



Lawton Public Schools

**Science
Curriculum Alignment Guide**

for

Grade 7th

**Barry Beauchamp, Superintendent
Dr. Linda Dzialo, Deputy Superintendent**

June 2008

Course/Level
Science
7th Grade

PASS Process Standard 1: Observe and Measure – Observing is the first action taken by the learner to acquire new information about an object, organism, or event. Opportunities for observation are developed through the use of a variety of scientific tools. Measurement allows observations to be quantified.

Time Range:
Hours 2
Quarter 1st

National Science Standard 12: Nature of Science

Assessment Instrument

NRT

CRT
X

EOI

ACT

SAT

AP

Lesson Objective P1.1, 2, 3 Identify qualitative and/or quantitative changes given conditions before, during, and after an event. 2: Use appropriate tools when measuring objects, organisms, and/or events. 3: Use appropriate System International units and SI prefixes when measuring objects, organisms, and/or events.

Level of Specificity: Same.

Prerequisites: Ability to read and handle a thermometer.

Blooms

K

C

A

A

S

E

Process Skills

Observe/Measure
*

Classify

Experiment
*

Inquiry
*

Interpret/Communicate

Model

Suggested Teaching Strategies:

- Follow the procedures in Skills Lab on Melting ice in Glencoe text, page 70. Students will be able to predict which ice cube will melt faster, one in a cup of warm water or one in a cup of room-temperature water; measure the temperature changes that take place as the ice cube melts; draw conclusions to explain how the addition of thermal energy causes ice to melt.

Aligned Instructional Resources:

- Glencoe pg. 12-14(Scientific Problem Solving)
- Glencoe Lab Management & Safety Bk. P. 37, 38, 39, 61, 63
- Glencoe p. 786 SI

Assessment Sample Format:

- Identify what type of changes will occur in the experiment above and predict which glass of water will return to room temperature first.
* the glass of which has ice added first
- List appropriate tools and measurement units for the experiment above.
* answer may vary: thermometer, stop watch, graph paper

Additional Resources/Notes:

- Prentice Hall, Science Explorer, Chemical Building Blocks, Ch. 2

Date(s) Taught

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Course/Level
Science
7th Grade

PASS Process Standard 4: Interpret and Communicate – Interpreting is the process of recognizing patterns in collecting data by making inferences, predictions, or conclusions. Communicating is the process of describing, recording, and reporting experimental procedures and results to others. Communication may be oral, written, or mathematical and includes: organizing ideas, using appropriate vocabulary, graphs, other visual representations, and mathematical equations.

Time Range:
Hours 5
Quarter 1st

National Science Standard 11: Nature of Science

Assessment Instrument

NRT	CRT X	EOI	ACT	SAT	AP
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Lesson Objective P4.1, 2: Report data in an appropriate method when given an experimental procedure or data. Interpret data tables, line, bar, trend, and/or circle graphs.

Level of Specificity: Read and create various information tools.

Prerequisites: Know why information tools are useful.

Blooms	K *	C	A	A	S *	E
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Process Skills	Observe/Measure	Classify *	Experiment	Inquiry	Interpret/Communicate *	Model
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Suggested Teaching Strategies:

- Have students create concept maps, compare/contrast tables, Venn diagrams, flow charts, data tables, bar graphs, and line graphs using information they are familiar with (i.e. cars, musicians, and cartoons.)
- Have students do the activities on pages 148-160 of the Skills Handbook.

Aligned Instructional Resources:

- Prentice Hall, Chemical Building Blocks: Skills Handbook, 2000, pp. 148-160
- Glencoe Math Skills Sect. Pp. 789-790
- <http://www.phschool.com>

Assessment Sample Format:

1. Which information tool is the best tool for organizing information that occurs in sequential steps?
 - a. *Flowchart
 - b. Cycle Diagram
 - c. Concept Map
 - d. Venn Diagram
2. Which information tool is used for organizing information of broad topics?
 - a. Flowchart
 - b. Cycle Diagram
 - c. *Concept Map
 - d. Venn Diagram

Additional Resources/Notes:

Date(s) Taught						
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Course/Level
Science
7th Grade

PASS Process Standard 4: Interpret and Communicate – Interpreting is the process of recognizing patterns in collecting data by making inferences, predictions, or conclusions. Communicating is the process of describing, recording, and reporting experimental procedures and results to others. Communication may be oral, written, or mathematical and includes: organizing ideas, using appropriate vocabulary, graphs, other visual representations, and mathematical equations.

Time Range:
Hours 2
Quarter 1st

National Science Standard 11: Nature of Science

Assessment Instrument

NRT

CRT
X

EOI

ACT

SAT

AP

Lesson Objective P4.3: Evaluate data to develop reasonable explanations, and/or predictions.

Level of Specificity: Use the question the student formulated from a previous lesson; have the student make an educated guess.

Prerequisites: Understand how to make an educated guess.

Blooms	K	C*	A	A	S	E
Process Skills	Observe/Measure *	Classify	Experiment	Inquiry *	Interpret/Communicate *	Model

Suggested Teaching Strategies:

- Give the students a list of ten investigative questions. Have the students make a hypothesis for each of the questions.
- Have the students share their observations from the previous lesson and the question/problem that they have formulated for the scientific method process.

Aligned Instructional Resources:

- Prentice Hall, Chemical Building Blocks: Skills Handbook, 2000, pp. 148 –160
- Glencoe, pp. 748, 789-790, Math Skills Handbook Sect.
- <http://www.phschool.com>

Assessment Sample Format:

1. How do birds fly?
2. Why are tree leaves green?
3. Why is there snow on top of tall mountains in July?

(*answers may vary)

Additional Resources/Notes:

Date(s) Taught

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Course/Level
Science
7th Grade

PASS Process Standard 5: Inquiry – Inquiry can be defined as the skill necessary to carry out the process of scientific or systemic thinking. In order for the inquiry to occur, students must have the opportunity to ask a question, formulate procedures, and observe phenomena.

Time Range:
Hours 2
Quarter 1st

National Science Standard 12: Nature of Science

Assessment Instrument					
NRT	CRT X	EOI	ACT	SAT	AP

Lesson Objective P5.1: Use systematic observations, make accurate measurements, and identify and control variables.

Level of Specificity: Measure, observe, and make calculations during a multi-use lab.

Prerequisites: Use a ruler and basic mathematical skills.

Blooms	K	C	A	A*	S	E
Process Skills	Observe/Measure *	Classify	Experiment	Inquiry *	Interpret/Communicate	Model

Suggested Teaching Strategies:

- Have students will accurately measure a variety of objects using a ruler; record results.
- Have students accurately weigh mass a variety of objects using a balance.
- Using a beaker of water and different objects, have students find the volume of each.
- Find density and compare objects that students have recorded both weight or mass and volume.

Aligned Instructional Resources:

- Glencoe p. 752
Chapter 1 p. 16-19
Control Variables
- Glencoe Performance
Assessment Book
- Technology Skills p.772-775

Assessment Sample Format:

1. What is the formula for density? * density = mass / volume
2. What is the formula for volume? *volume = L x W x H
3. Describe the process used to zero out a balance scale.

Additional Resources/Notes:

- Prentice Hall, Chemical Building Blocks: Skills Handbook, 2000, p. 148 –160
- <http://www.phschool.com>
- SpongeBob Activities on internet relating to Controls/variables etc.

Date(s) Taught							
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Course/Level
Science
7th Grade

PASS Process Standard 4: Interpret and Communicate – Interpreting is the process of recognizing patterns in collecting data by making inferences, predictions, or conclusions. Communicating is the process of describing, recording, and reporting experimental procedures and results to others. Communication may be oral, written, or mathematical and includes: organizing ideas, using appropriate vocabulary, graphs, other visual representations, and mathematical equations

Time Range:
Hours 1-2
Quarter 1st

National Science Standard 11: Nature of Science

Assessment Instrument

NRT

CRT

EOI

ACT

SAT

AP

Lesson Objective P4.4, 5: Accept or reject hypothesis when given results of an investigation. Communicate scientific procedures and explanations.

Level of Specificity: Test a hypothesis during a physical/chemical property lab.

Prerequisites: Use balances and graduated cylinders, observations.

Blooms	K	C	A *	A	S	E
Process Skills	Observe/Measure *	Classify	Experiment *	Inquiry	Interpret/Communicate *	Model

Suggested Teaching Strategies:

- Have students will develop a hypothesis over which boils faster, salt water or water.
- Demonstrate how to follow procedures to test their hypothesis.
- Have and write a conclusion. Have students test their hypothesis.

Aligned Instructional Resources:

- Glencoe Skills Handbook pp. 751-756
- Performance Assessment Book

Assessment Sample Format:

1. Which of the two substances boiled faster? Why?
2. At what temperature did salt water boil?
3. At what temperature did water boil?

Additional Resources/Notes:

- Prentice Hall, Chemical Building Blocks: Skills Handbook, 2000, p. 148 –160
- <http://www.phschool.com>

Date(s) Taught							
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Course/Level
Science
7th Grade

PASS Process Standard 3: Experiment – Experimenting is a method of discovering information. It requires making observations and measurements to test ideas.

Time Range:
Hours 2
Quarter 1

National Science Standard 11: Nature of Science

Assessment Instrument					
NRT	CRT X	EOI	ACT	SAT	AP

Lesson Objective P3.1, 2 3, 4, 5, 6: Ask questions about the world and design investigations that lead to scientific inquiry. Evaluate the design of a scientific investigation. Identify variables and/or controls in an experimental setup. Identify a testable hypothesis for an experiment. Design and conduct experiments. 6: Recognize potential hazards and practice safety procedures in all science activities.
Level of Specificity: Same.

Prerequisites: Know how to measure volume using SI units; introduction of scientific method.

Blooms	K	C	A	A	S	E
Process Skills	Observe/Measure *	Classify	Experiment *	Inquiry *	Interpret/Communicate *	Model

Suggested Teaching Strategies:

- Follow the procedures in Skills Lab on *What's in Your Lunch* in text, page 38. Students will be able to predict whether foods contain starches using iodine solution test or lipids using brown sack paper; conclude from the tests they perform whether their predictions are correct.
- Take a lab field trip, describing and pointing out potential hazards, such as poisons, electricity, and broken glass. Demonstrate preventative actions and know where and how to use safety equipment.
- Teach safety symbols.

Aligned Instructional Resources:

- Glencoe Chapter 1 p. 6-14 & Skills Handbook(back of textbook) p.748-756
- Lab Management & Safety Book p. 73
- Student Resources(back of bk) p. 752 p. 16-19
- Performance Assessment Bk p. 757-759

Assessment Sample Format:

- Recruit a drawing of the lab and label locations of each safety item:
 - fire extinguishers
 - safety goggles
 - vent hood
 - latex gloves

Additional Resources/Notes:

- Prentice Hall, Science Explorer, Cells and Heredity, Ch. 1
- Sponge Bob Act on Internet

Date(s) Taught						
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Course/Level
Science
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PASS Process Standard 5: Inquiry – Inquiry can be defined as the skill necessary to carry out the process of scientific or systemic thinking. In order for the inquiry to occur, students must have the opportunity to ask a question, formulate procedures, and observe phenomena.

Time Range:
Hours 3
Quarter 1st

National Science Standard 12: Nature of Science

Assessment Instrument

NRT

CRT
X

EOI

ACT

SAT

AP

Lesson Objective P5.2: Use technology to gather data and analyze results of investigations.

Level of Specificity: Use computers and calculators to gather data and analyze results of an investigation.

Prerequisites: Know how to use computers and calculators. Know how to determine mean, mode, and median of a given set of numbers.

Blooms	K	C	A	A*	S	E
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Process Skills

Observe/Measure

Classify

Experiment

Inquiry
*

Interpret/Communicate
*

Model

Suggested Teaching Strategies:

- Schedule a class through the library to teach how to gather information through the Internet.
- Teach the basic functions of a calculator.

Aligned Instructional Resources:

- Technology Skill Handbook p. 772-775

Assessment Sample Format:

1. What is the average temperature of black?
2. What is the median temperature of white?

	Red	Blue	White	Gray	Black
3:30	70°F	70°F	70°F	70°F	70°F
4:00	80°F	76°F	76°F	76°F	80°F
4:30	78°F	78°F	76°F	76°F	82°F
5:00	64°F	68°F	66°F	70°F	78°F
5:30	64°F	68°F	64°F	64°F	68°F

Additional Resources/Notes:

- Prentice Hall, Chemical Building Blocks: Skills Handbook, 2000, pp. 148 –160
- <http://www.phschool.com>

Date(s) Taught							
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Course/Level
Science
7th Grade

PASS Process Standard 5: Inquiry – Inquiry can be defined as the skill necessary to carry out the process of scientific or systemic thinking. In order for the inquiry to occur, students must have the opportunity to ask a question, formulate procedures, and observe phenomena.

Time Range:
Hours 2
Quarter 1st

National Science Standard 12: Nature of Science

Assessment Instrument

NRT

CRT

EOI

ACT

SAT

AP

Lesson Objective P5.3: Review data, summarize data, form logical conclusions.

Level of Specificity: Make logical conclusion based on the results of an experiment.

Prerequisites: Have ability to select best answers, and understand logic.

Blooms	K	C *	A	A	S	E
Process Skills	Observe/Measure	Classify	Experiment	Inquiry *	Interpret/Communicate *	Model

Suggested Teaching Strategies:

- Show a video of scientific method process experiment. Discuss how the scientist came up with the conclusion.
- Display three science project models from a science fair website or other source using the scientific method process. Discuss how the young scientists derived at the conclusion.

Aligned Instructional Resources:

- Glencoe 748-749

Assessment Sample Format:

1. How did the young scientist conclude that the black color absorbed more heat than white or gray? * The peak temperature was between 4:00 and 4:30. The black color had the highest reading.

	Red	Blue	White	Gray	Black
3:30	70°F	70°F	70°F	70°F	70°F
4:00	80°F	76°F	76°F	76°F	80°F
4:30	78°F	78°F	76°F	76°F	82°F
5:00	64°F	68°F	66°F	70°F	78°F
5:30	64°F	68°F	64°F	64°F	68°F

Additional Resources/Notes:

- Prentice Hall, Chemical Building Blocks: Skills Handbook, 2000, p. 148 –160
- <http://www.phschool.com>
- www.geogol.com
- www.isd77.k12.mn.us/resources/of/steps.html

Date(s) Taught

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Course/Level
Science
7th Grade

PASS Process Standard 5: Inquiry – Inquiry can be defined as the skill necessary to carry out the process of scientific or systemic thinking. In order for the inquiry to occur, students must have the opportunity to ask a question, formulate procedures, and observe phenomena.

Time Range:
Hours 2-3
Quarter 1st

National Science Standard 12: Nature of Science

Assessment Instrument					
NRT	CRT X	EOI	ACT	SAT	AP

Lesson Objective P5.4: Formulate and evaluate explanations proposed by examining and comparing evidence, pointing out statements that go beyond the evidence, and suggesting alternative explanations.
Level of Specificity: Students will come up with new ideas that could explain different theories.

Prerequisites: Work in groups and brainstorm.

Blooms	K	C	A	A	S *	E
Process Skills	Observe/Measure	Classify	Experiment	Inquiry *	Interpret/Communicate *	Model

Suggested Teaching Strategies:

- Have the students read a list from the skills handbook that has different theories on it. Explain and answer any questions that the students might have about the theories.
- Have the students work in groups and brainstorm some different ideas that could possibly explain the theories.

Aligned Instructional Resources:

- Glencoe Performance Assessment Book & Technology Skills p. 772-775

Assessment Sample Format:

1. What is a theory?
2. What are possible explanations for the theory of continental drift or the theory of evolution?

Additional Resources/Notes:

- Prentice Hall, Chemical Building Blocks: Skills Handbook, 2000, pp. 148 –160
<http://www.phschool.com>

Date(s) Taught							
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Course/Level
Science
7th Grade

PASS Process Standard 2: Classify – Classifying establishes order. Objects, organisms, and events are classified based on similarities, differences, and interrelationships.

Time Range:
Hours 2
Quarter 1st

National Science Standard 13: Nature of Science

Assessment Instrument

NRT	CRT X	EOI	ACT	SAT	AP
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Lesson Objective P2.1, 2: Use observable properties to place an object, organism, and/or event into a classification system. Identify properties by which an object, organism, and/or events could be ordered.
Level of Specificity: Same.

Prerequisites: Know how periodic table classifies elements based on their properties.

Blooms	K	C	A	A	S	E
Process Skills	Observe/Measure	Classify *	Experiment	Inquiry *	Interpret/Communicate *	Model

Suggested Teaching Strategies:

- Have Students classify objects based on similar characteristics
- Use a dichotomous key.

Aligned Instructional Resources:

- Glencoe Chapter 8 p. 218-220
- Several Classification Act. Listed p. 828

Assessment Sample Format:

- Lab performance Act. See Index p. 828

Additional Resources/Notes:

- Prentice Hall, Science Explorer, Chemical Building Blocks, Ch. 3

Date(s) Taught						
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Course/Level
Science
7th Grade

PASS Standard 1: Properties and Physical Changes in Matter – Physical characteristics of objects can be described using shape, size, and mass whereas the materials from which objects are made can be described using color and texture.

Time Range:
Hours 3-4
Quarter 1st

National Science Standard 8: Physical Sciences

Assessment Instrument					
NRT	CRT X	EOI	ACT	SAT	AP

Lesson Objective 1.1: Matter has physical properties that can be measured (i.e., mass, volume, temperature, color, texture, and density). Physical changes of a substance do not alter the chemical nature of a substance (e.g., phase changes of water and/or sanding wood).
Level of Specificity: Define property. Define physical property and list examples. Define physical change and list examples.

Prerequisites: Understand the definition of matter.

Blooms	K	C	A *	A	S	E
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Process Skills	Observe/Measure *	Classify *	Experiment	Inquiry	Interpret/Communicate *	Model
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Suggested Teaching Strategies:

- Dissolve a small amount of salt in water. Is this a physical change? Explain.
- Put a small nail into a bottle of coke and leave for one week. Is this a physical change? Explain.
- Describe one physical property of a given substance.
- At home and at school, make observations, describe five physical changes you noticed.

Aligned Instructional Resources:

- Glencoe Chapter 22 Section 1 P. 652-656

Assessment Sample Format:

3. Describe changes in properties that you might notice during the process of a piece of ice melting into a puddle of water.

Additional Resources/Notes:

- Prentice Hall, Chemical Interactions
- Glencoe, Science Interactions, Ch. 9, *Observing Matter*
- Wonder Science
- Kemtec Educational Co., Changes in Matter, Elements of Science Series

Date(s) Taught						
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Course/Level
Science
7th Grade

PASS Standard 1: Properties and Physical Changes in Matter – Physical characteristics of objects can be described using shape, size, and mass whereas the materials from which objects are made can be described using color and texture.

Time Range:
Hours 1
Quarter 1

National Science Standard 8: Physical Sciences

Assessment Instrument

NRT	CRT X	EOI	ACT	SAT	AP
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Lesson Objective 1.2: A mixture of substances often can be separated into the original substance using one or more of the physical properties.

Level of Specificity: Read and know the conservation of mass law.

Prerequisites: Know what is meant by mixture.

Blooms	K	C	A	A	S	E
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Process Skills	Observe/Measure	Classify *	Experiment *	Inquiry	Interpret/Communicate *	Model
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Suggested Teaching Strategies:

Mixture Activity:
Procedures: Write the following recipes on the chalkboard: lemonade (1 serving), 10 oz glass water, juice of ½ lemon, 1 TBS sugar, fruit salad (5 servings), 1 orange, 1 apple, 1 banana, 1 can pineapple chunks (97 oz), 1 small bunch of grapes.

- Have students calculate the amount of each ingredient needed to prepare lemonade and fruit salad for the whole class. (For each recipe divide the number of students by number of servings in the recipe; then multiply the quotient by the amount of each ingredient called for in the recipe).

Show students how to convert the produce to convenient units of measure. (For example, 32 oz = 1 qt)

Aligned Instructional Resources:

- Glencoe Chapter 21

Assessment Sample Format:

- Informative Writing – Description. Suppose you find an unknown substance growing out of the sidewalk in front of your home. Decide on its physical properties, and write a paragraph for your science teacher describing them.

Additional Resources/Notes:

- Paul Doherty, Dan Rathjen and the ExploratoriumTeacher Institute, [The Cool Hot Rod and Other Electrifying Experiments on Energy & Matter](#)

Date(s) Taught						
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Course/Level
Science
7th Grade

PASS Standard 4: Behavior and Regulations – All organisms must be able to grow, reproduce, and maintain stable internal conditions while living in a constantly changing external environment. Behavioral response is a set of actions determined in part by heredity and in part by experience.

Time Range:
Hours 1-2
Quarter 2

National Science Standard 5: Life Sciences

Assessment Instrument					
NRT	CRT X	EOI	ACT	SAT	AP

Lesson Objective 4.1: Living organisms strive to maintain a constant internal environment (i.e., temperature regulation).

Level of Specificity: Know different types of blood cells.

Prerequisites: Know the human body is composed of cells and the different cell parts.

Blooms	K	C	A	A	S *	E
Process Skills	Observe/Measure *	Classify	Experiment	Inquiry	Interpret/Communicate *	Model

Suggested Teaching Strategies:

- Compare microscope slides of red and white blood cells (videotape may also be used).
- Discuss the difference in appearance and function that each cell performs.

Aligned Instructional Resources:

- Prentice Hall, Cells and Heredity, 2000, Ch. 1
- <http://www.phschool.com>

Chapter 13
Section 1 p. 366-370

Assessment Sample Format:

1. Describe the function of each type of cell in the body:

- a) red blood cell—carries oxygen to the cells
- b) white blood cell—immunity
- c) platelets—blood clotting

Additional Resources/Notes:

Date(s) Taught							
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Course/Level
Science
7th Grade

PASS Standard 2: Structure and Function in Living Systems –
Living systems at all levels of organization demonstrate the complementary nature of structure and function.

Time Range:
Hours 4-5
Quarter 2

National Science Standard 5: Life Sciences

Assessment Instrument

NRT	CRT X	EOI	ACT	SAT	AP
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Lesson Objective 2.1: Living systems are organized by levels of complexity (i.e., cells, tissues, organs, and/or systems).

Level of Specificity: Understand the role of the cell membrane and nucleus in the cell; understand the functions of the cell organelles.

Prerequisites: None.

Blooms	K	C *	A	A	S	E
Process Skills	Observe/Measure *	Classify *	Experiment	Inquiry	Interpret/Communicate *	Model

Suggested Teaching Strategies:

- Students will draw a picture of plant and animal cells. Compare structures found in the two kinds of cells. Discuss functions of organelles. Determine which organelles are found only in plant cells and which organelles are found in both plant and animal cells.

Aligned Instructional Resources:

- Prentice Hall Science, *Cells and Heredity*
- Chapter 8 Cell Structure Section 3 p. 221-230

Assessment Sample Format:

- Label plant and animal cells with the correct parts.

Additional Resources/Notes:

Date(s) Taught						
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Course/Level
Science
7th Grade

PASS Standard 2: Reproduction and Heredity – Reproduction is the process by which organisms give rise to offspring. Heredity is the passing of traits to offspring. All organisms must be able to grow, reproduce, and maintain stable internal conditions while living in a constantly changing external environment.

Time Range:
Hours 3
Quarter 2

National Science Standard 5: Life Sciences

Assessment Instrument

NRT

CRT
X

EOI

ACT

SAT

AP

Lesson Objective 2.2: Specialized structures perform specific functions at all levels of complexity (e.g., leaves on trees and wings on birds).

Level of Specificity: Understand the differences between plant and animal cells.

Prerequisites: Know that the basic unit of all living things is the cell. Understands the terms: cell, cell wall nucleus, and vacuoles.

Blooms	K	C *	A	A	S	E
Process Skills	Observe/Measure *	Classify *	Experiment *	Inquiry *	Interpret/Communicate *	Model

Suggested Teaching Strategies:

- Have students make models of the plant and animal cell. (possible materials to be used may be “jello”, or colored construction paper)
- Activity: *Comparing Plant and Animal Cells*, General Life Science, page 53
- Design Your Own Experiment: Students will examine the cellular level of an onion by making a wet-mount slide of the membrane. Glencoe Life Science, page 56.

Aligned Instructional Resources:

- Glencoe, Science Interactions Course 2, p.548
- Merrill, Life Science, 1994, pp. 36-42
- Glencoe, Life Science, Glencoe/McGraw Hill, pp. 53, 56
Chapter 8 Section 3 p. 221-230

Assessment Sample Format:

1. Draw and label a plant cell and an animal cell.
2. Give the function of each of the cell parts.

Additional Resources/Notes:

Date(s) Taught							
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Course/Level
Science
7th Grade

PASS Standard 4: Behavior and Regulations – All organisms must be able to grow, reproduce, and maintain stable internal conditions while living in a constantly changing external environment. Behavioral response is a set of actions determined in part by heredity and in part by experience.

Time Range:
Hours 2
Quarter 2

National Science Standard 6: Life Sciences

Assessment Instrument					
NRT	CRT X	EOI	ACT	SAT	AP

Lesson Objective 4.2: Living organisms have physical and/or behavioral responses to external stimuli (e.g., hibernation, migration, and plant growth).

Level of Specificity: Explain how plants and animals respond to external stimuli throughout different geographical environments.

Prerequisites: Know the basic parts of a cell and their functions. Know the definition of a stimulus.

Blooms	K *	C *	A *	A	S	E
Process Skills	Observe/Measure *	Classify *	Experiment *	Inquiry	Interpret/Communicate *	Model

Suggested Teaching Strategies:

- Activity: Design Your Own Experiment—Plant Tropisms. Students will design and carry out an experiment to observe plant tropisms in plant seedlings.
- Mini Lab: What Are the Adaptations of a Frog? Students will prepare a table listing the adaptations frogs and toads have for life on land and in the water.

Aligned Instructional Resources:

- Prentice Hall, Cells and Heredity, 2000, Ch.1
- <http://www.phschool.com>
- Chapter 8 Section 1 p. 214
- Chapter 9 Section 3 p. 261-265

Assessment Sample Format:

1. A(n) _____ is anything in the environment that affects the behavior of an organism. * stimulus
2. When the plant responds to light by growing toward it, the response is called _____ phototropism. * positive
3. _____ is the flowering response of plants to the change in the lengths of darkness. * photoperiodism
4. List the adaptations of amphibians for living in water and their adaptations for living on land. * water-moist smooth skin, bulging eyes and nostrils on top of the head; strong hind legs for swimming; land-lungs, strong skeleton, strong hind legs for jumping, moist, smooth skin

Additional Resources/Notes:

Date(s) Taught							
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Course/Level
Science
7th Grade

Time Range:
Hours 6
Quarter 2

National Science Standard 4: Life Sciences

Assessment Instrument

NRT	CRT X	EOI	ACT	SAT	AP
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Lesson Objective 3.1: Characteristics of an organism result from inheritance and from interaction with the environment.
Level of Specificity: Know that specific characteristics are passed from one generation to the next by specific genes.

Prerequisites: Know that organisms have genes with specific characteristics that may be passed from one generation to the next.

Blooms	K	C	A	A	S *	E
Process Skills	Observe/Measure *	Classify *	Experiment	Inquiry	Interpret/Communicate *	Model

Suggested Teaching Strategies:

- Use colored candies in paper cups to demonstrate how genes pass from grandparents to parents to children. Have students put several different colored candies in a cup. Pick a trait for each color. Two cups will represent grandparents. Two will represent parents and one will represent offspring. From each grandparent cup select a specific number of candies to place in parents cup. From parents cup place a specific number in child's cup. The traits in the child's cup will match the ones for which colors have been selected.

Aligned Instructional Resources:

- Prentice Hall, Cells and Heredity, 2000, Ch.3
- <http://www.phschool.com>
- Chapter 11 Section 1-3

Assessment Sample Format:

According to Mendol's research:

TT-tall purebred **tt**-short purebred **Tt**-heterozygous tall

	T	T
t	Tt	Tt
t	Tt	Tt

Offspring from these parents show (tall) height.

Additional Resources/Notes:

Date(s) Taught						
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Course/Level
Science
7th Grade

PASS Standard 3: Reproduction and Heredity – Reproduction is the process by which organisms give rise to offspring. Heredity is the passing of traits to offspring. All organisms must be able to grow, reproduce, and maintain stable internal conditions while living in a constantly changing external environment.

Time Range:
Hours 1-3
Quarter 3

National Science Standard 7: Life Sciences

Assessment Instrument

NRT

CRT
X

EOI

ACT

SAT

AP

Lesson Objective 3.2: Reproduction is essential for species survival. Individual organisms with certain traits are more likely to survive and produce offspring.

Level of Specificity: Same.

Prerequisites: Give examples of how overproduction, competition, and variations affect the process of natural selection.

Blooms

K

C

A *

A

S

E

Process Skills

Observe/Measure

Classify

Experiment

Inquiry

Interpret/Communicate
*

Model

Suggested Teaching Strategies:

- Give examples of animals that illustrate the concept of overproduction (insects, octopus, sea turtles, etc.)
- Make a list of factors (food, water, shelter, etc.) that may lead to competition within members of a species.
- Discuss variations that may give an individual organism an advantage over other individual organisms.

Aligned Instructional Resources:

- Prentice Hall, Cells and Heredity, 2000, Ch. 5
- <http://www.phschool.com>
- Chapter 12 Section 1 p. 335-338
- Chapter 18 Section 2 p. 539-543

Assessment Sample Format:

1. What role does overproduction of offspring play in the process of natural selection? (It leads to competition in which only the most adapted organisms survive and reproduce)
2. Use an example to explain how natural selection can lead to evolution. (Possible answer: a large number of turtles are born every year, but only a few will be able to swim fast enough to escape predators. Those turtles will be the ones to survive and reproduce).

Additional Resources/Notes:

Date(s) Taught



Course/Level
Science
7th Grade

PASS Standard 6: Earth and Solar System – The earth is the third planet from the sun in a system that includes the moon, the sun, eight other planets and their moons, and smaller objects such as, asteroids and comets.

Time Range:
Hours 1-2
Quarter 3

National Science Standard 1: Earth and Space Sciences

Assessment Instrument					
NRT	CRT X	EOI	ACT	SAT	AP

Lesson Objective 6.2: Seasons result from variations in the amount of the sun’s energy hitting the surface, due to the tilt of the earth’s rotation on its axis and the length of the day.

Level of Specificity: Explain what causes the changing seasons on Earth.

Prerequisites: Understand the terms: spatial gravity, rotation of the Earth, Earth’s revolution around the sun, moon’s relationship with Earth.

Blooms	K	C*	A	A	S	E
Process Skills	Observe/Measure *	Classify *	Experiment	Inquiry	Interpret/Communicate *	Model

Suggested Teaching Strategies:

- Use a lamp without a shade to represent the sun and use a globe or ball to represent Earth. With the lamp on, hold the globe about 2 m away.
- Tilt the globe slightly so that the northern half points toward the lamp.
- Ask students where on the globe is light striking most directly? Walk the globe around the lamp, keeping it tilted at the same angle and pointed in the same direction as when you started. Ask students what they notice about the tilt and the area receiving the most direct light. Students should be able to tell when the globe is in a position that represents summer and winter in both hemispheres.

Aligned Instructional Resources:

- Prentice Hall, Astronomy, 2000, Ch.1
- <http://www.phschool.com>
- Chapter 7 Section 1 p. 178-183

Assessment Sample Format:

1. The seasons result from _____.
 - a. Earth being closer to the sun at times
 - b. *the tilt of Earth’s axis
 - c. Earth’s rotation
 - d. Earth’s closeness to the moon
2. If the Earth was not tilted on its axis, what effect would this have on seasons? * There would be no change in seasons because one hemisphere would not be tilted toward the sun at one time and away from it at another.

Additional Resources/Notes:

Date(s) Taught						
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Course/Level
Science
7th Grade

PASS Standard 6: Earth and Solar System – The earth is the third planet from the sun in a system that includes the moon, the sun, eight other planets and their moons, and smaller objects such as, asteroids and comets.

Time Range:
Hours 1-2
Quarter 3

National Science Standard 3: Earth and Space Sciences

Assessment Instrument					
NRT	CRT X	EOI	ACT	SAT	AP

Lesson Objective 6.1: Most objects in the solar system are in regular and predictable motion. Those motions explain such phenomena as the day, the year, phases of the moon, and eclipses.

Level of Specificity: Describe the cause of day and night.

Prerequisites: Understand motion along a curved path and the motions of Earth, the moon, and the sun.

Blooms	K	C	A*	A	S	E
Process Skills	Observe/Measure *	Classify	Experiment	Inquiry	Interpret/Communicate *	Model

Suggested Teaching Strategies:

- Demonstrate how night and day are caused by Earth’s rotation. Materials needed: lamp, globe, paper, and tape.
- On a table set up a lamp and a globe about 0.5 m apart and turn out the classroom lights. Tell students that the lamp represents the sun and the globe represents the Earth. Turn on the lamp so that it shines on the globe and casts a shadow. Ask students what they see. Point out that half the globe is lit and the other half is cast in shadow. Have a student write an X on a small slip of paper and tape it to the globe. Then begin turning the globe counterclockwise. Ask students what happens to the X as the globe makes one complete turn. (It passes from light into dark and back.

Aligned Instructional Resources:

- Prentice Hall, Astronomy, 2000, Ch.1
- <http://www.phschool.com>
- Chapter 7 Section 2 184-192

Assessment Sample Format:

1. Why do the sun and moon appear to move westward in the sky? Include in your answer why the terms: sunrise and sunset are misleading. (The sun and moon appear to move westward through the sky because Earth rotates from west to east. Sunrise and sunset are misleading terms because the sun only appears to rise in the east and set in the west as a spot on Earth rotates toward and away from the sun.)
2. Night and day are caused by _____.
 - a. the rotation of the moon
 - b. the sun’s revolution around the Earth
 - c. the tilt of Earth’s axis
 - *d. the rotation of Earth

Additional Resources/Notes:

Date(s) Taught							
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Course/Level
Science
7th Grade

PASS Standard 5: Structures of the Earth System – The earth is mostly rock, three-fourths of its surface is covered by a relatively thin layer of water, and the entire planet is surrounded by a relatively thin blanket of air, and is able to support life.

Time Range:
Hours 2
Quarter 4th

National Science Standard 1: Earth and Space Sciences

Assessment Instrument					
NRT	CRT X	EOI	ACT	SAT	AP

Lesson Objective 5.1: Global patterns of atmospheric movement influence local weather such as ocean effect on climate.

Level of specificity: Identify the major types of air masses that affect the weather in North America.

Prerequisites: Know types of air masses: maritime tropical, continental tropical, maritime polar, continental polar.

Blooms	K	C	A	A	S *	E
Process Skills	Observe/Measure *	Classify *	Experiment *	Inquiry *	Interpret/Communicate *	Model

Suggested Teaching Strategies:

- Compare weather maps from day to day to find patterns in the weather.
- Predict the weather for tomorrow based on the weather today and draw weather maps showing the predictions.
- Compare student predictions with professional forecasts and the next day's weather.

Aligned Instructional Resources:

- Simons, Barbara Brooks, Science Explorer: Weather and Climate, Ch. 3
- Chapter 4 Section 3 p. 103-107

Assessment Sample Format:

1. What are the major types of air masses that affect the weather in North America?
* maritime tropical, maritime polar, continental tropical, continental polar
2. What two main characteristics are used to classify air masses?
* temperature and humidity
3. Why do maritime polar air masses have more effect on the west coast than the east coast?
* east coast maritime polar air masses are blown out to sea by prevailing westerlies

Additional Resources/Notes:

Date(s) Taught							
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Course/Level Science 7 th Grade	PASS Standard 5: Structures of the Earth System – The earth is mostly rock, three-fourths of its surface is covered by a relatively thin layer of water, and the entire planet is surrounded by a relatively thin blanket of air, and is able to support life.	Time Range: Hours 2 Quarter 4 th
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National Science Standard 1: Earth and Space Sciences	Assessment Instrument <table border="1" style="display: inline-table;"> <tr> <td>NRT</td> <td>CRT X</td> <td>EOI</td> <td>ACT</td> <td>SAT</td> <td>AP</td> </tr> </table>	NRT	CRT X	EOI	ACT	SAT	AP
NRT	CRT X	EOI	ACT	SAT	AP		

Lesson Objective 5.2: Clouds, formed by the condensation of water vapor, affect local weather and climate.

Level of Specificity: Explain how clouds form. Identify cloud types and the weather they bring.

Prerequisites: None.

Blooms	K	C	A	A	S	E
Process Skills	Observe/Measure	Classify	Experiment *	Inquiry	Interpret/Communicate	Model

Suggested Teaching Strategies:

- Hypothesis: How do you think a cloud forms? (List ideas on board or overhead). Materials: small-mouthed clear glass jars, hot water, match sticks, ice cubes, flashlights. Procedure: Carefully fill a jar with hot water. Pour out all but 5 centimeters (2 in of the hot water). Strike a match and drop it in the jar. Place several ice cubes at mouth of jar. Shine a flashlight on the jar. Observe what is happening. Record you observations. The ice cubes cooled the air in the jar. Water vapor in cool air forms cloud.
- Make cloud pictures out of cotton and watercolors or markers. Label the type of clouds and the weather they bring. Examples: Cumulus: fair weather, puffy white clouds. Stratus: fine drizzle, low gray, horizontal clouds. Cirrus: highest clouds made of ice, feather, thin. Nimbostratus: dark rain clouds. Cumulonimbus: thunder clouds.

Aligned Instructional Resources:

- www.scrtec.org
- The Weather Around Us, Creative Teaching Press, Inc. 1987
- Chapter 5 Section 1 p. 118-125

Assessment Sample Format:

1. Explain how a cloud forms.
2. How can clouds help a meteorologist predict weather?
3. List five types of clouds and the weather they produce.

Additional Resources/Notes:

Date(s) Taught							
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Course/Level
Science
7th Grade

PASS Standard 5: Structures of the Earth System – The earth is mostly rock, three-fourths of its surface is covered by a relatively thin layer of water, and the entire planet is surrounded by a relatively thin blanket of air, and is able to support life.

Time Range:
Hours 2
Quarter 4th

National Science Standard 1: Earth and Space Sciences

Assessment Instrument					
NRT	CRT X	EOI	ACT	SAT	AP

Lesson Objective 5.1: Global patterns of atmospheric movement influence local weather such as ocean effect on climate.
Level of specificity: Define cyclones and anticyclones. Determine type of weather associated with each one.

Prerequisites: Know definition of air mass. Identify types of fronts. Understand water cycle.

Blooms	K	C	A	A *	S	E
Process Skills	Observe/Measure *	Classify *	Experiment	Inquiry *	Interpret/Communicate *	Model

Suggested Teaching Strategies:

- Compare and contrast characteristics of cyclones and anticyclones.
- Have students list the main types of storms and explain how they form.
- Have students collect newspaper maps to determine how patterns affect local weather.
- Have students make a collection of newspaper articles about weather.
- Use latitude and longitude to track the path of a hurricane.

Aligned Instructional Resources

- Prentice Hall, Science Explorer: Weather and Climate, Ch. 3
- Cyclone, National Geographic video
- www.tornadoproject.com
- www.hurricanes98.com
- American Red Cross
- Chapter 5 Section 2 p. 126-133

Assessment Sample Format:

1. Winds spiraling inward toward a center of low pressure form a(n)
a. anticyclone b. front c. isobar *d. cyclone
2. What weather conditions are most likely to cause thunderstorms and tornadoes?
* warm air being forced upward at a cold front to form large cumulonimbus clouds

Additional Resources/Notes:

Date(s) Taught							
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