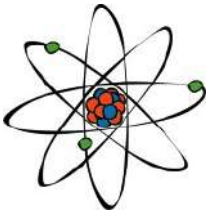

Physical Science

8th Grade

Mr. St. Edwards

Welcome to the 2016-2017 SMS school year! I am very excited to meet and work with our new students. In physical science, we will be learning about different non-living processes. The SOL objectives are a mixture of chemistry and physics concepts. Students will also review science topics from 6th and 7th grade to prepare for their cumulative SOL.

Course Objectives: P.S. 1 – P.S. 11

First Nine Weeks

- Scientific Investigation (8.1)
- Nature of Matter (8.2)
- Atomic Theory (8.3)
- The Periodic Table (8.4)

Second Nine Weeks

- Scientific Investigation (8.1)
- Changes in Matter (8.5)
- Forms of Energy (8.6)
- Temperature and Heat (8.7)
- Motion and Newton's Laws (8.10)

Third Nine Weeks

- Scientific Investigation (8.1)
- Work and Machines (8.10)
- Electricity and Magnetism (8.11)
- Sound and Light Waves (8.8, 8.9)

Fourth Nine Weeks

- Scientific Investigation (8.1)
- Cumulative 6-8th Grade Science SOL Review.

Required Supplies (Per Semester)

- 1-3 Subject Notebook (five star)
- Pencils (mechanical preferred)
- Colored Pencils or Crayons
- Mini stapler with staples

Grading Scale

- A ---------- 93-100
- B ---------- 85-92
- C ---------- 77-84
- D ---------- 70-76
- F ---------- 69 and below

Classroom Assessments and Weights

- Homework (10%) – Given nightly as studying or written work.
- Classwork (35%) – Warm-ups, labs, and practice in class.
- Quizzes (25%) – At least once per week.
- Tests and Benchmarks (30%) – 2 benchmarks each nine weeks, 1 notebook grade.

Absence and Make-up work policy: All work should be completed within 5 days of your return to school. You must pick up your own work from the make-up folders and ask questions if you do not understand. Missing work that is never turned in will eventually result in a zero.

Homework policy: Homework is provided Monday through Friday (not always written). Late work will result in a zero. A student may opt to replace the zero by completing the original assignment and an additional one I have assigned.

Re-take policy: Students may be allowed to re-take failing quizzes and test grades a second time as long as the resulting score is a C (77) or higher. If a re-take does not meet this requirement, the original score will be final. Students may also re-do failing classwork grades as needed until you've mastered the topic.

Rewards: Students may earn science bucks by winning team games, excellence with their work, and exhibiting positive behaviors I want to see. In return, the science bucks may be spent on my own store of supplies and privileges in the classroom.

Classroom Expectations and Procedures:

- Take care of all bathroom, water, and hallway needs, and be seated in class **before** the tardy bell.
- When class starts, take out your required supplies and start your warm-up.
- All seats are assigned in groups and will change from time to time as needed for the best learning environment.
- There will be no talking when I am speaking to the class or during independent work. All pair and group activities will require talking, but strictly on topic and only with your group.
- You must remain seated during instruction, unless the activity requires it.
- Raise your hand and wait for me to call on you for all questions and requests.
- Be respectful to other students, the teacher, and their belongings.

Consequences:

- 3 tardies will result in an absence, a referral to administration, and a letter home.
- Talking at inappropriate times, off-task, and any other disruptive behaviors:
    1. Warning or seating change as needed.
    2. Student-teacher conference about misbehaviors and expectations.
    3. Parent contact via letter or phone call.
    4. Referral to administration and parent contact.
- Physically fighting, blatant disrespect to staff, and other major misbehaviors will result in classroom removal, a referral to administration and parent contact.

Physical Science
Verification Sheet

By signing below, I am verifying that I have read and reviewed the syllabus and course outline for the 2016-2017 school year. I will abide by all classroom and schools rules and come prepared daily with all required materials.

Students will keep their syllabus in their notebooks for future reference.

Student Name (please print) _____

Student Signature _____ Date: _____

Parent 1 Name (please print) _____

Parent 1 Signature _____ Date: _____

Parent 1 Phone _____ (Home)

(if available) _____ (Cell)

_____ (Work)

Parent 1 e-mail address (if available) _____

Parent 2 Name (please print) _____

Parent 2 Signature _____ Date: _____

Parent 2 Phone _____ (Home)

(if available) _____ (Cell)

_____ (Work)

Parent 2 e-mail address (if available) _____

Please return this form to Mr. St. Edwards by Friday, September 12th, 2016.

Physical Science

First Nine Weeks SOL Pacing Guide

(45 Days Total)

1. First Day and Pre-test (2 days)

2. Nature of Matter (12 days)
   SOL Objective: 8.2

   Days 1-4:
   - Describe the particle theory of matter. (pg. 206-212)
   - Describe whether a substance is an element, compound, or mixture. (pgs. 176-186)
   - Define compounds as inorganic or organic. (pgs. 176-186)

   Days 5-8:
   - Distinguish between physical and chemical properties of matter. (pgs. 130-130)
   - Describe what a salt is and explain how salts form. (pgs. 192-202)
   - Analyze the pH of a solution and classify it as acidic, basic, or neutral. (pgs. 192-202)
   - Design an investigation related to chemical properties of matter.
   - Determine the identity of an unknown substance by comparing it to known substances.

   Days 9-12:
   - Distinguish between physical and chemical properties of matter. (pgs. 130-130)
   - Design an investigation related to chemical properties of matter.
   - Find the mass and volume of substances and calculate and compare densities. (pgs. 116-126)
   - Determine the identity of an unknown substance by comparing it to known substances.

   (*Reserved until PS. 7*)
   - Describe the properties of solids, liquids, gases, and plasma. (pg. 206-212)

3. Atomic Theory (8 days)
   SOL Objective: 8.3

   Days 1-4:
   - Describe the historical development of the concept of the atom. (pgs. 298-306)
   - Compare the Bohr atomic model to the electron cloud model. (pgs. 298-306)

   Days 5-8:
   - Differentiate among the three basic particles in the atom. (pgs. 298-306)
   - Compare the Bohr atomic model to the electron cloud model. (pgs. 298-306)

4. The Periodic table (12 days)
   SOL Objective: SOL 8.4

   Days 1-4:
   - Use the periodic table to obtain information about elements. (pgs. 310-318)
   - Describe the organization of the periodic table. (pgs. 310-318)
   - Recognize that an atom's identity is the number of protons in its nucleus. (pgs. 310-318)
   - Categorize a given element as metal, nonmetal, or metalloid. (pgs. 310-318)

   Days 5-8:
   - Recognize that the number of e- in the outermost level determine its reactivity. (pgs. 322-328)

   Days 9-12:
   - Describe the difference between ionic and covalent bonding. (pgs. 334-340)
   - Predict what kind of bond will likely form when metals and nonmetals are chemically combined. (pg. 334-340)
   - Identify the elements and number of atoms in a given chemical formula.

5. 8th Grade Review (4 days)

6. 8th Grade Benchmarks (2 days)

7. Extra Days (5)

Physical Science

Second Nine Weeks SOL Pacing Guide
(45 Days Total)

1. Changes in Matter (12 days)
   SOL Objective: 8.5

   Days 1-4:
   - Compare and contrast physical, chemical, and nuclear changes. (pgs. 144-151)
   - Recognize endothermic and exothermic chemical reactions.
   - Design an investigation that illustrates physical and chemical changes. (pgs. 144-151)

   Days 5-8:
   - Identify the reactants and products in a given chemical equation formula. (pgs. 188-189)
   - Given chemical formulas, write and balance simple chemical equations. (pgs. 188-189)
   - Analyze data to see if it supports the Law of Conservation of Mass. (pgs. 144-151)

   Days 9-12:
   - Compare and contrast physical, chemical, and nuclear changes. (pgs. 144-151)
   - Describe processes that release nuclear energy. (pgs. 156-167)
   - Evaluate the positive and negative effects of using nuclear energy. (pgs. 156-167)

2. Forms of Energy (8 days)
   SOL Objective: 8.6

   Days 1-4:
   - Differentiate between potential and kinetic energy. (pgs. 242-250, 438-444))
   - Use diagrams to compare relative amounts of potential and kinetic energy. (pgs. 242-250)

   Days 5-8:
   - Identify and give examples of common forms of energy. (pgs. 242-250)
   - Design an investigation or create a diagram to illustrate energy transformations.

3. Temperature and Heat (8 days)
   SOL Objective: 8.7

   Days 1-4:
   - Illustrate and explain the effect of thermal energy on the motion of molecules. (pgs. 216-226)
   - Analyze a time/temperature graph to determine the temperature at which phase changes occur (pgs. 216-226).
   - Describe the properties of solids, liquids, gases, and plasma. (pg. 206-212) *From **SOL 2***

Days 5-8:

- Distinguish between heat and temperature. (pgs. 264-272)
- Compare and contrast Celsius and Kelvin temperature scales and absolute zero. (pgs. 114-118)
- Compare and contrast methods of thermal energy transfer. (pgs. 264-272)
- Explain, in simple terms, the application of thermal energy with heat pumps, heat engines, etc.
- Design an investigation related to the transfer of thermal energy.

4. Motion and Newton's Laws (8 days)
   SOL Objective: 8.10ab

Days 1-4:

- Make measurements to calculate the speed of a moving object. (pgs. 354-364)
- Apply the concepts of speed, velocity, and acceleration for moving objects. (pgs. 354-364)

Days 5-8:

- Differentiate between mass and weight. (pgs. 392-398)
- Identify situations that illustrate each Law of Motion. (pgs. 378-388)
- Explain how force, mass, and acceleration are related. (pgs. 378-388)

8. 8th Grade Review (4 days)
9. 8th Grade Benchmarks (2 days)
10. Extra Days (3)

Physical Science

Third Nine Weeks SOL Pacing Guide
(45 Days Total)

1. Work and Machines (8 days)
   SOL Objective: 8.10cd

   Days 1-4:
   - Make measurements to calculate the work done on an object. (pgs. 428-434)
   - Make measurements to calculate the power of an object. (pgs. 428-434)
   - Solve basic speed, force, work, and power problems.

   Days 5-8:
   - Apply the concept of M.A. to explain how machines make work easier. (pgs. 452-462)
   - Explain how work, force, and motion apply to everyday uses and technology.

2. Electricity and Magnetism (8 days)
   SOL Objective: 8.11

   Days 1-4:
   - Design an investigation to illustrate the effects of static electricity. (pgs. 476-482)
   - Construct and compare series and parallel circuits. (pgs. 494-502)
   - Identify current applications of semiconductors and their uses. (pgs. 476-482)
   - Provide examples of materials that are good conductors, semiconductors, and insulators. (pgs. 476-482)
   - Construct circuits to determine the relationship between voltage, resistance, and current. (pgs. 486-490)

   Days 5-8:
   - Create an electromagnet and explain how it works. (pgs. 520-530)
   - Compare and contrast generators and motors and how they function. (pgs. 520-530)
   - Identify situations in everyday life in which motors and generators are used. (pgs. 520-530)
   - Explain the relationship between a magnetic field and an electric current. (pgs. 506-512)

3. Sound Waves (8 days)
   SOL Objectives: 8.8

   Days 1-4:
   - Determine the relationship between frequency and wavelength. (pgs. 634-642)
   - Model a compression wave, label, and describe the basic components. (pgs. 556-562, 588-596)
   - Design an investigation to test questions related to sound.
   - Describe technological applications of sound waves. (pgs. 614-620)

Days 5-8:

- Analyze factors that determine the speed of sound in materials. (pgs. 588-596, 600-608)
- Identify examples illustrating resonance. (pgs. 600-608)
- Describe technological applications of sound waves. (pgs. 614-620)

4. Electromagnetic Waves (12 days)
   SOL Objectives: 8.9

Days 1-4:

- Model a transverse wave and draw and label the basic components. (pgs. 556-562, 568-574)
- Compare the various types of electromagnetic waves in terms of their properties. (pgs. 634-642, 678-686)
- Describe an everyday application of each major form of electromagnetic energy. (pgs. 634-642)

Days 5-8:

- Describe the wave behavior of visible light. (pgs. 646-652)
- Design an investigation to illustrate the behavior of visible light.

Days 9-12:

- Describe the wave behavior of visible light. (pgs. 646-652)
- Design an investigation to illustrate the behavior of visible light.
- Identify the images formed by lenses and mirrors. (pgs. 656-662)

5. 8th Grade Review (4 days)
6. 8th Grade Benchmarks (2 days)
7. Extra Days (3)

Physical Science

Fourth Nine Weeks SOL Pacing Guide
(45 Days Total)

1. SOL 1 Review

2. 8th Grade Review + Post-Test

3. 7th Grade Review

4. 6th Grade Review

5. 6th – 8th Grade Reviewed