PACING:</b>	7 class periods.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 12-20 Chapter 1; Section 1.2 <b>TECHNOLOGY INTEGRATION:</b>	<a href="#">A Dictionary of Measures, Units and Conversions</a> ... pressure, which is force/unit area. For the rainfall <b>conversions</b> a density of 1 kg/liter has been assumed. To change any of these ... Description: A summary of most of the units of measurement to be found in use around the world today (and a few... Category: <a href="#">Science &gt; Reference &gt; Units of Measurement</a> <a href="http://www.ex.ac.uk/cimt/dictunit/dictunit.htm">www.ex.ac.uk/cimt/dictunit/dictunit.htm</a>	
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Holt Science Spectrum- A Physical Approach pp. 15 Assign worksheet 1.2: Connection to Language Arts- Medical Terminology Integration Enrichment Resources		
<b>SAMPLE ASSESSMENTS:</b>		
1. How many meters are there in 1865 cm? A. 0.1865 B. 1.865 C. 18.65 D. 186.5 E. 18,650 (C is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill) 2. A beaker contains 0.32 L of water. What is the volume of water in milliliters? A. 320 ml      B. 32 ml      C. 3.2 ml      D. 0.032 ml (A is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)		

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<b>National Standard(s):</b> Develop abilities to do scientific inquiry. (2)		
<b>OBJECTIVE(S):</b>		
7. Plan, develop, and produce an independent science research project.		
<b>PACING:</b>	5 class periods and during the semester.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
<b>TECHNOLOGY INTEGRATION:</b>	<p><b>The science project is intended to develop the student's ability to think critically and independently and to become a self-motivated learner. The student will develop the ability to investigate, hypothesize, conduct experiments, and formulate a conclusion based on the results. Additional possible benefits of the research include preparation of students for higher levels of involvement in science programs, and special awards and recognition for outstanding work.</b></p> <p><b>Information concerning science research project, topic selection, project components, current Georgia Science and Engineering Fair (GSEF) restrictions (i.e. vertebrates, human tissue culture, lasers, chemicals, etc.) , and any other pertinent information should be given to each honors student during the first week of each semester.</b></p> <p><b>It is recommended that the science fair project constitute 10-20 percent of the student's final grade. The teacher's course syllabus will include the exact percentage which the science research project will count</b></p>	

	<p><b>that particular semester. The syllabus should also include a sequence of that semester's activities, with deadlines indicated, which the student is expected to complete.</b></p>
<p><b>INTERDISCIPLINARY CONNECTIONS:</b></p>	
<p><b>SAMPLE ASSESSMENTS:</b></p>	
<p>Multiple Choice Items:</p> <p>1. A science project dealt with solar energy (sunlight). Equipment included a solar cell, colored transparent squares (filters) to cover the solar cell, and propeller wired to the cell. When the cell was exposed to light, the propeller turned at a constant rate. When a blue filter was placed over the cell, the propeller slowed down. The blue filter was removed, and a red one was installed. The propeller slowed down even more. The speed increased again when all filters were removed. What can be inferred from this information?</p> <p>A. Different colors of visible light have different energies.  B. Solar cells are unable to produce a steady supply of energy.  C. Variance in the light source intensity accounted for changes in the speed.  D. No hypothesis can be drawn, since the wavelength of visible light are so similar.</p> <p>(A is the correct answer. Source for this item is GHSGT Content Description- Science 1998)</p>	

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<b>National Standard(s):</b> Develop an understanding of motion and forces. (4)		
<b>OBJECTIVE (S):</b>		
8. Define motion and the terms associated with motion. (distance, displacement, speed, velocity, and acceleration) (QCC 1.1)		
<b>PACING:</b>	7 class periods.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 252-259 Chapter 8; Section 8.1 <b>TECHNOLOGY INTEGRATION:</b>	<b>Title: <u>I'm Inclined to See (Exploration)</u></b> <b>Annotation:</b> Students will discover relationships between distance, time, velocity, speed and acceleration. This site offers skills in observing, communicating, experimenting, <b>graphing</b> and applying. Lesson can be used as a lab. ( <i>Entered 7/29/1999</i> ) <b>URL:</b> <a href="http://askeric.org/cgi-bin/printlessons.cgi/Virtual/Lessons/Science/Physics/PHS0019.html">http://askeric.org/cgi-bin/printlessons.cgi/Virtual/Lessons/Science/Physics/PHS0019.html</a>	
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Holt Science Spectrum- A Physical Approach pp. 254 Assign worksheet 8.1: Connection to Social Studies- An expanding city. Integration Enrichment Resources		
<b>SAMPLE ASSESSMENTS:</b>		
1. The statement, "The car was traveling at 55 mph due west," best describes <ul style="list-style-type: none"> <li>A. acceleration</li> <li>B. motion</li> <li>C. speed</li> <li>D. velocity</li> </ul> (D is the correct answer. Source for this item is GHSGT Content Description- Science 1998)		

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<b>National Standard(s):</b> Develop an understanding of motion and forces. (4)			
<b>OBJECTIVE (S):</b>			
9. Be able to plot and analyze graphs of position, distance, speed, and velocity with respect to time. (QCC 1.2)			
<b>PACING:</b>	3 class periods.		
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>		<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 252-259 Chapter 8; Section 8.1		<b>Title: <u><a href="#">I'm Inclined to See (Exploration)</a></u></b> <b>Annotation:</b> Students will discover relationships between distance, time, <b>velocity</b> , speed and acceleration. This site offers skills in observing, communicating, experimenting, graphing and applying. Lesson can be used as a lab. (Entered 7/29/1999) <b>URL:</b> <a href="http://askeric.org/cgi-bin/printlessons.cgi/Virtual/Lessons/Science/Physics/PHS0019.html">http://askeric.org/cgi-bin/printlessons.cgi/Virtual/Lessons/Science/Physics/PHS0019.html</a>	
<b>TECHNOLOGY INTEGRATION:</b>			
<b>INTERDISCIPLINARY CONNECTIONS:</b>			
Holt Science Spectrum- A Physical Approach pp. 262 Assign worksheet 8.3: Integrating Math- Jesse Owens in the 100 m dash Integration Enrichment Resources			
<b>SAMPLE ASSESSMENTS:</b>			
1.	Given the following data for a bike rider:	Distance (m)	Time(s)
		0	0
A.	Graph the data.	50	10
B.	What is the total distance traveled?	50	20
C.	What is the total time traveled?	100	30
D.	What is the average speed for the whole trip?	200	40
E.	What is the average speed for each time interval?		
F.	During which time interval was the biker traveling the fastest.		

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<b>National Standard(s):</b> Develop an understanding of motion and forces. (4)		
<b>OBJECTIVE (S):</b>		
10. Calculate speed, velocity, and acceleration in a lab setting. (QCC 14.1)		
<b>PACING:</b>	4 class periods.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 259-268 Chapter 8; Section 8.2	<b>Title:</b> <a href="#">Forces and Energy of Motion</a> <b>Annotation:</b> Information about potential and kinetic energy, Newton's Laws, force, motion, velocity, <b>acceleration</b> , gravity, energy and friction. Online information, mini lesson plan and activities. (Entered 7/29/1999) <b>URL:</b> <a href="http://www.usoe.k12.ut.us/curr/science/sciber00/8th/forces/sciber/forces2.htm">http://www.usoe.k12.ut.us/curr/science/sciber00/8th/forces/sciber/forces2.htm</a>	
<b>TECHNOLOGY INTEGRATION:</b> <b>Title:</b> <a href="#">Energy: Where to go from here.</a> <b>Annotation:</b> Online games, quizzes, visual aids, formulas and information about potential and kinetic energy, gravitational <b>acceleration</b> and friction. (Entered 7/29/1999) <b>URL:</b> <a href="http://library.thinkquest.org/3042/energy.html">http://library.thinkquest.org/3042/energy.html</a>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Holt Science Spectrum- A Physical Approach pp. 256 Assign worksheet 8.2: Real World Applications: Hiking in Yellowstone Integration Enrichment Resources		
<b>SAMPLE ASSESSMENTS:</b>		
1. A car is moving southwest at a velocity of 20 meters/sec. Five seconds later, still traveling in the same direction, the car has a velocity of 25 meters/sec. Calculate the acceleration using the formula: $a = \Delta V/t$ A. 1 meter/sec/sec B. 5 meters/sec/sec C. 8 meters/sec/sec D. 100 meters/sec/sec (A is the correct answer. Source for this item is GHSGT Content Description- Science 1998)		

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<b>National Standard(s):</b> Develop an understanding of motion and forces. (4)		
<b>OBJECTIVE (S):</b>		
11. Define and demonstrate Newton's First Law of Motion. (QCC 14.1)		
<b>PACING:</b>	2-class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 268-275 Chapter 8; Section 8.3 <b>TECHNOLOGY INTEGRATION:</b>	<p><b>Title:</b> <a href="#"><u>Forces and Energy of Motion</u></a>  <b>Annotation:</b> Information about potential and kinetic energy, <b>Newton's</b> Laws, force, motion, velocity, acceleration, gravity, energy and friction. Online information, mini lesson plan and activities. (Entered 7/29/1999)  <b>URL:</b> <a href="http://www.usoe.k12.ut.us/curr/science/sciber00/8th/forces/sciber/forces2.htm">http://www.usoe.k12.ut.us/curr/science/sciber00/8th/forces/sciber/forces2.htm</a></p> <p><b>Title:</b> <a href="#"><u>One Two Three, Isaac Newton and Me</u></a>  <b>Annotation:</b> Students will use a hovercraft to explore <b>Newton's</b> Three laws. Three exploratory labs are included in this lesson. This site offers skills in observing, communicating, experimenting and applying. Lesson can be used as a lab. (Entered 7/29/1999)  <b>URL:</b> <a href="http://unite.ukans.edu/explorer/explorer-db/html/783750789-447DED81.html">http://unite.ukans.edu/explorer/explorer-db/html/783750789-447DED81.html</a></p>	
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Holt Science Spectrum- A Physical Approach pp. 264 Assign worksheet 8.4: Connection to Biology- Serendipity and Science. Integration Enrichment Resources		

**SAMPLE ASSESSMENTS:**

1. The statement, “an object at rest remains at rest and an object in constant motion remains in motion” is known as Newton’s \_\_\_\_\_ law of motion.

- A. first
- B. second
- C. third

(A is the correct answer)

2. You have landed on another planet and notice immediately that some of the laws of nature do not apply. You must determine which specific law is not on effect and report to the Space Command. As you walk on the planet’s surface, you slip and slide. You finally make it to a suitable area and attempt to build a shelter. The nails fall out of the walls as soon as you drive them in. You set the transmitter down on a table and barely touch it, but it goes sliding across the table. Your time is up. You must report in. What is the cause of this problem?

- A. Friction is not in effect on this planet
- B. Nuclear forces are ineffective on this planet
- C. The law of conservation of energy does not work here
- D. Gravitational forces are too strong and overwhelm all other forces

(A is the correct answer. Source for this item is GHSGT Content Description – Science 1998)

3. Which demonstrates inertia?

- A. a kite freed from its string
- B. a top spinning on a glass surface
- C. a pendulum in a vacuum chamber
- D. a car accelerating through a green light

(A is the correct answer. Source for this item is GHSGT Content Description – Science 1998)

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<b>National Standard(s):</b> Develop an understanding of motion and forces. (4)		
<b>OBJECTIVE (S):</b>		
12. Define and demonstrate Newton's Second Law of Motion. (QCC 14.1)		
<b>PACING:</b>	3 class periods.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 268-275 Chapter 8; Section 8.3	<b>Title:</b> <a href="#">One Two Three, Isaac Newton and Me</a> <b>Annotation:</b> Students will use a hovercraft to explore <b>Newton's</b> Three laws. Three exploratory labs are included in this lesson. This site offers skills in observing, communicating, experimenting and applying. Lesson can be used as a lab. (Entered 7/29/1999) <b>URL:</b> <a href="http://unite.ukans.edu/explorer/explorer-db/html/783750789-447DED81.html">http://unite.ukans.edu/explorer/explorer-db/html/783750789-447DED81.html</a>	
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Students Worksheet 8.7: Connection to Fine Arts- Momentum of Line in Art		
<b>SAMPLE ASSESSMENTS:</b>		
1. Apply the concept that a Newton (N) is the force needed to accelerate one kilogram of mass by one meter per second. In soccer practice, what would you use Newton to measure? A. the air pressure needed inside the ball to accomplish perfect shots at goal B. how hard a person kicks the ball C. how far the ball goes after it is kicked D. the proper length of the field to ensure a fair game (B is the correct answer. Source for this item is GHSGT Content Description- Science 1998)		

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<b>National Standard(s):</b> Develop an understanding of motion and forces. (4)		
<b>OBJECTIVE (S):</b>		
13. Know the various types of forces present in our environment. (Weight, balanced force, unbalanced forces, etc.). Examine everyday occurrences of forces and identify the various forces involved. (QCC 13.1)		
<b>PACING:</b>	3 class periods.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 268-275 Chapter 8; Section 8.3	<b>Title:</b> <a href="#">Forces and Energy of Motion</a> <b>Annotation:</b> Information about potential and kinetic energy, Newton's Laws, force, motion, velocity, acceleration, <b>gravity</b> , energy and friction. Online information, mini lesson plan and activities. (Entered 7/29/1999) <b>URL:</b> <a href="http://www.usoe.k12.ut.us/curr/science/sciber00/8th/forces/sciber/forces2.htm">http://www.usoe.k12.ut.us/curr/science/sciber00/8th/forces/sciber/forces2.htm</a>	
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Holt Science Spectrum- A Physical Approach pp. 272 Assign worksheet 8.5: Integrating Space Science- Gravity and the Planets Integration Enrichment Resources		

**SAMPLE ASSESSMENTS:**

1. Bob picked up two eggs from the table. One egg slipped out of his hand as he picked it up and hit the table but did not break. The egg then rolled off the table and fell on the floor, where it broke. Which principle of physical science best explains why the egg broke on the floor but not on the table?
- A. The floor was harder than the table
  - B. The first fall cracked the egg so that it would break the next time it hit something.
  - C. As the egg fell to the floor, it encountered friction with the air, which made it easier to break.
  - D. The egg was going faster when it hit the floor than when it hit the table; therefore it hit the floor with greater force.

(D is the correct answer. Source for this item is GHSGT Content Description- Science 1998)

2. A spaceship crew has been given the task of gathering "space trash". They are to collect the material and bring it back to earth in the shuttle. Some materials are quite large and some quite small. Apply what you know of weight to and mass to this situation to determine which statement is true.
- A. The larger pieces will be harder to move, strictly because of their weight.
  - B. The smaller pieces will be easily gathered since little or no force will be required to move them to the shuttle.
  - C. Since weight is not involved, the crew will be able to move all the materials using the same amount of force.
  - D. The force required to move the material will depend solely on its mass.

(D is the correct answer. Source for this item is GHSGT Content Description- Science 1998)

3. Friction, gravity, and buoyancy are all important in a basketball game. How are friction and gravity different?
- A. Gravity pulls the ball down, while friction pulls it up
  - B. Gravity varies in strength, while friction remains constant
  - C. Gravity is a force at a distance, while friction is a constant force.
  - D. Gravity is measured in Newton, while friction is measured in foot-pounds.

(C is the correct answer. Source for this item is GHSGT Content Description- Science 1998)

4. Apply the concept of a Newton = N, as a force needed to accelerate one kilogram of mass by one meter per second. In soccer practice, what would you use Newton's to measure?
- A. the air pressure needed inside the ball to accomplish perfect shots at goal
  - B. the force needed for a straight shot at the goal from a known distance
  - C. the weight limits for the players to ensure their running speed
  - D. the proper length of the field to ensure a fair game

(B is the correct answer. Source for this item is GHSGT Content Description- Science 1998)

5. A spaceship crew has been given the task of gathering "space trash". They are to collect the material and bring it back to earth in the shuttle. Some materials are quite large and some, quite small. APPLY what you know of weight and mass to this situation to determine which statement is true.
- A. The larger pieces will be harder to move, strictly because of their weight.
  - B. The smaller pieces will be easily gathered since little or no force will be required to move them to the shuttle.
  - C. Since weight is not involved, the crew will be able to move all the materials using the same amount of force.
  - D. Although none of the material has weight, the force required to move the material will depend solely on its mass.

(D is the correct answer. Source for this item is GHSGT Content Description – Science 1998)

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of motion and forces. (4)		
<b>OBJECTIVE (S):</b>		
14. Define gravity. Know why different objects fall to the ground at different rates. Define weightlessness. (QCC 13.2)		
<b>PACING:</b>	2-class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 268-275 Chapter 8; Section 8.3 <b>TECHNOLOGY INTEGRATION:</b>	<p><b>Title:</b> <a href="#"><u>Forces and Energy of Motion</u></a>  <b>Annotation:</b> Information about potential and kinetic energy, Newton's Laws, force, motion, velocity, acceleration, <b>gravity</b>, energy and friction. Online information, mini lesson plan and activities. (Entered 7/29/1999)  <b>URL:</b> <a href="http://www.usoe.k12.ut.us/curr/science/sciber00/8th/forces/sciber/forces2.htm">http://www.usoe.k12.ut.us/curr/science/sciber00/8th/forces/sciber/forces2.htm</a></p> <p><b>Title:</b> <a href="#"><u>Roller Coasters in the Classroom</u></a>  <b>Annotation:</b> The students will explain the relationship of height to potential energy and kinetic energy. The students will understand the effects of <b>weight</b> and speed on momentum. This site offers skills in observing, communicating, experimenting and applying. Lesson can be used as a lab or demonstration. (Entered 7/29/1999)  <b>URL:</b> <a href="http://ofcn.org/cyber.serv/academy/ace/sci/cecsci/cecsci193.html">http://ofcn.org/cyber.serv/academy/ace/sci/cecsci/cecsci193.html</a></p>	
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Holt Science Spectrum- A Physical Approach pp. 272 Assign worksheet 8.6: Integrating Biology- How fish maintain Neutral Buoyancy. Integration Enrichment Resources		

**SAMPLE ASSESSMENTS:**

1. At one time, there were only eight known planets in our solar system. However, the orbit of the eighth planet did not follow a logical path. Something was affecting the orbit. Using this aberration, a scientist knew where to look in the sky for another mass- and Pluto was discovered. Which laws or theory helped in this discovery?
- A. Matter is anything that has mass and takes up space.
  - B. For every action, there is an equal and opposite reaction.
  - C. Gravitational force increases with increased mass, and decreased, as distance between masses becomes greater.
  - D. A mass moving at a constant velocity tends to keep moving at that velocity unless acted on by an outside force.

(C is the correct answer. Source for this item is GHSGT Content Description – Science 1998)

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of motion and forces. (4)		
<b>OBJECTIVE (S):</b>		
15. Define friction. Know the difference between static and kinetic friction. (QCC – 13.2)		
<b>PACING:</b>	2 class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 265-275 Chapter 8; Section 8.2 <b>TECHNOLOGY INTEGRATION:</b> <b>Title:</b> <a href="#">Energy: Where to go from here.</a> <b>Annotation:</b> Online games, quizzes, visual aids, formulas and information about potential and kinetic energy, gravitational acceleration and <b>friction.</b> (Entered 7/29/1999) <b>URL:</b> <a href="http://library.thinkquest.org/3042/energy.html">http://library.thinkquest.org/3042/energy.html</a>	<b>Title:</b> <a href="#">Reluctant Movers</a> <b>Annotation:</b> The student will explore the natural law of inertia. This site offers skills in observing, communicating, experimenting and applying. Lesson can be used as a demonstration or lab. (Entered 7/29/1999) <b>URL:</b> <a href="http://wings.avkids.com/Curriculum/Foces_Motion/reluctant_howto.html">http://wings.avkids.com/Curriculum/Foces_Motion/reluctant_howto.html</a>	
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
<b>SAMPLE ASSESSMENTS:</b>		
1. Two crates, a heavy one and a light one, are at rest on a waxed floor. Which crate will need a large force to give the same change in speed? Explain your answer in terms of inertia.  The heavy one has more inertia and requires a larger force. (Source for item is Glencoe Physical Science by McGraw-Hill)		
2. _____ forces acting on an object cause the object to accelerate. A. Unbalanced      B. balanced      C. no forces (A is the correct answer)		

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of motion and forces. (4)		
<b>OBJECTIVE(S):</b>		
16. Define projectile motion and know why it follows a curved path.		
<b>PACING:</b>	2 class periods.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Use other resources; not mentioned in the book		
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
<b>SAMPLE ASSESSMENTS:</b>		
1. The path of a projectile is _____.		
<ul style="list-style-type: none"> <li>A. curved</li> <li>B. always horizontal</li> <li>C. always vertical</li> <li>D. straight</li> </ul>		
(A is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)		

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of motion and forces. (4)		
<b>OBJECTIVE(S):</b>		
17. Compare motion in a straight line with circular motion.		
<b>PACING:</b>	1 class period	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Use other resources; not mentioned in the book		
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
<b>SAMPLE ASSESSMENTS:</b>		
Multiple Choice Items:		
1. When an object moves in a circular path, it accelerates toward the center of the circle as a result of _____.		
<ul style="list-style-type: none"> <li>A. centripetal force</li> <li>B. frictional force</li> <li>C. gravitational force</li> <li>D. momentum</li> <li>E. terminal velocity</li> </ul>		
(A is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)		

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of motion and forces. (4)		
<b>OBJECTIVE(S):</b>		
18. Explain how satellites are placed in orbit around the earth. Give examples of how satellites can be used.		
<b>PACING:</b>	1 class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>		<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>
Use other resources; not mentioned in the book		
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
<b>SAMPLE ASSESSMENTS:</b>		
1. Artificial _____ are human-made devices that orbit Earth for a specific purpose.  (Satellite is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)		

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding for motion and forces. (4)		
<b>OBJECTIVE (S):</b>		
19. Compare the scientific meaning of work with it everyday meaning. (QCC 15.1)		
<b>PACING:</b>	2-class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>		<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>
<p>Holt Science Spectrum- A Physical Approach pp. 284-291 Chapter 9; Section 9.1</p> <p><b>TECHNOLOGY INTEGRATION:</b></p> <p><b>Title: <u>The Energy Story</u></b> <b>Annotation:</b> A very well done tutorial on nuclear <b>energy</b> with graphics, pop-up windows to other sites can be accessed by hot links on the page. A summary is provided at the end of the page. (Entered 9/25/2000 5:37:59 PM) <b>URL:</b> <a href="http://www.energy.ca.gov/education/story/story-html/chapter07.html">http://www.energy.ca.gov/education/story/story-html/chapter07.html</a></p> <p><b>Title: <u>The Wolf Man's Ghostly Graveyard II Energy is not equal</u></b> <b>Annotation:</b> Students can learn about heats of combustion for fossil fuels, global warming and the greenhouse gas, carbon dioxide at this site. (Entered 9/26/2000 10:25:21 AM)</p>		<p><b>Title: <u>Roller Coasters in the Classroom</u></b> <b>Annotation:</b> The students will explain the relationship of height to potential energy and kinetic energy. The students will understand the effects of weight and <b>speed</b> on momentum. This site offers skills in observing, communicating, experimenting and applying. Lesson can be used as a lab or demonstration. (Entered 7/29/1999) <b>URL:</b> <a href="http://ofcn.org/cyber.serv/academy/ace/sci/cecsci/cecsci193.html">http://ofcn.org/cyber.serv/academy/ace/sci/cecsci/cecsci193.html</a></p>
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
<p>Holt Science Spectrum- A Physical Approach pp. 285 Assign worksheet 9.1: Integrating Biology- Muscles and Work Integration Enrichment Resources</p>		

**SAMPLE ASSESSMENTS:**

1. The amount of work done when a force of 1 N acts through a distance of 1 m is equal to a \_\_\_\_\_.
- A. calorie
  - B. Celsius degree
  - C. Kelvin
  - D. Kilogram
  - E. Joule

(E is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of motion and forces. (4)		
<b>OBJECTIVE (S):</b>		
20. Calculate work done using lab devices. (QCC 15.1)		
<b>PACING:</b>	1 class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 284-291 Chapter 9; Section 9.1 <b>TECHNOLOGY INTEGRATION:</b>	<b>Title:</b> <a href="#">Roller Coasters in the Classroom</a> <b>Annotation:</b> The students will explain the relationship of height to potential energy and kinetic energy. The students will understand the effects of weight and <b>speed</b> on momentum. This site offers skills in observing, communicating, experimenting and applying. Lesson can be used as a lab or demonstration. (Entered 7/29/1999) <b>URL:</b> <a href="http://ofcn.org/cyber.serv/academy/ace/sci/cecsci/cecsci193.html">http://ofcn.org/cyber.serv/academy/ace/sci/cecsci/cecsci193.html</a>	
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Holt Science Spectrum- A Physical Approach pp. 295 Assign worksheet 9.2 : Connection to Social Studies- The Pyramids Integration Enrichment Resources		
<b>SAMPLE ASSESSMENTS:</b>		
Short Answer Choice Items:		
1. A 5000 N elevator is lifted 7 m. How much work was done? Answer: 35,000 J (Source for item is Glencoe Physical Science by McGraw-Hill)		

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of motion and forces. (4)		
<b>OBJECTIVE (S):</b>		
21. Know the importance, classification, and use of machines. (QCC 15.2)		
<b>PACING:</b>	2 class periods.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>		<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>
Holt Science Spectrum- A Physical Approach pp. 291-297 Chapter 9; Section 9.2		<a href="http://www.scilinks.org">www.scilinks.org</a> password: HK1092
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Holt Science Spectrum- A Physical Approach pp. 297 Assign worksheet 9.5: Connection to Language Arts- The Concept of Energy Integration Enrichment Resources		
<b>SAMPLE ASSESSMENTS:</b>		
<p>1. An inclined plane is described as a sloping surface, which helps make-work easier. Which other machines work on the same principle?</p> <p>A. lever, pulley B. lever, wheel, and axle C. screw, wedge D. wedge, wheel, and axle</p> <p>(B is the correct answer. Source for this item is GHSGT Content Description- Science 1998)</p>		

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of motion and forces. (4)		
<b>OBJECTIVE (S):</b>		
22. Describe the relationship among work, power, and time.		
<b>PACING:</b>	1-class periods.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 284-291 Chapter 9; Section 9.1		
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		

**SAMPLE ASSESSMENTS:**

1. Choose the statement or situation, which best demonstrates the relationship between power and force.
- A. Force is power divided by time
  - B. Greater power implies greater force, but greater force does NOT imply greater power
  - C. Since power involves greater speed and greater force, it means a higher work output than force alone.
  - D. Since power is work divided by time, and work is force times distance, power involves the rate at which a change in motion is accomplished.

(D is the correct answer. Source for this item is GHSGT Content Description- Science 1998)

2. Use the formula,  $\text{Power} = \text{Work} / \text{Time}$ , to determine the amount of power needed for the following problem.
- A person weighing 800 Newton walks up three flights of steps. Each flight is 10 meters high. IT takes 60 seconds to reach the top. How much power is required?
- A. 8000 Newton-meter/sec
  - B. 400 Newton-meter/sec
  - C. 133.3 Newton-meter/sec
  - D. 0 Newton-meter/sec

(B is the correct answer. Source for this item is GHSGT Content Description- Science 1998)

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of motion and forces. (4)		
<b>OBJECTIVE(S):</b>		
23. Identify compound machines as a combination of simple machines and describe how work is done. (QCC 15.3)		
<b>PACING:</b>	1 class period	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>		<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>
Use other resources		
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
<b>SAMPLE ASSESSMENTS:</b>		
Multiple Choice Items:		
1. Two simple machines that are part of a bicycle are _____.		
A. a gear and a wheel and axle		
B. an inclined plane and a lever		
C. an inclined plane and a wedge		
D. a screw and an inclined plane		
E. a wheel an axle and an inclined plane		
(A is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)		

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of interactions of energy and matter. (4)		
<b>OBJECTIVE (S):</b>		
24. Describe some sources and uses of energy such as chemical, thermal, thermonuclear, photoelectric, electromagnetic energy etc. Know the relationship between energy and work. (QCC 12.1)		
<b>PACING:</b>	1 class period	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
<p>Holt Science Spectrum- A Physical Approach pp. 297-306 Chapter 9; Section 9.3</p> <p><b>TECHNOLOGY INTEGRATION:</b></p> <p><b>Title: <a href="#">Alternative Energy</a></b> <b>Annotation:</b> This an award winner from think quest. Looks at alternative <b>energy</b>. The problems and the possible solutions. (Entered 9/19/2000 7:55:44 PM) <b>URL:</b> <a href="http://library.thinkquest.org/15684/main.html">http://library.thinkquest.org/15684/main.html</a></p> <p><b>Title: <a href="#">Energy Fact Sheets</a></b> <b>Annotation:</b> This series of very well written articles discusses our past, present and future uses of <b>energy</b>. The most commonly used <b>energy</b> sources today are not without their consequences to the environment. Advantages and disadvantages of various <b>energy</b> sources and the potential of alternatives are described. (Entered 7/14/1999) <b>URL:</b> <a href="http://www.iclei.org/efacts/">http://www.iclei.org/efacts/</a></p>	<p><b>Title: <a href="#">Forms of Energy</a></b> <b>Annotation:</b> The homepage for forms of <b>energy</b>. On this page, you can select from a list of topics on <b>energy</b>. (Entered 9/26/2000 9:54:39 AM) <b>URL:</b> <a href="http://www.swift.com/apase/charlotte/formse.html">http://www.swift.com/apase/charlotte/formse.html</a></p> <p><b>Title: <a href="#">Chem 4 Kids - Matter</a></b> <b>Annotation:</b> Students will explore the different states of matter and see how <b>energy</b> and temperature plays a role in change of state. Online research and exploration. (Entered 7/29/1999)</p>	

**INTERDISCIPLINARY CONNECTIONS:**

Holt Science Spectrum- A Physical Approach pp. 285  
Assign worksheet 9.1: Integrating Biology- Muscles and Work  
Integration Enrichment Resources

**SAMPLE ASSESSMENTS:**

1. The heat from nuclear reactions is used to make steam, which in turn drives a turbine to generate electricity. Which sequence is followed in this conversion of energy?
- A. thermal-→ mechanical-→ electrical-→
  - B. nuclear-→chemical-→mechanical-→electrical
  - C. thermal-→nuclear-→mechanical-→electrical
  - D. nuclear-→thermal-→mechanical-→electrical
- (D is the correct answer. Source for this item is GHSGT Content Description- Science 1998)

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the interactions of energy and matter. (4)		
<b>OBJECTIVE (S):</b>		
25. Know the difference between kinetic and potential energy. Be able to calculate the kinetic energy and potential energy of various situations. (QCC 12.1)		
<b>PACING:</b>	4-class periods.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>		<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>
Holt Science Spectrum- A Physical Approach pp. 297-306 Chapter 9; Section 9.3		<a href="http://www.scilinks.org">www.scilinks.org</a> password: HK1094
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Holt Science Spectrum- A Physical Approach pp. 285 Assign worksheet 9.6: Integrating Chemistry- Chemical reactions as an extension exercise. Integration Enrichment Resources		

**SAMPLE ASSESSMENTS:**

1. Which would be the best example of kinetic energy?

- A. batteries on a shelf
- B. batteries in a flashlight that is turned off
- C. batteries in a flashlight that is turned on
- D. batteries in a flashlight that has been left on too long

(C is the correct answer. Source for this item is GHSGT Content Description- Science 1998)

2. Falling water, a car racing around a track, a yo-yo returning to your hand, and a basketball on the way to the hoop are all example of \_\_\_\_\_.

- A. kinetic energy
- B. potential energy
- C. mechanical energy
- D. heat potential energy

(A is the correct answer. Source for this item is GHSGT Content Description- Science 1998)

3. You have been hired to drive pilings from a small bridge. The pilings are held in place, and a mass suspended from a crane drops and drives the pilings into the ground. You have discovered that the procedure you are currently using does not drive the pilings deep enough. How could you best modify the plan to drive the pilings deeper?

- A. Use smaller pilings for the bridge, which would in turn lower the energy required.
- B. Increase potential energy by moving the crane as close as possible to the piling being driven.
- C. Increase kinetic energy by lowering the crane and increasing the mass of the weight hitting the piling.
- D. Increase potential energy by increasing the height of the crane or the mass of the weight hitting each piling.

(D is the correct answer. Source for this item is GHSGT Content Description- Science 1998)

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the interactions of energy and matter. (4)		
<b>OBJECTIVE (S):</b>		
26. Describe and give examples of the law of conservation of energy. (QCC 11.2)		
<b>PACING:</b>	1-class periods.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 306-315 Chapter 9; Section 9.4 <b>TECHNOLOGY INTEGRATION:</b>	<p><b>Title:</b> <a href="#">Forms of Energy</a>  <b>Annotation:</b> The homepage for forms of <b>energy</b>. On this page, you can select from a list of topics on <b>energy</b>. (Entered 9/26/2000 9:54:39 AM)  <b>URL:</b> <a href="http://www.swift.com/apase/charlotte/formse.html">http://www.swift.com/apase/charlotte/formse.html</a></p> <p><b>Title:</b> <a href="#">Chem 4 Kids - Matter</a>  <b>Annotation:</b> Students will explore the different states of matter and see how <b>energy</b> and temperature plays a role in change of state. Online research and exploration. (Entered 7/29/1999)</p>	
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Holt Science Spectrum- A Physical Approach pp. 310 Assign worksheet 9.4: Integrating Technology- Batteries and Emerging Technology Integration Enrichment Resources		

**SAMPLE ASSESSMENTS:**

1. The law of conservation of energy states that \_\_\_\_.
- A. energy created is really not transformed
  - B. energy can neither be created nor destroyed; it can only be transformed
  - C. energy transformation occurs without any loss or gain in the amount of energy
  - D. in all energy conversions in a closed system, the potential energy of the final state is always less than that of the initial state.

(B is the correct answer. Source for this item is GHSGT Content Description- Science 1998)

2. Which of the following is the best example of an energy transformation?
- A. solid energy converted to liquid energy as ice melts
  - B. electrical energy converted to chemical energy in a dry cell battery
  - C. building materials changed into a house through construction
  - D. electrical energy changed to light energy through a tungsten wire in a bulb

(D is the correct answer. Source for this item is GHSGT Content Description- Science 1998)

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the interactions of energy and matter. (4)		
<b>OBJECTIVE (S):</b>		
27. Compare the effectiveness of various methods of energy conservation. (QCC 12.3)		
<b>PACING:</b>	2-class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 306-315 Chapter 9; Section 9.4	<p><b>Title:</b> <a href="#">Saving Energy and Energy Conservation</a></p> <p><b>Annotation:</b> A brief look at some of the things that we can do to lower our <b>energy</b> uses. Can be used for an introduction to <b>energy</b> conservation. (Entered 8/7/1999)</p> <p><b>URL:</b> <a href="http://www.energy.ca.gov/education/story/story-html/chapter14.html">http://www.energy.ca.gov/education/story/story-html/chapter14.html</a></p>	
<p><b>TECHNOLOGY INTEGRATION:</b></p> <p><b>Title:</b> <a href="#">Alternative Energy</a></p> <p><b>Annotation:</b> This an award winner from think quest. Looks at alternative <b>energy</b>. The problems and the possible solutions. (Entered 9/19/2000 7:55:44 PM)</p> <p><b>URL:</b> <a href="http://library.thinkquest.org/15684/main.html">http://library.thinkquest.org/15684/main.html</a></p> <p><b>Title:</b> <a href="#">Energy Fact Sheets</a></p> <p><b>Annotation:</b> This series of very well written articles discusses our past, present and future uses of <b>energy</b>. The most commonly used <b>energy</b> sources today are not without their consequences to the environment. Advantages and disadvantages of various <b>energy</b> sources and the potential of alternatives are described. (Entered 7/14/1999)</p> <p><b>URL:</b> <a href="http://www.iclei.org/efacts/">http://www.iclei.org/efacts/</a></p>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Holt Science Spectrum- A Physical Approach pp. 310 Assign worksheet 9.7: Environmental Science- Batteries and Emerging Technology		

Integration Enrichment Resources
<b>SAMPLE ASSESSMENTS:</b>
Short Answer Items:  1. List three ways to conserve energy and fossil fuels.  Answer: turn off lights not being used, drive car at correct speed, use energy efficient appliances, lower temperature of house in winter, turn up or turn off air conditioning, use alternative energy sources.  (Source for item is Glencoe Physical Science by McGraw-Hill)

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the interactions of energy and matter. (4)		
<b>OBJECTIVE (S):</b>		
28. Identify and analyze the nature of heat transfer in the learner's environment and describe and classify heat transfer as conduction, convection, and radiation. (QCC 12.4)		
<b>PACING:</b>	2 class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 324-331 Chapter 10; Section 10.1 <b>TECHNOLOGY INTEGRATION:</b>  <b>Title: <u>Alternative Energy</u></b> <b>Annotation:</b> This an award winner from think quest. Looks at alternative <b>energy</b> . The problems and the possible solutions. (Entered 9/19/2000 7:55:44 PM) <b>URL:</b> <a href="http://library.thinkquest.org/15684/main.html">http://library.thinkquest.org/15684/main.html</a>	<b>Title: <u>Energy Fact Sheets</u></b> <b>Annotation:</b> This series of very well written articles discusses our past, present and future uses of <b>energy</b> . The most commonly used <b>energy</b> sources today are not without their consequences to the environment. Advantages and disadvantages of various <b>energy</b> sources and the potential of alternatives are described. (Entered 7/14/1999) <b>URL:</b> <a href="http://www.iclei.org/efacts/">http://www.iclei.org/efacts/</a>	
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Holt Science Spectrum- A Physical Approach pp. 328 Assign worksheet 10.1: Integrating Space Science- Starlight, Star Heat Integration Enrichment Resources Holt Science Spectrum- A Physical Approach pp. 337 Assign worksheet 10.3: Integrating Earth Science – Land and Sea Breezes Integration Enrichment Resources Holt Science Spectrum- A Physical Approach pp. 340 Assign worksheet 10.2: Connection to Social Studies- Early Central Heating Integration Enrichment Resources		

**SAMPLE ASSESSMENTS:**

1. Which of the following best defines convection?
- A. The movement of a fluid transfers heat.
  - B. A liquid acquires enough heat to change to a gas.
  - C. Temperature changes are measured only in Kelvin degrees.
  - D. Thermal energy is transferred by the direct contact of one molecule to another.

(A is the correct answer. Source for this item is GHSGT Content Description- Science 1998)

2. What would be a good material to include in city design, particularly to help cool and heat building more efficiently?
- A. concrete
  - B. glass
  - C. metal
  - D. natural stone

(B is the correct answer. Source for this item is GHSGT Content Description- Science 1998)

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the interactions of energy and matter. (4)		
<b>OBJECTIVE(S):</b>		
29. Experimentally compare the relative role of conductors and insulators in heat conductivity. (QCC 12.5)		
<b>PACING:</b>	2 class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>		<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>
Holt Science Spectrum- A Physical Approach pp. 331-339 Chapter 10; Section 10.2		<a href="http://www.scilinks.org">www.scilinks.org</a> <b>password: HK1103</b>
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Holt Science Spectrum- A Physical Approach pp. 337 Assign worksheet 10.3 : Integrating Earth Science – Land and Sea Breezes Integration Enrichment Resources		

**SAMPLE ASSESSMENTS:**

1. Which property does NOT contribute to a material's ability to conduct electricity?
  - A. being metallic in nature
  - B. having one to three electrons in the atom's outer level
  - C. being capable of having electrons transfer by induction
  - D. being capable of having electrons transfer by conduction

(C is the correct answer. Source for this item is GHSGT Content Description- Science 1998)
  
2. How could you test the effectiveness of a material as a conductor of electricity?
  - A. Place it outside during an electric storm; observe if it attracts lightning.
  - B. Rub it with a magnet, then bring it into contact with other materials; observe if it attracts or repels the materials.
  - C. Rub it with a charged material, then touch it to the knob of an electroscope; observe the metal leaves' movement.
  - D. Rub it with oil, then with a glass rod, then touch it to a metal wire; observe if sparks appear on contact.

(C is the correct answer. Source for this item is GHSGT Content Description- Science 1998)
  
3. High-tension wires that carry electricity across the countryside are left bare because the amount of insulation required for 230,000 volts is not practical. Porcelain guides are used on high-tension wires where they come near the steel support towers. What is a likely explanation for this?
  - A. The porcelain provides leverage for electricians when repairs are necessary.
  - B. The porcelain insulates the wire from the steel tower and prevents sparks from flying between the two.
  - C. The porcelain prevents rubbing of the wires against the steel, which can cause interference in the electric current.
  - D. The porcelain conducts a small current of electricity, which feeds a monitor that controls the flow of electricity through the wire.

(B is the correct answer. Source for this item is GHSGT Content Description- Science 1998)

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the interactions of energy and matter. (4)		
<b>OBJECTIVE(S):</b>		
30. Understand the difference between heat and temperature. (QCC 12.4)		
<b>PACING:</b>	3 class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>		<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>
Holt Science Spectrum- A Physical Approach pp. 324-331 Chapter 10; Section 10.1		<a href="http://www.scilinks.org">www.scilinks.org</a> <b>password: HK1103</b>
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Holt Science Spectrum- A Physical Approach pp. 330 Assign worksheet 10.2 : Integrating Health- Skin Temperature Integration Enrichment Resources		
<b>SAMPLE ASSESSMENTS:</b>		
1. As the temperature of a material decreases, the average _____ of its particles also decreases. A. heat capacity B. kinetic energy C. mass D. potential energy (B is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)		

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the interactions of energy and matter. (4)		
<b>OBJECTIVE(S):</b>		
31. Understand the various processes involved in changing ice to steam and steam to ice. (QCC 12.4)		
<b>PACING:</b>	4 class periods.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 324-331 Chapter 10; Section 10.2	<a href="http://www.scilinks.org">www.scilinks.org</a> <b>password: HK1104</b>	
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Holt Science Spectrum- A Physical Approach pp. 340 Assign worksheet 10.2 : Connection to Social Studies- Early Central Heating Integration Enrichment Resources Holt Science Spectrum- A Physical Approach pp. 343 Assign worksheet 10.7 : Connection to Social Studies- The Little Ice Age Integration Enrichment Resources		
<b>SAMPLE ASSESSMENTS:</b>		
1. Melting can be defined as a _____. A. Chemical change. B. Phase change of solid to liquid. C. Substance undergoing sublimation. D. Change from solid to gas only in the presence of high temperature (B is the correct answer. Source for this item is GHSGT Content Description- Science 1998)		

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the interactions of energy and matter. (4)		
<b>OBJECTIVE(S):</b>		
32. Differentiate between conductors and insulators. (QCC – 12.5)		
<b>PACING:</b>	1 class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>		<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>
Holt Science Spectrum- A Physical Approach pp. 324-331 Chapter 10; Section 10.1		<a href="http://www.scilinks.org">www.scilinks.org</a> <b>password: HK1104</b>
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Holt Science Spectrum- A Physical Approach pp. 340 Assign worksheet 10.2 : Connection to Social Studies- Early Central Heating Integration Enrichment Resources		
<b>SAMPLE ASSESSMENTS:</b>		
<p>1. A material that reduces the flow of heat by conduction, convection, and radiation is _____.</p> <p>A. a conductor</p> <p>B. condensation</p> <p>C. an insulator</p> <p>D. a solar collector</p> <p>E. a radiator</p> <p>(C is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)</p>		

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the interactions of energy and matter. (4)		
<b>OBJECTIVE(S):</b>		
33. Explain how insulation affects the transfer of energy. (QCC 12.5)		
<b>PACING:</b>	1 class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>		<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>
Holt Science Spectrum- A Physical Approach pp. 324-331 Chapter 10; Section 10.1		<a href="http://www.scilinks.org">www.scilinks.org</a> <b>password: HK1104</b>
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
<b>SAMPLE ASSESSMENTS:</b>		
1. The effectiveness of insulation is rated with _____.		
A. a convection value		
B. an R-value		
C. a solar value		
D. a temperature value		
(B is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)		

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the interactions of energy and matter. (4)		
<b>OBJECTIVE(S):</b>		
34. Explain the use of solar energy; Distinguish between the working of an internal and an external combustion engine; Define a heat mover and give some of its applications; Explain the relationship between the ocean and thermal energy. (QCC 12.5)		
<b>PACING:</b>	1 class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 324-331 Chapter 10; Section 10.1 <b>TECHNOLOGY INTEGRATION:</b>	<a href="http://www.scilinks.org">www.scilinks.org</a> <b>password: HK1104</b>	
<b>INTERDISCIPLINARY CONNECTIONS:</b>		

**SAMPLE ASSESSMENTS:**

## Short Answer Items:

1. You are going to wrap your hot-water heater with insulation to prevent heat from escaping into the air. Would you place the side of insulation with the foil next to the tank or away from the tank?

(The shiny side would be placed next to the tank to reflect thermal energy being transferred by radiation. Source for item is Glencoe Physical Science by McGraw-Hill)

2. Gasoline engines and diesel engines are \_\_\_\_\_.

- A. insulators
- B. external combustion engines
- C. internal combustion engines
- D. heat movers
- E. heat pumps

(C is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)

3. Refrigerators and air conditioners are examples of \_\_\_\_\_.

- A. heat engines
- B. heat movers
- C. heat pumps
- D. heat collectors

(B is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the interactions of energy and matter. (4)		
<b>OBJECTIVE(S):</b>		
35. Define a wave. Classify a wave and know some examples. Compare the transmission of sound through various mediums. (QCC 16.5)		
<b>PACING:</b>	2 class periods.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>		<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>
Holt Science Spectrum- A Physical Approach pp. 356 - 365 Chapter 11; Section 11.1 <b>TECHNOLOGY INTEGRATION:</b>		<b>Title:</b> <b>Waves</b> <b>Annotation:</b> Refers to standards 11 and 11.1. Online lesson that includes graphics, questions, and further research materials on <b>waves</b> . See side navigation bar for location of lesson plan categories. (Entered 8/24/1999) <b>URL:</b> <a href="http://oceanworld.tamu.edu/students/waves/wavesintro.htm">http://oceanworld.tamu.edu/students/waves/wavesintro.htm</a>
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Holt Science Spectrum- A Physical Approach pp. 360 Assign worksheet 11.1 : Connection to Engineering- Wave Energy Integration Enrichment Resources ancillary		
<b>SAMPLE ASSESSMENTS:</b>		
1. _____ is the rhythmic disturbances that carry energy through matter or space. (Waves is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)		
2. Waves carry _____ when they travel. A. particles B. sound C. speed D. energy (D is the correct answer.)		

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Understand the relationship between waves and sound.		
<b>OBJECTIVE(S):</b>		
36. Define frequency, wavelength, velocity, pitch, and intensity of a wave. Be able to calculate the frequency, wavelength, or velocity in a lab setting. (QCC 1.2, 13.1)		
<b>PACING:</b>	3-class periods.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 356 - 365 Chapter 11; Section 11.1 <b>TECHNOLOGY INTEGRATION:</b>	<b>Title:</b> <b>Waves</b> <b>Annotation:</b> Refers to standards 11 and 11.1. Online lesson that includes graphics, questions, and further research materials on <b>waves</b> . See side navigation bar for location of lesson plan categories. (Entered 8/24/1999) <b>URL:</b> <a href="http://oceanworld.tamu.edu/students/waves/wavesintro.htm">http://oceanworld.tamu.edu/students/waves/wavesintro.htm</a>	
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Holt Science Spectrum- A Physical Approach pp. 363 Assign worksheet 11.2 : Science and the Consumer- Bicycle Design and Shock Absorption. Integration Enrichment Resources ancillary		

**SAMPLE ASSESSMENTS:**

1. The \_\_\_\_\_ of a wave is affected by the temperature of the medium it passes through.

- A. amplitude
- B. frequency
- C. velocity
- D. wavelength

(C is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)

2. The \_\_\_\_\_ of a wave is affects its intensity and amplitude.

- A. direction of travel
- B. energy
- C. frequency
- D. velocity

(B is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the interactions of energy and matter. (4)		
<b>OBJECTIVE(S):</b>		
37. Know the properties of waves. (Reflection, refraction, diffraction, and interference) (QCC 1.2, 13.1)		
<b>PACING:</b>	3 class periods.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>		<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>
Holt Science Spectrum- A Physical Approach pp. 365- 374 Chapter 11; Section 11.2 <b>TECHNOLOGY INTEGRATION:</b>		<b>Title:</b> <u>Waves</u> <b>Annotation:</b> Refers to standards 11 and 11.1. Online lesson that includes graphics, questions, and further research materials on <u>waves</u> . See side navigation bar for location of lesson plan categories. (Entered 8/24/1999) <b>URL:</b> <a href="http://oceanworld.tamu.edu/students/waves/wavesintro.htm">http://oceanworld.tamu.edu/students/waves/wavesintro.htm</a>
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Holt Science Spectrum- A Physical Approach pp. 367 Assign worksheet 11.6: Connection to Language Arts – Writing a Plan for Wave Observation. Integration Enrichment Resources ancillary		
<b>SAMPLE ASSESSMENTS:</b>		
1. _____ occurs when compressions and rarefaction's of different waves coincide. A. amplitude B. Constructive Interference C. Destructive Interference D. Noise Pollution (B is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)		

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the interactions of energy and matter. (4)		
<b>OBJECTIVE(S):</b>		
38. Illustrate the Doppler Effect with some examples. (QCC 1, 2.1, 16.1)		
<b>PACING:</b>	1 class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>		<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>
Holt Science Spectrum- A Physical Approach pp. 372-373 Chapter 11; Section 11.2		<a href="http://www.scilinks.org">www.scilinks.org</a> keyword: HK1114
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
<b>SAMPLE ASSESSMENTS:</b>		
<p>1. The Doppler effect is an apparent change in _____ of a sound caused by the motion of the source.</p> <p>A. amplitude B. intensity C. loudness D. pitch</p> <p>(B is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)</p>		

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the interactions of energy and matter. (4)		
<b>OBJECTIVE(S):</b>		
39. Recognize the relationship between intensity and loudness and frequency and pitch. (QCC 1.2, 13.1)		
<b>PACING:</b>	1 class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 390-399 Chapter 12; Section 12.1	<a href="http://www.scilinks.org">www.scilinks.org</a> keyword: HK1121	
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
<b>SAMPLE ASSESSMENTS:</b>		
1. If the compression of a wave arrives at the same time as the rarefaction of another wave, a decrease in _____ results. A. frequency B. loudness C. pitch D. quality (B is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)		

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the interactions of energy and matter. (4)		
<b>OBJECTIVE(S):</b>		
40. Distinguish between music and noise. (QCC 2.1, 16.5, 1, 2)		
<b>PACING:</b>	1 class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>		<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>
Holt Science Spectrum- A Physical Approach pp. 390-395 Chapter 12; Section 12.1		
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
<b>SAMPLE ASSESSMENTS:</b>		
<p>1. Technically, noise is defined as _____.</p> <p>A. any loud sound</p> <p>B. irregular vibrations at irregular intervals.</p> <p>C. A compressional wavelength with a large amplitude.</p> <p>D. Any sound that falls between the range of 100 to 1000 decibels.</p> <p>(B is the correct answer. Source for this item is GHSGT Content Description- Science 1998)</p>		

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> ): Develop an understanding of the interactions of energy and matter. (4)		
<b>OBJECTIVE(S):</b>		
41. Understand the various part and uses of the electromagnetic spectrum. Differentiate between visible and invisible light using the electromagnetic spectrum. (QCC 1, 16.1, 16.4)		
<b>PACING:</b>	2 class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 399-405 Chapter 12; Section 12.2	<a href="http://www.scilinks.org">www.scilinks.org</a> keyword: HK1123	
<b>TECHNOLOGY INTEGRATION:</b>	<b>Title: <u>Electromagnetic Radiation</u></b> <b>Annotation:</b> Defines electromagnetic radiation with an excellent graphic on the electromagnetic spectrum. Useful as an introduction and as a review site. (Entered 8/6/1999) <b>URL:</b> <a href="http://www.lbl.gov/MicroWorlds/ALSTool/EMSpec/EMSpec.html">http://www.lbl.gov/MicroWorlds/ALSTool/EMSpec/EMSpec.html</a>	
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Holt Science Spectrum- A Physical Approach pp. 403 Assign worksheet 12.1: RWA – How does sunscreen work? Integration Enrichment Resources ancillary		

**SAMPLE ASSESSMENTS:**

## Multiple Choice Items:

1. Electromagnetic waves \_\_\_\_.
- A. have no frequency
  - B. have no wavelength
  - C. require a medium
  - D. transfer energy

(D is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)

2. The electromagnetic waves with the shortest wavelengths are \_\_\_\_\_.
- A. gamma rays
  - B. radio waves
  - C. light
  - D. X-rays

(A is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)

3. Objects containing heat can emit \_\_\_\_.
- A. gamma rays
  - B. infrared radiation
  - C. microwaves
  - D. radio radiation

(B is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> ): Develop an understanding of the interactions of energy and matter. (4)		
<b>OBJECTIVE(S):</b>		
42. Explain how you see color. Describe the difference between light color and pigment color. (QCC 2, 16.1, 16.3)		
<b>PACING:</b>	2 class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>		<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>
Holt Science Spectrum- A Physical Approach pp. 406 - 411 Chapter 12; Section 12.3		<a href="http://www.scilinks.org">www.scilinks.org</a> <b>keyword: HK1125</b>
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Holt Science Spectrum- A Physical Approach pp. 407 Assign worksheet 12.2: Integrating Space Science - Telescopes Integration Enrichment Resources ancillary		
<b>SAMPLE ASSESSMENTS:</b>		
Short answer items:		
1. What color is obtained when the primary colors of light are mixed? Explain.		
(Answer: White. Mixing the primary colors is a subtractive process. Different pigments subtract additional colors, "taking away" all the light, leaving black. Source for item is Glencoe Physical Science by McGraw-Hill)		

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the interactions of energy and matter. (4)		
<b>OBJECTIVE(S):</b>		
43. State and give an example of the law of reflection; Explain how an image is formed in a plane mirror. Identify some uses of plane mirrors. What are the characteristics of an image formed by a plane mirror? (QCC 1, 3.1, 16.2)		
<b>PACING:</b>	4 class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 406 - 411 Chapter 12; Section 12.3	<a href="http://www.scilinks.org">www.scilinks.org</a> <b>keyword: HK1125</b>  <b>Title: <u>Laws of Reflection</u></b> <b>Annotation:</b> The student will develop an understanding of the basic Laws of <b>Reflection</b> by observation of images of objects in plane mirrors. This site offers skills in observing, communicating and experimenting. Lesson can be used as a lab. <i>(Entered 7/29/1999)</i> <b>URL:</b> <a href="http://ofcn.org/cyber.serv/academy/ace/sci/cecsci/cecsci194.html">http://ofcn.org/cyber.serv/academy/ace/sci/cecsci/cecsci194.html</a>	
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Holt Science Spectrum- A Physical Approach pp. 407 Assign worksheet 12.2: Integrating Space Science - Telescopes Integration Enrichment Resources ancillary		

**SAMPLE ASSESSMENTS:**

## Multiple Choice Items:

1. An apple is red because it \_\_\_\_\_ red light.
  - A. reflects
  - B. absorbs
  - C. refracts
  - D. transmits

(A is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the interactions of energy and matter. (4)		
<b>OBJECTIVE(S):</b>		
44. Conduct original or standard experiment to prove the law of reflection. (QCC 1, 3.1, 16.2)		
<b>PACING:</b>	1 class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>		<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>
Holt Science Spectrum- A Physical Approach pp. 406 - 411 Chapter 12; Section 12.3		<a href="http://www.scilinks.org">www.scilinks.org</a> <b>keyword: HK1125</b>
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Holt Science Spectrum- A Physical Approach pp. 407 Assign worksheet 12.2: Integrating Space Science - Telescopes Integration Enrichment Resources ancillary		
<b>SAMPLE ASSESSMENTS:</b>		
Multiple Choice Items:		
1. The angle at which light strikes a surface is called the angle of _____.		
A. incidence		
B. refraction		
C. reflection		
(A is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)		

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the interactions of energy and matter. (4)		
<b>OBJECTIVE(S):</b>		
45. Understand refraction of light and know some of its applications. Conduct experiments with image formation using formation using mirrors and lenses. Draw ray diagrams for concave and convex mirrors. Describe the characteristics of the images formed when the object is placed at various positions in front of the mirror. Know some applications of the concave and convex mirrors. Discuss the goals and uses of the Hubble Space Telescopes. Describe polarized light and the uses of polarizing filters. Explain how a laser produces coherent light and it differs from incoherent light. Apply the concept of total internal reflection to the uses of optical fibers. (QCC 2..1, 16.2)		
<b>PACING:</b>	6 class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 412 - 419 Chapter 12; Section 12.4 <b>TECHNOLOGY INTEGRATION:</b>	<a href="http://www.scilinks.org">www.scilinks.org</a> <b>keyword: HK1126</b>  <b>Title: <u>Contact Lenses</u></b> <b>Annotation:</b> Comprehensive information on laboratory safety and the use of contact <b>lenses</b> is provided at this site. Page could be used as part of a laboratory manual on safety. (Entered 9/25/2000 4:57:51 PM) <b>URL:</b> <a href="http://www.cheminfonet.org/contact.htm">http://www.cheminfonet.org/contact.htm</a>	
<b>INTERDISCIPLINARY CONNECTIONS:</b>		

**SAMPLE ASSESSMENTS:**

## Multiple Choice Items:

1. If light waves change speed when they pass from one medium into another, the light will be \_\_\_\_\_.  
A. diffracted  
B. reflected  
C. refracted  
D. separated

(C is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)

2. In \_\_\_\_\_ light, transverse waves vibrate in one plane.

(Polarized is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)

3. What radiation is the Hubble Space Telescope designed to detect?

(Answer: visible light, infrared radiation, and ultraviolet radiation. Source for item is Glencoe Physical Science by McGraw-Hill)

4. Laser light is NOT used \_\_\_\_\_.  
A. for cutting and welding materials  
B. in car headlights  
C. to read bar codes  
D. with optical fibers

(B is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the interactions of energy and matter. (4)		
<b>OBJECTIVE(S):</b>		
46. Know the working of the eye. Explain how lenses are used to correct vision. (QCC 2.1, 16.2)		
<b>PACING:</b>	4 class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 412 - 419 Chapter 12; Section 12.4	<a href="http://www.scilinks.org">www.scilinks.org</a> <b>keyword: HK1126</b>	
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
<b>SAMPLE ASSESSMENTS:</b>		
<p>1. A farsighted eye focuses an image _____.</p> <p>A. behind the retina</p> <p>B. in front of the lens</p> <p>C. in front of the retina</p> <p>D. on the retina</p> <p>(A is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)</p>		

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> To understand static electricity and how it leads to electric current and its uses.		
<b>OBJECTIVE(S):</b>		
47. Define Static Electricity and know its effects. (QCC 1, 1.2, 2.1, 5, 7, 17)		
<b>PACING:</b>	3 class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 429 - 436 Chapter 13; Section 13.1 <b>TECHNOLOGY INTEGRATION:</b>	<b>Title: <a href="#">What is Electricity?</a></b> <b>Annotation:</b> An excellent primer on the nature of electricity, how it moves, how it is measured, the nature of batteries, and static electricity. An excellent introduction for a unit on electricity. Could be used for class instruction. <i>(Entered 8/6/1999)</i>	
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Holt Science Spectrum- A Physical Approach pp. 407 Assign worksheet 13.1: Connection to Social Studies – Incandescent Bulbs Integration Enrichment Resources ancillary		
<b>SAMPLE ASSESSMENTS:</b>		
1. A good way to generate static electricity is to _____. A. rub a glass rod with fur B. rub a wire on a magnet C. turn a magnet in a coil of wire D. rub two pieces of wool together (A is the correct answer. Source for this item is GHSGT Content Description- Science 1998)		

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the interactions of energy and matter. (4)		
<b>OBJECTIVE(S):</b>		
48. Observe the electric charge on an object with an electroscope. (QCC 1, 1.2,2.1, 5, 7, 17)		
<b>PACING:</b>	1 class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 429 - 436 Chapter 13; Section 13.1 <b>TECHNOLOGY INTEGRATION:</b>	<b>Title: <u>What is Electricity?</u></b> <b>Annotation:</b> An excellent primer on the nature of electricity, how it moves, how it is measured, the nature of batteries, and static electricity. An excellent introduction for a unit on electricity. Could be used for class instruction. <i>(Entered 8/6/1999)</i>	
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Science Spectrum- A Physical Approach pp. 407 Assign worksheet 13.2: Integrating Biology – Electric Eels Integration Enrichment Resources ancillary		
<b>SAMPLE ASSESSMENTS:</b>		
1. If the leaves of an electroscope are spread apart, it indicates that _____. A. the leaves of the electroscope are neutral. B. The leaves of the electroscope have received a charge C. No charge is moving through the electroscope D. There is static electricity in the electroscope, (B is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)		

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of interactions of energy and matter.		
<b>OBJECTIVE(S):</b>		
49. To know how lightning is formed the precautions that need to be taken in case there is lightning, and the harmful effects of lightning. (QCC 1, 1.2, 2.1, 5, 7) (QCC 17)		
<b>PACING:</b>	1 class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 429 - 436 Chapter 13; Section 13.1 <b>TECHNOLOGY INTEGRATION:</b>	<b>Title: <u>What is Electricity?</u></b> <b>Annotation:</b> An excellent primer on the nature of electricity, how it moves, how it is measured, the nature of batteries, and static electricity. An excellent introduction for a unit on electricity. Could be used for class instruction. <i>(Entered 8/6/1999)</i>	
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
<b>SAMPLE ASSESSMENTS:</b>		
Multiple Choice Items:		
1. Lightning is _____.		
A. a buildup of neutrons		
B. harmless		
C. a high-voltage electric current		
D. a large discharge of static electricity		
(D is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)		

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the interactions of energy and matter. (4)		
<b>OBJECTIVE(S):</b>		
50. Define an electric current and know the function of an ammeter. Know the difference between dry cell and wet cell as a source of electricity. (QCC 1, 2, 17.2, 17.4, 17.5)		
<b>PACING:</b>	3-class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 437 - 445 Chapter 13; Section 13.2	<b>Title: <a href="#">What is Electricity?</a></b> <b>Annotation:</b> An excellent primer on the nature of electricity, how it moves, how it is measured, the nature of batteries, and static electricity. An excellent introduction for a unit on electricity. Could be used for class instruction. <i>(Entered 8/6/1999)</i>	
<b>TECHNOLOGY INTEGRATION:</b> <b>Title: <a href="#">How Batteries Work</a></b> <b>Annotation:</b> Describes how batteries work. A brief primer on battery history, and on the types of batteries. The explanation and diagrams are very good. Could be used for group instruction, as a student enrichment site, or as a teacher resource. Requires ShockWave plugin. <i>(Entered 8/6/1999)</i>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		

**SAMPLE ASSESSMENTS:**

1. A static charge differs from an electric current in that a static charge

\_\_\_\_\_.

- A. involves the movement of ions as well as electrons
- B. is a flow of electrons
- C. lasts for only a fraction of a second
- D. results because a force is exerted on the electrons

(C is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)

2. Your task is to generate electricity by a chemical reaction. Which of the following supplies could you use?

- A. magnet, copper wire, HCL, test tube
- B. beaker, HCL, zinc and copper strips
- C. silk material, rubber rod, electroscope
- D. sulfuric acid, graphite, silicon, graduated cylinder

(B is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the interactions of energy and matter. (4)		
<b>OBJECTIVE(S):</b>		
51. Know what is Ohm's law and be able to do problems applying it. (QCC 1, 2, 17.2, 17.4, 17.5)		
<b>PACING:</b>	5-class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>		<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>
Holt Science Spectrum- A Physical Approach pp. 437 - 445 Chapter 13; Section 13.2 <b>TECHNOLOGY INTEGRATION:</b> <b>Title: <a href="#">How Batteries Work</a></b> <b>Annotation:</b> Describes how batteries work. A brief primer on battery history, and on the types of batteries. The explanation and diagrams are very good. Could be used for group instruction, as a student enrichment site, or as a teacher resource. Requires ShockWave plugin. <i>(Entered 8/6/1999)</i>		<b>Title: <a href="#">What is Electricity?</a></b> <b>Annotation:</b> An excellent primer on the nature of electricity, how it moves, how it is measured, the nature of batteries, and static electricity. An excellent introduction for a unit on electricity. Could be used for class instruction. <i>(Entered 8/6/1999)</i>
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Science Spectrum- A Physical Approach pp. 407 Assign worksheet 13.2: Integrating Biology – Electric Eels Integration Enrichment Resources ancillary		

**SAMPLE ASSESSMENTS:**

1. Use Ohm's Law  $V = IR$ , where  $V$  = voltage,  $I$  = current, and  $R$  = resistance, to determine the resistance of the load if the current in the circuit is 0.5 amperes and the voltage of the battery is 1.5 volts.
- A. 0.33 ohms
  - B. 0.75 ohms
  - C. 3 ohms
  - D. 3 R

(C is the correct answer. Source for this item is GHSGT Content Description- Science 1998)

2. Your task is to generate electricity by a chemical reaction. Which of the following supplies could you use?
- E. magnet, copper wire, HCL, test tube
  - F. beaker, HCL, zinc and copper strips
  - G. silk material, rubber rod, electroscope
  - H. sulfuric acid, graphite, silicon, graduated cylinder

(B is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the interactions of energy and matter. (4)		
<b>OBJECTIVE(S):</b>		
52. Define an electric circuit. Know the difference between a series and parallel circuit. Recognize the function of circuit breakers and fuses. Demonstrate safe use of electrical devices. Be able to set up light bulbs in series and parallel circuit, and analyze the difference between the two set-ups. (QCC 17.5, 17.4)		
<b>PACING:</b>	4 class periods.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 445-453 Chapter 13; Section 13.3 <b>TECHNOLOGY INTEGRATION:</b>	<b>Title: <a href="#">What is Electricity?</a></b> <b>Annotation:</b> An excellent primer on the nature of electricity, how it moves, how it is measured, the nature of batteries, and static electricity. An excellent introduction for a unit on electricity. Could be used for class instruction. (Entered 8/6/1999)	
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Science Spectrum- A Physical Approach pp. 450 Assign worksheet 13.6: Integrating Health – Recording Electricity in the Brain Integration Enrichment Resources ancillary		
<b>SAMPLE ASSESSMENTS:</b>		
Multiple Choice Items: 1. In electric circuits, what is the relationship between wattage and energy?  A. The higher the wattage, the less energy required. B. The lower the wattage, the less energy needed to cause a fire. C. The lower the wattage, the higher the initial energy required. D. The higher the wattage, the greater the energy delivered per second. (D is the correct answer. Source for this item is GHSGT Content Description- Science 1998)		

2. Fred's car would not start, and Alicia offered to help him using her jumper cable. Alicia started her engine and connected the cables to her battery. The other end of the cables touched Fred's car and made sparks. Why did this happen?
- A. Alicia had not correctly connected the cables to her battery.
  - B. Alicia completed an electrical circuit from her battery, to Fred's car, and back again.
  - C. Fred forgot to wait until both ends of the cables were connected before starting his car.
  - D. Alicia jumper cables probably had a break in the insulation, which will cause a short circuit.

(B is the correct answer. Source for this item is GHSGT Content Description- Science 1998)

3. Which precautions would you apply when operating ordinary household electrical appliances?
- A. Ignore a frayed cord, as it poses no real danger.
  - B. Unplug all other appliances when using a particular appliance.
  - C. Avoid using certain appliances above an altitude of 6000 meters.
  - D. Make sure hands are completely dry before plugging an appliance into an electric outlet.

(D is the correct answer. Source for this item is GHSGT Content Description- Science 1998)

4. You have a plug; bulb and 1.5 volt dry cells are in series with each other. There is a current of 0.5 amperes in the circuit. What would happen if two more 1.5-volt dry cells were added in series in the previous circuit?
- A. Amperes will increase.
  - B. Amperes will stay the same
  - C. Amperes will decrease
  - D. There is not enough information to answer the question.

(A is the correct answer. Source for this item is GHSGT Content Description- Science 1998)

Lab Type Items:

Arrange three light bulbs in series and then in parallel. What was the difference in the intensity of the light bulbs in both cases?

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> Physical Science Honors	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the interactions of energy and matter. (4)		
<b>OBJECTIVE(S):</b>		
53. Explain and calculate electrical power, voltage, or current.		
<b>PACING:</b>	4 class periods.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 445-453 Chapter 13; Section 13.3 <b>TECHNOLOGY INTEGRATION:</b>	<b>Title:</b> <a href="#">What is Electricity?</a> <b>Annotation:</b> An excellent primer on the nature of electricity, how it moves, how it is measured, the nature of batteries, and static electricity. An excellent introduction for a unit on electricity. Could be used for class instruction. <i>(Entered 8/6/1999)</i>	
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Science Spectrum- A Physical Approach pp. 450 Assign worksheet 13.6: Integrating Health – Recording Electricity in the Brain Integration Enrichment Resources ancillary		
<b>SAMPLE ASSESSMENTS:</b>		
Problem Type Item:		
1. An air conditioner uses 1800 W of power when plugged into a wall socket that operates at a voltage of 210 V. What is the current flowing through the air conditioner?		
( 8.57 A is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)		

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the interactions of energy and matter. (4)		
<b>OBJECTIVE(S):</b>		
54. Understand the magnetic field around a magnet and know the different types of magnets		
<b>PACING:</b>	3 class periods.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>		<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>
Holt Science Spectrum- A Physical Approach pp. 461 - 467 Chapter 14; Section 14.1		<a href="http://www.scilinks.org">www.scilinks.org</a> <b>password: HK1142</b>
<b>TECHNOLOGY INTEGRATION:</b>		<b>Title:</b> <a href="#">Magnetic Fields and Bermuda Triangle</a> <b>Annotation:</b> Students will explain how two <b>magnetic</b> fields combine. Students will use a compass to determine the direction of the <b>magnetic</b> field. Predict the location of the Bermuda Triangle. This site offers skills in observing, communicating, experimenting and applying. Lesson can be used as a lab. (Entered 7/29/1999) <b>URL:</b> <a href="http://askeric.org/cgi-bin/printlessons.cgi/Virtual/Lessons/Science/Earth_Science/EAR0022.html">http://askeric.org/cgi-bin/printlessons.cgi/Virtual/Lessons/Science/Earth_Science/EAR0022.html</a>
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Science Spectrum- A Physical Approach pp. 465 Assign worksheet 14.1: Connection to Social Studies – The natural Force and Laws of Compasses Integration Enrichment Resources ancillary		

**SAMPLE ASSESSMENTS:**

1. The location of the strongest magnetic forces is the \_\_\_\_\_.
- A. electromagnets
  - B. magnetic domains
  - C. magnetic fields
  - D. magnetic poles

(D is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the interactions of energy and matter. (4)		
<b>OBJECTIVE(S):</b>		
55. Know the properties of magnets and understand why only certain metals are magnets.		
<b>PACING:</b>	1 class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 461 - 467 Chapter 14; Section 14.1	<a href="http://www.scilinks.org">www.scilinks.org</a> <b>password: HK1142</b>  <b>Title: <u>Magnetic Fields and Bermuda Triangle</u></b> <b>Annotation:</b> Students will explain how two <b>magnetic</b> fields combine. Students will use a compass to determine the direction of the <b>magnetic</b> field. Predict the location of the Bermuda Triangle. This site offers skills in observing, communicating, experimenting and applying. Lesson can be used as a lab. <i>(Entered 7/29/1999)</i> <b>URL:</b> <a href="http://askeric.org/cgi-bin/printlessons.cgi/Virtual/Lessons/Science/Earth_Science/EAR0022.html">http://askeric.org/cgi-bin/printlessons.cgi/Virtual/Lessons/Science/Earth_Science/EAR0022.html</a>	
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Science Spectrum- A Physical Approach pp. 465 Assign worksheet 14.1: Connection to Social Studies – The natural Force and Laws of Compasses Integration Enrichment Resources ancillary		

**SAMPLE ASSESSMENTS:**

1. Two objects A and B are brought near each other. At a critical distance they begin to veer away from one another. You try to push them together but the two objects veer from each other faster. What is likely to happen if you bring A close to C, if you have observed C being attracted to B?
- A. A will be attracted to C.
  - B. A will veer away from C.
  - C. A will have no reaction to C.
  - D. A will now is attracted to B, since C touched B.

(A is the correct answer. Source for this item is GHSGT Content Description- Science 1998)

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the interactions of energy and matter. (4)		
<b>OBJECTIVE(S):</b>		
56. Make an electromagnet and determine how its strength can be increased.		
<b>PACING:</b>	2 class periods.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 469 - 473 Chapter 14; Section 14.2	<a href="http://www.scilinks.org">www.scilinks.org</a> <b>password: HK1144</b>  <b>Title: <u>How an Electromagnet Works</u></b> <b>Annotation:</b> Describes the workings of an electromagnet. The explanation and diagrams are very good. Could be used for group instruction, as a student enrichment site, or as a teacher resource. Requires ShockWave plugin. (Entered 8/6/1999) <b>URL:</b> <a href="http://www.howstuffworks.com/electromagnet.htm">http://www.howstuffworks.com/electromagnet.htm</a>	
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Assign worksheet 14.2: Integrating Chemistry – Molecular Magnetism Integration Enrichment Resources ancillary		

**SAMPLE ASSESSMENTS:**

1. You are working a crane in an automobile salvage yard. Your job is to pick up car bodies with an electromagnet and move them to a crusher. You have moved the crane into position, lowered the electromagnet close to the designated car, and activated the electromagnet. You pick up the car and move it to the crusher. What is the next step in the sequence?
- A. Turn ON the electricity to the electromagnet, so that the car will drop.
  - B. Turn OFF the electricity to the electromagnet, so that the car will drop.
  - C. Lower the car to the crusher and let the crusher pull the car away from the crane.
  - D. Separate the magnet and electric source to decrease power of the magnet gradually so that the car will drop.

(B is the correct answer. Source for this item is GHSGT Content Description- Science 1998)

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the interactions of energy and matter. (4)		
<b>OBJECTIVE(S):</b>		
57. Know the principle on which the electric motor and electric generator work.		
<b>PACING:</b>	4 class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>		<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>
Holt Science Spectrum- A Physical Approach pp. 469 - 481 Chapter 14; Section 14.2 and 14.3 <b>TECHNOLOGY INTEGRATION:</b>		<b>Title:</b> <a href="#">How an Electromagnet Works</a> <b>Annotation:</b> Describes the workings of an electromagnet. The explanation and diagrams are very good. Could be used for group instruction, as a student enrichment site, or as a teacher resource. Requires ShockWave plugin. (Entered 8/6/1999) <b>URL:</b> <a href="http://www.howstuffworks.com/electromagnet.htm">http://www.howstuffworks.com/electromagnet.htm</a>
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Assign worksheet 14.3: Integrating Technology – Magnetic Resonance Imaging Integration Enrichment Resources ancillary		
<b>SAMPLE ASSESSMENTS:</b>		
1. The function of an electric motor is to change _____. A. chemical energy to electrical energy B. electrical energy to chemical energy C. electrical energy to mechanical energy D. mechanical energy to electrical energy (C is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)		

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the interactions of energy and matter. (4)		
<b>OBJECTIVE(S):</b>		
58. Define electromagnetic induction and explain its application in a transformer. Know the construction of a transformer and be able to do some simple problems.		
<b>PACING:</b>	4 class periods.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>		<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>
Holt Science Spectrum- A Physical Approach pp. 478 - 481 Chapter 14; Section 14.2 and 14.3		
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Assign worksheet 14.3: Integrating Technology – Magnetic Resonance Imaging Integration Enrichment Resources ancillary		
<b>SAMPLE ASSESSMENTS:</b>		
1. A transformer that increases voltage is a _____.		
A. resistance transformer		
B. step-down transformer		
C. step-up transformer		
D. voltage motor		
(C is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)		

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develops an understanding of the structure and properties of matter. (4)		
<b>OBJECTIVE(S):</b>		
59. Explain the relationship between matter, atoms, and elements; Distinguish between elements and compounds; Define thermal expansion and know some applications. (QCC 4.1, 4.2)		
<b>PACING:</b>	1 class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 38 - 44 Chapter 2; Section 2.1	<a href="http://www.scilinks.org">www.scilinks.org</a> <b>password: HK1022</b>	
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Read page 43: Science and the Consumer		

**SAMPLE ASSESSMENTS:**

## Multiple Choice Items:

1. A compound, which may consist of numerous types of atoms, can be pure substance because
- I. a compound may contain different kinds of molecules
  - II. the atoms of a compound are held by covalent bonds
  - III. a compound has its own properties.
- A. I only  
B. II only  
C. I and II  
D. II and III

(D is the correct answer. Source for this item is GHSGT Content Description- Science 1998)

2. You are given a beaker with a mixture of iron and sugar in it. How could you demonstrate the difference between the element (iron) and a compound (sugar)?
- A. Dissolve the sugar in water, separating it from the iron, thus showing iron is an element.
  - B. Break the sugar into small pieces, demonstrating it is a compound; the iron will not split.
  - C. Separate the iron from the sugar with a magnet, thus showing iron is an element and sugar is not.
  - D. Heat both the sugar and the iron until the sugar breaks down and water is released; the iron does not break down.

(B is the correct answer. Source for this item is GHSGT Content Description- Science 1998)

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the structure and properties of matter. (4)		
<b>OBJECTIVE(S):</b>		
60. Identifies matter in its various forms including pure substances, heterogeneous and homogeneous mixtures and solutions. (QCC 4.3)		
<b>PACING:</b>	1 class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>		<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>
Holt Science Spectrum- A Physical Approach pp. 38 - 44 Chapter 2; Section 2.1		<a href="http://www.scilinks.org">www.scilinks.org</a> <b>password: HK1022</b>
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
<b>SAMPLE ASSESSMENTS:</b>		
Multiple Choice Items: 1. _____ is NOT homogeneous. A. A compound B. An element C. A solution D. A suspension (D is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)		

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the structure and properties of matter. (4)		
<b>OBJECTIVE(S):</b>		
61. Use the kinetic theory to describe the properties and structures of the different states of matter. Describe the energy transfers involved in changes of state. Describe the law of conservation of energy. Explain how gas exerts pressure on its container. Define Boyle's law and know some of its applications. Define Charles Law and know some of its application. (QCC 4, 12.2, 12.3, 3)		
<b>PACING:</b>	1 class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 44 - 52 Chapter 2; Section 2.2		
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Assign worksheet 2.4: Integrating Space Science – Our Changing Universe (page 51) Integration Enrichment Resources ancillary		

**SAMPLE ASSESSMENTS:**

1. Matter that has a definite volume and a definite shape is a \_\_\_\_\_.
- A. gas
  - B. liquid
  - C. plasma
  - D. solid

(D is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)

2. The pressure of a gas will increase, as the volume of the container decreases, provided the temperature does NOT change is \_\_\_\_\_.
- A. Bernoulli's principle
  - B. Boyle's Law
  - C. Charles's Law
  - D. Archimedes' principle
  - E. Pascal's principle

(B is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)

3. The idea that the volume of a gas increases temperature provided the pressure does NOT change is \_\_\_\_\_.
- A. Bernoulli's principle
  - B. Boyle's Law
  - C. Charles's Law
  - D. Archimedes' principle
  - E. Pascal's principle

(C is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the structure and properties of matter. (4)		
<b>OBJECTIVE(S):</b>		
62. Be able to understand the difference between physical and chemical properties of substances. Give some physical and chemical properties of a known substance. (QCC 5.2)		
<b>PACING:</b>	4 class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 52 - 61 Chapter 2; Section 2.3	<a href="http://www.scilinkgs.org">www.scilinkgs.org</a> <b>password: HK1024</b>	
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Assign worksheet 2.8: Integrating Environmental Science – Ozone Depletion (page 58) Integration Enrichment Resources ancillary		
<b>SAMPLE ASSESSMENTS:</b>		
1. The color of ink is a _____. A. chemical change B. chemical property C. physical change D. physical property (D is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)		

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the structure and properties of matter. (4)		
<b>OBJECTIVE(S):</b>		
63. Differentiate between chemical and physical changes in the following lab situations-combustion, fermentation, melting, dissolving, metabolism, boiling, and electrolysis. (QCC 6.1)		
<b>PACING:</b>	2 class periods	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	
Holt Science Spectrum- A Physical Approach pp. 52 - 61 Chapter 2; Section 2.3	Holt Science Spectrum- A Physical Approach pp. 52 - 61 Chapter 2; Section 2.3	
<b>TECHNOLOGY INTEGRATION:</b>	<b>TECHNOLOGY INTEGRATION:</b>	
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Assign worksheet 2.8: Integrating Environmental Science – Ozone Depletion (page 58) Integration Enrichment Resources ancillary		
<b>SAMPLE ASSESSMENTS:</b>		
<p>1. Which chemical change takes place when vinegar is added to baking soda?</p> <p>A. The combination will burn.</p> <p>B. A gas is released.</p> <p>C. The color of the solution will change.</p> <p>D. A blue powder forms.</p> <p>(B is the correct answer. Source for this item is GHSGT Content Description- Science 1998)</p> <p>2. What type of chemical change takes place when you turn the thermostat up on a furnace?</p> <p>A. air moves throughout the room.</p> <p>B. Fuel burns in the furnace</p> <p>C. Heat in the room rises</p> <p>D. The temperature in the room increases</p> <p>(B is the correct answer. Source for this item is GHSGT Content Description- Science 1998)</p>		

3. Melting can be defined as a \_\_\_\_\_.

- A. chemical change.
- B. Phase change of solid to liquid.
- C. Substance undergoing sublimation.
- D. Change from solid to gas only in the presence of high temperature

(B is the correct answer. Source for this item is GHSGT Content Description- Science 1998)

4. In a beaker, sugar is dissolved in water, and then the water is heated and evaporates. The sugar is recovered, and heat is again applied. Vapor is released, and the material in the beaker changes from white to black. What must you know to determine if a chemical change occurred?

- A. the boiling point of water
- B. the boiling point of sugar
- C. temperature at which sugar evaporates
- D. whether or not the black substance is sugar

(D is the correct answer. Source for this item is GHSGT Content Description- Science 1998)

5. Which represents a chemical change in matter?

- A. Carbon dioxide undergoing sublimation
- B. Water undergoing evaporation
- C. Metal post beginning to rust
- D. Water dissolving salt to form a solution

(C is the correct answer. Source for this item is GHSGT Content Description- Science 1998)

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the structure of atoms. (4)		
<b>OBJECTIVE(S):</b>		
64. Identify relative location, size, and charge of subatomic particles. (QCC 7.1)		
<b>PACING:</b>	1 class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>		<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>
Holt Science Spectrum- A Physical Approach pp. 68 - 76 Chapter 3; Section 3.1		<a href="http://www.scilinks.org">www.scilinks.org</a> <b>password: HK1031</b>
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Assign worksheet 3.7: Integrating Technology – Seeing the Atoms (page 70) Integration Enrichment Resources ancillary Assign worksheet 3.8: Integrating Physics – Atomic Fingerprints (page 73) Integration Enrichment Resources ancillary		

**SAMPLE ASSESSMENTS:**

1. An electron cloud is defined as \_\_\_\_\_.
- A. A space around the nucleus where electrons are found.
  - B. the first two energy levels of electrons in an atom where electron density is the greatest.
  - C. a more specific term for the entire atom, since the electrons determine all chemical properties.
  - D. an atmosphere cloud in which electrons have been stripped from atoms and molecules and are free in the cloud.

(A is the correct answer. Source for this item is GHSGT Content Description- Science 1998)

2. Which is the smallest particle of sugar that still has all the properties of sugar?
- A. atom
  - B. ion
  - C. isotope
  - D. molecule

(D is the correct answer. Source for this item is GHSGT Content Description- Science 1998)

3. Which is the property of a proton?
- A. no electrical charge
  - B. same mass as electron
  - C. atomic mass equals to one
  - D. same charge as electron

(B is the correct answer. Source for this item is GHSGT Content Description- Science 1998)

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the structure of the atom. (4)		
<b>OBJECTIVE(S):</b>		
65. Relate the relative number of protons and electrons to chemical charge and reactivity. (QCC 7.2)		
<b>PACING:</b>	2 class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 68 - 76 Chapter 3; Section 3.1	<a href="http://www.scilinks.org">www.scilinks.org</a> <b>password: HK1031</b>	
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Assign worksheet 3.7: Integrating Technology – Seeing the Atoms (page 70) Integration Enrichment Resources ancillary Assign worksheet 3.8: Integrating Physics – Atomic Fingerprints (page 73) Integration Enrichment Resources ancillary		
<b>SAMPLE ASSESSMENTS:</b>		
<p>1. The atomic number of iron is 26, and the atomic mass is 55.847. What does this mean in terms of protons, electrons, and neutrons?</p> <p>A. There are 26 each of protons and neutrons, and the rest of the mass is as a result of electrons.</p> <p>B. There are 26 protons and 26 electrons. Some atoms of iron have 29 neutrons; the .847 shows that there is more than one isotope of iron.</p> <p>C. There are 26 protons and 29 neutrons. Each particle has an atomic mass of 1. The .847 is the result of the negligible weight of 26 electrons.</p> <p>D. There are 26 protons and 26 neutrons. Since neutrons have slightly more mass than protons, the mass is greater than 52.</p> <p>(B is the correct answer. Source for this item is GHSGT Content Description- Science 1998)</p>		

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the structure of the atom. (4).		
<b>OBJECTIVE(S):</b>		
66. Compute the atomic mass and mass number of an atom. (QCC 8)		
<b>PACING:</b>	3 class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>		<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>
Holt Science Spectrum- A Physical Approach pp. 77 - 85 Chapter 3; Section 3.2		<a href="http://www.scilinks.org">www.scilinks.org</a> <b>password: HK1031</b>
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Assign worksheet 3.6: Integrating Biology – Elements in your Body (page 77) Integration Enrichment Resources ancillary Assign worksheet 3.4: Connection to Language Arts – Chemical Symbols (page 79) Integration Enrichment Resources ancillary		
<b>SAMPLE ASSESSMENTS:</b>		
1. If you are looking at Boron in the periodic table, the number 5 refers to the element's _____. A. atomic number B. atomic mass C. number of neutrons D. number of electron shells (A is the correct answer. Source for this item is GHSGT Content Description- Science 1998)		

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the structure of the atom. (4)		
<b>OBJECTIVE(S):</b>		
67. Identify and describe isotopes of common elements.		
<b>PACING:</b>	4 class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>		<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>
Holt Science Spectrum- A Physical Approach pp. 77 - 85 Chapter 3; Section 3.2		<a href="http://www.scilinks.org">www.scilinks.org</a> <b>password: HK1031</b>
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Assign worksheet 3.5: Connection to Fine Arts – Carbon Dating Masterpieces (page 83). Integration Enrichment Resources ancillary		
<b>SAMPLE ASSESSMENTS:</b>		
Short Answer Items:		
1. How are the isotopes of carbon the same and how are they different?		
(Answer: chemically they act the same, same number of protons and electrons; number of neutrons and atomic mass are different. Source for item is Glencoe Physical Science by McGraw-Hill)		

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science</b>	<b>COURSE NUMBER:</b> 40.41110000
<b>National Standard(s):</b> Develop an understanding of the structure and properties of matter. (4)		
<b>OBJECTIVE(S):</b>		
68. Describe the periodic table of elements and use it to find information about an element. Compare trends of chemical properties of periods and groups in the periodic chart; locate alkali metal, alkaline earth metals, and transition metals in the periodic table; locate semiconductors, halogens, and noble gases in the periodic table; relate an element's chemical properties to the electron arrangement of its atom.(QCC – 8.1)		
<b>PACING:</b>	3-class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 86 - 94 Chapter 3; Section 3.3	<a href="http://www.scilinks.org">www.scilinks.org</a> <b>password: HK1035</b>	
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Assign worksheet 3.5: Connection to Fine Arts – Carbon Dating Masterpieces (page 83). Integration Enrichment Resources ancillary		
<b>SAMPLE ASSESSMENTS:</b>		
1. What do all the elements in the carbon family of the periodic table have in common? A. They are metals. B. They are in the same period. C. They have the same number of electrons. D. They have four electrons in their outer shells. (D is the correct answer. Source for this item is GHSGT Content Description- Science 1998)		

2. A diatomic molecule is \_\_\_\_\_.
- A. particularly rare
  - B. not a pure element
  - C. made up of two atoms
  - D. the same size as an atom

(C is the correct answer. Source for this item is GHSGT Content Description- Science 1998)

3. Molecules can be distinguished from ions by the \_\_\_\_\_.
- A. type of bonding that molecules exhibit
  - B. number of atoms making up a molecule
  - C. presence of electrons in the ion's nucleus
  - D. equal number of neutrons and protons in ions

(A is the correct answer. Source for this item is GHSGT Content Description- Science 1998)

4. Elements in-groups 3 through 12 of the periodic table are called \_\_\_\_\_.
- A. isotopes
  - B. metals
  - C. metalloids
  - D. radioactive
  - E. transitional elements

(E is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)

5. At room temperatures, most metals are \_\_\_\_\_.
- A. gases
  - B. liquids
  - C. radioactive
  - D. solids

(D is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)

6. Hydrogen is grouped with the Alkali Metals because it \_\_\_\_\_.
- A. does not readily form compounds
  - B. has one electron in its outer energy level
  - C. is a gas
  - D. is a metal

(B is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)

7. Three transitional elements in Group 12 of the periodic table are \_\_\_\_\_.
- A. copper, silver, and gold
  - B. iron, nickel, and cobalt
  - C. mercury, zinc, and cadmium
  - D. neon, helium, and xenon

(C is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)

8. An element with an atomic number greater than that of uranium is a \_\_\_\_\_.
- A. halogen
  - B. lanthanide
  - C. transitional element
  - D. transuranium element

(D is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)

9. Elements that lie along the stair-step line of the periodic table are \_\_\_\_\_.
- A. liquids
  - B. metals
  - C. metalloids
  - D. radioactive

(C is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the structure and properties of matter. (4)		
<b>OBJECTIVE(S):</b>		
69. Distinguish between compound and mixtures; Relate the chemical formula of a compound to the relative number of atoms or ions present in the compound; Know why atoms combine.; Predict whether 2 elements will chemically combine based on their position in the periodic table. (QCC 9.1)		
<b>PACING:</b>	5-class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 86 - 94 Chapter 4; Section 4.1 and 4.2	<a href="http://www.scilinks.org">www.scilinks.org</a> <b>password: HK1042</b>	
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
<b>SAMPLE ASSESSMENTS:</b>		
<p>1. Which element in the second group in the periodic table is least likely to react with other elements?</p> <p>A. Boron B. Carbon C. Neon D. Oxygen</p> <p>(C is the correct answer. Source for this item is GHSGT Content Description- Science 1998)</p> <p>2. The chemical formula for table salt is NaCl. Which element has more atoms in the formula? Which element has a larger share of the mass in the formula?</p> <p>(Answer: equal number of atoms, one each; chlorine by 35.5 to 23. Source for item is Glencoe Physical Science by McGraw-Hill)</p>		

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the structure and properties of matter. (4)		
<b>OBJECTIVE(S):</b>		
70. Classify compounds as ionic, polar, covalent, or non-polar covalent compounds. (QCC 9.4)		
<b>PACING:</b>	3 class periods.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>		<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>
Holt Science Spectrum- A Physical Approach pp. 115- 122 Chapter 4; Section 4.2		<a href="http://www.scilinks.org">www.scilinks.org</a> <b>password: HK1044</b>
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Assign worksheet 4.3: Integrating Space Science – Ion Propulsion in Deep Space 1. Integration Enrichment Resources ancillary		
<b>SAMPLE ASSESSMENTS:</b>		
1. A chemical bond that occurs when atoms share electrons is _____ bond. A. a covalent B. an ionic C. a magnetic D. a platonic (A is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)		

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the structure and properties of matter. (4)		
<b>OBJECTIVE(S):</b>		
71. Write formulas for compounds from their names. (QCC 9.2)		
<b>PACING:</b>	10 class periods.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>		<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>
Holt Science Spectrum- A Physical Approach pp. 123 - 128 Chapter 4; Section 4.3		<a href="http://www.scilinks.org">www.scilinks.org</a> <b>password: HK1044</b>
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
<b>SAMPLE ASSESSMENTS:</b>		
<p>1. Which of the following is the correct formula for magnesium nitrate?</p> <p>A. <math>MgNO_3</math></p> <p>B. <math>Mg_2NO_3</math></p> <p>C. <math>Mg(NO_3)_2</math></p> <p>D. <math>Mg_2(NO_3)_2</math></p> <p>(C is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)</p> <p>2. What is the correct name for <math>K_2SO_4</math>?</p> <p>A. potassium disulfide</p> <p>B. potassium sulfate</p> <p>C. potassium sulfide</p> <p>D. potassium(II) sulfate</p> <p>(B is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)</p>		

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the structure and properties of matter. (4)		
<b>OBJECTIVE(S):</b>		
72. Describe how carbon atoms bond covalently to form organic compounds; Identify the names and structures of groups of simple organic compounds and polymers; Identify which polymers essential for life are made of. (QCC 11.1, 11)		
<b>PACING:</b>	4 class periods.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 129 - 137 Chapter 4; Section 4.3	<a href="http://www.scilinks.org">www.scilinks.org</a> <b>password: HK1045</b>	
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Assign worksheet 4.6: Connection to Engineering – Fractions of Crude Oil. Integration Enrichment Resources ancillary Assign worksheet 4.4: Integrating Environmental Science – Plastics Integration Enrichment Resources ancillary Assign worksheet 4.5: Integrating Math – Amino Acid Combinations Integration Enrichment Resources ancillary		
<b>SAMPLE ASSESSMENTS:</b>		
1. Each carbon atom can form a total of _____ bonds. a. one                      b. two                      c. three                      d. four (Answer: D)		
2. A carbon atom can form four bonds because it has _____. a. four different anions b. four electrons in its outermost energy level c. two inner energy level d. no protons in the nucleus (Answer: B)		

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of chemical reactions. (4)		
<b>OBJECTIVE(S):</b>		
73. Recognize some signs of a chemical reaction taking place; explain chemical changes; know the difference between endothermic and exothermic reactions; identify situations involving chemical energy. (QCC 10.2, 10.1, 12.1, 6)		
<b>PACING:</b>	4 class periods.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 146 – 153 Chapter 5; Section 5.1	<a href="http://www.scilinks.org">www.scilinks.org</a> <b>password: HK1051</b>	
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Assign worksheet 5.8: Connection to Social Studies – Alchemists’ theory of the elements. Integration Enrichment Resources ancillary		
<b>SAMPLE ASSESSMENTS:</b>		
1. If thermal energy must be added to a chemical reaction for the reaction to take place, the reaction is _____.		
A. balanced		
B. endothermic		
C. exothermic		
D. reactant		
E. coefficient		
(B is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)		
1. Each substance to the right of the arrow in a chemical equation is a (n) _____.		
A. catalyst		
B. inhibitor		
C. precipitate		
D. product		
E. reactant		
(D is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)		

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of chemical reactions. (4)		
<b>OBJECTIVE(S):</b>		
74. Describe the four types of chemical reactions using their generalized formulas. Classify various chemical reactions by type.		
<b>PACING:</b>	2 class periods.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 154 - 160 Chapter 5; Section 5.2	<a href="http://www.scilinks.org">www.scilinks.org</a> <b>password: HK1053</b>	
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Assign worksheet 5.3: Integrating Earth Science- Limestone Reaction. Integration Enrichment Resources ancillary Assign worksheet 5.4: Connection to Fine Arts- The Chemistry of Art Integration Enrichment Resources ancillary		
<b>SAMPLE ASSESSMENTS:</b>		
1. The breaking down of a compound into simpler substances is _____. A. decomposition B. displacement C. product D. synthesis (A is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)		

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of chemical reactions. (4)		
<b>OBJECTIVE(S):</b>		
75. Write balanced chemical equation given names of reactants and products. (QCC 10.2)		
<b>PACING:</b>	6 class periods.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 161 - 168 Chapter 5; Section 5.3	<a href="http://www.scilinks.org">www.scilinks.org</a> <b>password: HK1057</b>	
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Assign worksheet 5.5: Connection to Social Studies- Fireworks Integration Enrichment Resources ancillary		
<b>SAMPLE ASSESSMENTS:</b>		
Short Answer Items:		
1. Write a balanced chemical equation in which the reactants are silver nitrate and sodium chloride, and the products are silver chloride and sodium nitrate.		

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of chemical reactions. (4)		
<b>OBJECTIVE(S):</b>		
76. Describe the effects of catalysts and inhibitors on the reaction rate.		
<b>PACING:</b>	1 class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>		<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>
Holt Science Spectrum- A Physical Approach pp. 169 - 179 Chapter 5; Section 5.3		<a href="http://www.scilinks.org">www.scilinks.org</a> <b>password: HK1054</b>
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Assign worksheet 5.7: Integrating Environmental Science – Fertilizers: Friend or Foe? Integration Enrichment Resources ancillary		
<b>SAMPLE ASSESSMENTS:</b>		
1. Substances that prevent chemical reactions are called _____.		
A. catalysts		
B. endothermic		
C. inhibitors		
D. products		
E. reactants		
(C is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)		

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the structure and properties of matter. (4)		
<b>OBJECTIVE(S):</b>		
77. Know the various types of solutions and their examples. Distinguish between homogenous and heterogeneous mixtures. Compare and contrast properties of solutions, colloids, and suspensions. Identify ways to separate different kinds of mixtures. (QCC 6, 6.1, 4.5, 4.4, 5.1)		
<b>PACING:</b>	3 class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 186 - 191 Chapter 6; Section 6.1	<a href="http://www.scilinks.org">www.scilinks.org</a> <b>password: HK1060</b>	
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Assign worksheet 6.3: Integrating Physics – The Centrifuge Integration Enrichment Resources ancillary		
<b>SAMPLE ASSESSMENTS:</b>		
1. The oceans are an example of _____ solution. A. an anhydrous B. a gaseous C. a liquid D. a solid (C is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)		

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the structure and properties of matter. (4)		
<b>OBJECTIVE(S):</b>		
78. Describe how substances dissolve in terms of solubility, molecular motion, and solute-solvent interactions; identify factors affecting the rate of dissolving; distinguish between saturated, unsaturated, and supersaturated solutions. (QCC 4.4)		
<b>PACING:</b>	2 class periods.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 192 - 198 Chapter 6; Section 6.2	<a href="http://www.scilinks.org">www.scilinks.org</a> <b>password: HK1063</b>	
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
<b>SAMPLE ASSESSMENTS:</b>		
1. Instant coffee crystals are prepared for breakfast by stirring them in boiling water. Water is the _____.		
A. Solute.		
B. Solvent.		
C. Compounding agent.		
D. Heterogeneous agent		
(B is the correct answer. Source for this item is GHSGT Content Description- Science 1998)		
2. The amount of solute that can be dissolved in a specific amount of solvent at a given temperature is its _____.		
A. concentration		
B. density		
C. dilution		
D. solubility		
(D is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)		

3. Which of the following will speed up the dissolving of a solid solute in water?
- A. cool the solution
  - B. freeze the solute
  - C. grind up the solvent
  - D. stir the solution

(D is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)

4. A solution that contains all the solute it can hold at a given temperature is \_\_\_\_\_.
- A. diluted
  - B. saturated
  - C. supersaturated
  - D. unsaturated

(B is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)

5. A molecule that is positively charged on one end and negatively charged on the other end is \_\_\_\_\_.
- A. ionic
  - B. magnetic
  - C. polar
  - D. radioactive

(C is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)

6. The process by which the positive and negative ions of an ionic compound separate in water is called \_\_\_\_\_.
- A. dissociation
  - B. ionization
  - C. polarity
  - D. saturation

(A is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> Develop an understanding of the structure and properties of matter. (4).		
<b>OBJECTIVE(S):</b>		
79. Distinguish between an acid and a base. List names, formulas, and uses of some common acids and bases. Relate pH of a solution to the concentration and strength of dissolved acid or base. Identify products of neutralization reactions. (QCC 6, 6.1)		
<b>PACING:</b>	4 class periods.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 199 - 213 Chapter 6; Section 6.3	<a href="http://www.scilinks.org">www.scilinks.org</a> <b>password: HK1064</b>	
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Assign worksheet 6.2: Connection to Social Studies – Detergents helpful or harmful? Integration Enrichment Resources ancillary		
<b>SAMPLE ASSESSMENTS:</b>		
1. Using hydriod paper, also known as pH paper, you test an unknown substance. The paper turns pink. If you test the same unknown substance with litmus paper, what color would you expect the litmus paper to turn? A. blue B. pink C. red D. white (D is the correct answer. Source for this item is GHSGT Content Description- Science 1998)		

2. When the acidity of a substance is determined by the hydronium ion concentration, the \_\_\_\_\_ of the substance is being calculated.
- A. ester
  - B. base
  - C. pH
  - D. oxide
  - E. saponification
- (C is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)

3. According to Arrhenius model, what would you predict to be a consequence of mixing an acid and a base?
- I. neutralization occurs
  - II. a small explosion
  - III. water and salt appear after heat is applied
- A. I only
  - B. I and II
  - C. II and III
  - D. I and III

(D is the correct answer. Source for this item is GHSGT Content Description- Science 1998)

4. What are the products of a neutralization reaction that is when an acid and base are mixed?
- A. ammonia
  - B. water and salt
  - C. hydrogen ions
  - D. carbon dioxide

(B is the correct answer. Source for this item is GHSGT Content Description- Science 1998)

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> ): Develop an understanding of the structure and properties of matter. (4)		
<b>OBJECTIVE(S):</b>		
80. Define radioactivity. How is it detected? Distinguish between alpha, beta, and gamma radiations. (QCC 7.3)		
<b>PACING:</b>	2 class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>		<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>
Holt Science Spectrum- A Physical Approach pp. 220 - 228 Chapter 7; Section 7.1		<a href="http://www.scilinks.org">www.scilinks.org</a> <b>password: HK1072</b>
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Assign worksheet 7.5: Connection to Social Studies – A remarkable discovery Integration Enrichment Resources ancillary Assign worksheet 7.6: Connection to Language Arts – Marie Curie and the Naming of a Unit. Integration Enrichment Resources ancillary		
<b>SAMPLE ASSESSMENTS:</b>		
1. Which characteristic is associated with alpha particles? A. The ability to gain or lose an electron. B. The capability of penetrating 5 inches of lead shielding. C. The reduction of the atomic number of the parent nuclide by 2. D. The ability to produce X-rays. (C is the correct answer. Source for this item is GHSGT Content Description- Science 1998)		

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science</b>	<b>COURSE NUMBER:</b> 40.41110000
<b>National Standard(s):</b> Develop an understanding of the structure and properties of matter. (4)		
<b>OBJECTIVE(S):</b>		
81. Define a nuclear reaction. Distinguish between nuclear fission and nuclear fusion. (QCC 7.3)		
<b>PACING:</b>	1 class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 229 -234 Chapter 7; Section 7.2	<a href="http://www.scilinks.org">www.scilinks.org</a> <b>password: HK1074</b>	
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Assign worksheet 7.6: Connection to Language Arts – Marie Curie and the Naming of a Unit. Integration Enrichment Resources ancillary		
<b>SAMPLE ASSESSMENTS:</b>		
1. Neutrons released in a fission reaction can strike other nuclei and cause _____.		
A. a chain reaction		
B. an electron avalanche		
C. fusion reaction		
D. radioactive decay		
(A is the correct answer. Source for item is Glencoe Physical Science by McGraw-Hill)		

<b>CONTENT AREA: Science</b>		
<b>GRADE/LEVEL:</b> 10	<b>COURSE TITLE:</b> <b>Physical Science Honors</b>	<b>COURSE NUMBER:</b> 40.41110040
<b>National Standard(s):</b> To understand radioactivity and nuclear physics		
<b>OBJECTIVE(S):</b>		
82. Describe the effects of being exposed to a radioactive substance. Describe radioactive isotopes and some of their uses. (QCC 7.3)		
<b>PACING:</b>	1 class period.	
<b>ALIGNED INSTRUCTIONAL RESOURCES:</b>	<b>SUGGESTED INSTRUCTIONAL STRATEGIES:</b>	
Holt Science Spectrum- A Physical Approach pp. 235 - 240 Chapter 7; Section 7.1	<a href="http://www.scilinks.org">www.scilinks.org</a> <b>password: HK1075</b>	
<b>TECHNOLOGY INTEGRATION:</b>		
<b>INTERDISCIPLINARY CONNECTIONS:</b>		
Assign worksheet 7.8: Integrating Environmental Science- Environmental Radiations Integration Enrichment Resources ancillary		
<b>SAMPLE ASSESSMENTS:</b>		
<p>1. Radioactive materials (such as uranium and plutonium) have been linked to cancer and genetic defects, both of which are caused within the cell. How does radioactivity affect living cells?</p> <p>A. Radio-length waves emitted from radioactive elements constantly bombard the cell, causing changes.</p> <p>B. Uranium and plutonium replace normal elements in certain proteins, either causing birth defects or initiating cancer.</p> <p>C. Alpha, beta, and gamma radiation can change the molecular composition of a chromosome or other cell structure, thus changing the cell.</p> <p>D. Although radioactivity has been suggested as a causal factor, it is known that all atoms of higher atomic mass are incompatible with life forms and cause cellular changes.</p> <p>(C is the correct answer. Source for this item is GHSGT Content Description- Science 1998)</p>		