

WASHINGTON STATE LASER

Alignment of Washington 6-8
Science Standards by EALR/Domain for

FOSS/MS

Chemical Interactions

November 1, 2010

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Chemical Interactions
Systems ~ SYSA**

Content Standard

Any system may be thought of as containing subsystems and as being a subsystem of a larger system.

Performance Expectation

- Given a system, identify subsystems and a larger encompassing system

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Investigation 02	Aligned with modifications (see comments)	Investigation 2 parts 1 and 2 pp 70-81; Lab Notebook p 21	Teacher must use the vocabulary terms systems and subsystems when discussing atoms and molecules. This investigation is part of a learning progression.
Investigation 03	Aligned with modifications (see comments)	Investigation 3 part 2 pp 99-107	Teacher must use the vocabulary terms systems and subsystems when discussing the syringe system.
Investigation 07	Aligned with modifications (see comments)	Investigation 7 parts 4 and 5 pp 222-234; Lab Notebook p 73	Teacher must explain that the vial of water is the subsystem and the entire apparatus is the system. The vial of water is part of the larger system.
Investigation 09	Aligned with modifications (see comments)	Investigation 9 parts 2 and 3 pp 288-307; Lab Notebook pp 88-93	This investigation contains many opportunities to address the standards but the teacher must be intentional in using the terms systems and subsystems.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Chemical Interactions
Systems ~ SYSB**

Content Standard The boundaries of a system can be drawn differently depending on the features of the system being investigated, the size of the system, and the purpose of the investigation.

Performance Expectation • Explain how the boundaries of a system can be drawn to fit the purpose of the study (e.g., to study how insect populations change, a system might be a forest, a meadow in the forest, or a single tree).

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Investigation 02	Aligned with modifications (see comments)	Investigation 2 parts 1 and 2, pp 70-81; Lab Notebook p 21	Teacher must be intentional about using the vocabulary words boundaries and system when referring to elements and substances. The lesson is an integral part of a learning progression.
Investigation 03	Aligned with modifications (see comments)	Investigation 3 part 2 pp 99-107	Teacher must be intentional about discussing the terms system and boundaries of a system when working with the syringe system.
Investigation 07	Aligned with modifications (see comments)	Investigation 7 parts 4 and 5 pp 222-234; Lab Notebook p 73	Teacher must be intentional when discussing the setup for these 2 inquiries as being a system and that the boundaries of the system are the setup. Students should not consider the environment outside of the setup as part of the system.
Investigation 09	Aligned with modifications (see comments)	Investigation 9 parts 2 and 3 pp 288-307; Lab Notebook pp 88-93	Teacher must be intentional about discussing the boundaries of the system. In part 2 their lungs are part of the system, but in part 3 they are not.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Chemical Interactions
Systems ~ SYSC**

Content Standard

The output of one system can become the input of another system.

Performance Expectation

- Give an example of how output of matter or energy from a system can become input for another system

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Investigation 07	Aligned with modifications (see comments)	Investigation 7 parts 4 and 5 pp 222-234; Lab Notebook p 73	In this investigation the teacher must be intentional about pointing out the different systems. In part 4, the water vial outputs energy to the cup. In part 5 the cup of water outputs to the cup of ice.
Investigation 09	Aligned with modifications (see comments)	Investigation 9 parts 2 and 3 pp 288-307; Lab Notebook pp 88-93	In this investigation, the teacher needs to be intentional about discussing how the air from the body is the input into the lime water, and the acid is the input into the baking soda.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Chemical Interactions
Systems ~ SYSD**

Content Standard In an open system, matter flows into and out of the system. In a closed system, energy may flow into or out of the system, but matter stays within the system.

Performance Expectation • Given a description of a system, analyze and defend whether it is open or closed.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Investigation 03	Aligned with modifications (see comments)	Investigation 3 part 1 pp 91-98	The teacher needs to be intentional about discussing the standard.
Investigation 04	Aligned with modifications (see comments)	Investigation 4 part 2 pp 130-138; Lab Notebook pp 34-35	The teacher needs to be intentional about discussing the standard.
Investigation 07	Aligned with modifications (see comments)	Investigation 7 parts 4 and 5 pp 222-234; Lab Notebook p 73	Teacher must be clear in parts 4 and 5 that the energy is going from the water to the ice, but there is no additional input. These should be considered closed systems.
Investigation 09	Aligned with modifications (see comments)	Investigation 9 parts 2 and 3 pp 288-307; Lab Notebook pp 88-93	The lesson contains opportunities for the use of terms open and closed systems but it requires the intentional use by teachers.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Chemical Interactions
Systems ~ SYSD**

Content Standard In an open system, matter flows into and out of the system. In a closed system, energy may flow into or out of the system, but matter stays within the system.

Performance Expectation • Given a description of a system, analyze and defend whether it is open or closed.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Investigation 10	Aligned with modifications (see comments)	Investigation 10 part 2 pp 330-336	This lesson is a great example of a closed system, but the teacher must be intentional about discussing the standard.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Chemical Interactions
Systems ~ SYSE**

Content Standard

If the input of matter or energy is the same as the output, then the amount of matter or energy in the system won't change; but if the input is more or less than the output, then the amount of matter or energy in the system will change.

Performance Expectation

• Measure the flow of matter into and out of an open system and predict how the system is likely to change (e.g., a bottle of water with a hole in the bottom, an ecosystem, an electric circuit).

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Investigation 04	Aligned with modifications (see comments)	Investigation 4 part 2 pp 130-138; Lab Notebook pp 34-35	Teacher must be intentional about discussing that the amount of matter does not change, just the amount of energy which is what is affecting the system.
Investigation 07	Aligned with modifications (see comments)	Investigation 7 parts 4 and 5 pp 222-234; Lab Notebook p 73	Teacher must be intentional about discussing that the amount of matter stays the same, it is the energy that is flowing.
Investigation 09	Aligned with modifications (see comments)	Investigation 9 parts 2 and 3 pp 288-307; Lab Notebook pp 88-93	In these systems, the teacher has the opportunity to discuss whether or not matter is being added to the system and how that system is changing as a consequence.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Chemical Interactions
Systems ~ SYSF**

Content Standard

The natural and designed world is complex; it is too large and complicated to investigate and comprehend all at once. Scientists and students learn to define small portions for the convenience of investigation. The units of investigation can be referred to as “systems.”

Performance Expectation

- Given a complex societal issue with strong science and technology components (e.g., overfishing, global warming), describe the issue from a systems point of view, highlighting how changes in one part of the system are likely to influence other parts of the system.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Investigation 02	Aligned as designed	Investigation 2 parts 1 and 2 pp 70-81; Lab Notebook pp 21; Resource book pp 90-91	Teacher must be intentional about use of systems vocabulary.
Investigation 09	Aligned as designed	Investigation 9 parts 1 and 2 pp 280-297; Lab Notebook pp 86, 87, 89; Resource book pp 63-68	Teacher must be intentional about use of systems vocabulary. Teacher can take this opportunity to discuss how these models represent a small part of the natural world.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Chemical Interactions
Inquiry ~ INQA**

Content Standard Scientific inquiry involves asking and answering questions and comparing the answer with what scientists already know about the world.

Performance Expectation • Generate a question that can be answered through scientific investigation. This may involve refining or refocusing a broad and ill-defined question.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Investigation 01	Aligned as designed	Investigation 1 parts 1 and 2 pp 33-58; Lab Notebook pp 5 and 7; CD-ROM: "Two-Substance Reactions"	The investigation contains many opportunities to address the standards but the teacher must be intentional in leading students to asking their own questions.
Investigation 06	Aligned as designed	Investigation 6 part 1 pp 173-187; Lab Notebook pp 54-55	The investigation contains many opportunities to address the standards but the teacher must be intentional in leading students to asking their own questions.
Investigation 07	Aligned as designed	Investigation 7 part 3 pp 215-221; Lab Notebook p 64	This investigation contains many opportunities to address the standards but the teacher must be intentional in leading students to ask their own questions.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Chemical Interactions
Inquiry ~ INQB**

Content Standard

Different kinds of questions suggest different kinds of scientific investigations.

Performance Expectation

- Plan and conduct a scientific investigation (e.g., field study, systematic observation, controlled experiment, model, or simulation) that is appropriate for the question being asked.
- Propose a hypothesis, give a reason for the hypothesis, and explain how the planned investigation will test the hypothesis.
- Work collaboratively with other students to carry out the investigations.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Investigation 01	Aligned as designed	Investigation 1 parts 1 and 2 pp 41-58; Lab Notebook pp 5-11	The investigation contains many opportunities to address the standards but the teacher must be intentional in allowing the students to experience all parts of the investigation independently.
Investigation 03	Aligned as designed	Investigation 3 part 1 pp 92-98; Lab Notebook pp 22-23	The investigation contains many opportunities to address the standards but the teacher must be intentional about allowing the students to write their own investigation using the scientific method terms in the standard. Students should be given the opportunity to do the write-up independently, replacing the lab notebook p 22.
Investigation 04	Aligned as designed	Investigation 4 parts 1-3 pp 122-142; Lab Notebook pp 32-35	The investigations contain many opportunities to address the standards but the teacher must be intentional in pointing out that the type of investigation varies with state of matter that is being investigated.
Investigation 08	Aligned as designed	Investigation 8 parts 2 and 3 pp 256-268; Lab Notebook pp 78, 79, and 83	The investigations contain many opportunities to address the standards but the teacher must be intentional in pointing out that the type of investigation varies with what is being investigated.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Chemical Interactions
Inquiry ~ INQC**

Content Standard

Collecting, analyzing, and displaying data are essential aspects of all investigations.

- Communicate results using pictures, tables, charts, diagrams, graphic displays, and text that are clear, accurate, and informative.

Performance Expectation

- Recognize and interpret patterns – as well as variations from previously learned or observed patterns – in data, diagrams, symbols, and words.
- Use statistical procedures (e.g., median, mean, or mode) to analyze data and make inferences about relationships.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Investigation 01	Aligned as designed	Investigation 1 parts 1 and 2, pp 41-58; Lab Notebook pp 5-11	
Investigation 03	Aligned as designed	Investigation 3 part 1 pp 92-98; Lab Notebook pp 22 and 23	
Investigation 04	Aligned as designed	Investigation 4 parts 1 and 2 pp 122-138; Lab Notebook pp 32-35	
Investigation 05	Aligned as designed	Investigation 5, part 1 pp 153-158 and part 3, pp 165-171; Lab Notebook pp 43, 48-51.	

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Chemical Interactions
Inquiry ~ INQC**

Content Standard

Collecting, analyzing, and displaying data are essential aspects of all investigations.

- Communicate results using pictures, tables, charts, diagrams, graphic displays, and text that are clear, accurate, and informative.

Performance Expectation

- Recognize and interpret patterns – as well as variations from previously learned or observed patterns – in data, diagrams, symbols, and words.
- Use statistical procedures (e.g., median, mean, or mode) to analyze data and make inferences about relationships.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Investigation 06	Aligned as designed	Investigation 6 part 1 pp 178-187; Lab Notebook pp 54 and 55	
Investigation 08	Aligned as designed	Investigation 8, parts 1-3 pp 248-268; Lab Notebook pp 74, 75, 78, 79, and 83	

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Chemical Interactions
Inquiry ~ INQD**

Content Standard

For an experiment to be valid, all (controlled) variables must be kept the same whenever possible, except for the manipulated (independent) variable being tested and the responding (dependent) variable being measured and recorded. If a variable cannot be controlled, it must be reported and accounted for.

Performance Expectation

• Plan and conduct a controlled experiment to test a hypothesis about a relationship between two variables. Determine which variables should be kept the same (controlled), which (independent) variable should be systematically manipulated, and which responding (dependent) variable is to be measured and recorded. Report any variables not controlled and explain how they might affect results.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Investigation 03	Aligned with modifications (see comments)	Investigation 3 part 1, pp 92-98; Lab Notebook pp 22-23	The investigation contains many opportunities to address the standards but the teacher must be intentional in addressing reactants as variables.
Investigation 04	Aligned with modifications (see comments)	Investigation 4 part 2 pp 130-138; Lab Notebook pp 34-35	The investigation contains many opportunities to address the standards but the teacher must be intentional in addressing the variables.
Investigation 05	Aligned with modifications (see comments)	Investigation 5 part 3 pp 165-171; Lab Notebook pp 48-51	The investigation contains many opportunities to address the standards but the teacher must be intentional to address hot and cold water as variables. The temperature of the water is the independent variable and the final temperature is the dependent variable.
Investigation 06	Aligned with modifications (see comments)	Investigation 6 part 1 pp 178-187; Lab Notebook pp 54-55	The investigation contains many opportunities to address the standards but the teacher must be intentional in addressing the variables.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Chemical Interactions
Inquiry ~ INQD**

Content Standard

For an experiment to be valid, all (controlled) variables must be kept the same whenever possible, except for the manipulated (independent) variable being tested and the responding (dependent) variable being measured and recorded. If a variable cannot be controlled, it must be reported and accounted for.

Performance Expectation

• Plan and conduct a controlled experiment to test a hypothesis about a relationship between two variables. Determine which variables should be kept the same (controlled), which (independent) variable should be systematically manipulated, and which responding (dependent) variable is to be measured and recorded. Report any variables not controlled and explain how they might affect results.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Investigation 08	Aligned with modifications (see comments)	Investigation 8 part 2 pp 256-262; Lab Notebook pp 78-79	This investigation presents a great opportunity for students to address variables when writing a procedure.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Chemical Interactions
Inquiry ~ INQE**

Content Standard Models are used to represent objects, events, systems, and processes. Models can be used to test hypotheses and better understand phenomena, but they have limitations.

Performance Expectation • Create a model or simulation to represent the behavior of objects, events, systems, or processes. Use the model to explore the relationship between two variables and point out how the model or simulation is similar to or different from the actual phenomenon.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Investigation 02	Aligned as designed	Investigation 2 parts 1 and 2, pp 70-81; Lab Notebook p 17; CD-ROM: "Periodic Table"	Teacher has multiple opportunities to reinforce the concept that this is a model of a system.
Investigation 04	Aligned as designed	Investigation 4 part 2 pp 130-138; Lab Notebook pp 34-35	Students are asked to assemble a water thermometer (referred to as a bottle system).
Investigation 05	Aligned as designed	Investigation 5 parts 2 and 3 pp 159-171; CD-ROM: "Energy Transfer by Collision," "Mixing Hot and Cold Water," "Thermometer," and "Energy Flow"	Investigation 5's multimedia contains many opportunities to simulate particle movement with an animated model. Teachers must be intentional about discussing the standard while using the multimedia.
Investigation 09	Aligned as designed	Investigation 9 part 1 pp 280-287; Lab Notebook pp 86-87	

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Chemical Interactions
Inquiry ~ INQF**

Content Standard It is important to distinguish between the results of a particular investigation and general conclusions drawn from these results.

- Generate a scientific conclusion from an investigation using inferential logic, and clearly distinguish between results (e.g., evidence) and conclusions (e.g., explanation).
- Describe the differences between an objective summary of the findings and an inference made from the findings.

Performance Expectation

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Investigation 01	Aligned as designed	Investigation part 2 pp 46-58; Lab Notebook pp 7-11	
Investigation 03	Aligned as designed	Investigation 3 part 1 pp 92-98; Lab Notebook pp 22, 23	
Investigation 04	Aligned as designed	Investigation 4, parts 1-2 pp 122-138; Lab Notebook pp 32-35	
Investigation 07	Aligned as designed	Investigation 7 parts 1 and 4 pp 204-209 and 223-228; Lab Notebook pp 61, 70, and 71	

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Chemical Interactions
Inquiry ~ INQF**

Content Standard It is important to distinguish between the results of a particular investigation and general conclusions drawn from these results.

- Generate a scientific conclusion from an investigation using inferential logic, and clearly distinguish between results (e.g., evidence) and conclusions (e.g., explanation).
- Describe the differences between an objective summary of the findings and an inference made from the findings.

Performance Expectation

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Investigation 8	Aligned as designed	Investigation 8 parts 2 and 3, pp 258-268; Lab Notebook pp 78, 79, and 83	
Investigation 08	Aligned as designed	Investigation 8 parts 2 and 3 pp 258-268; Lab Notebook pp 78, 79, and 83	
Investigation 09	Aligned as designed	Investigation 9 parts 2 and 3, pp 288-307; Lab Notebook pp 88, 89, and 93	
Investigation 10	Aligned as designed	Investigation 10 part 1 pp 323-329; Lab Notebook p 101	

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Chemical Interactions
Inquiry ~ INQG**

Content Standard

Scientific reports should enable another investigator to repeat the study to check the results.

Performance Expectation

• Prepare a written report of an investigation by clearly describing the question being investigated, what was done, and an objective summary of results. The report should provide evidence to accept or reject the hypothesis, explain the relationship between two or more variables, and identify limitations of the investigation.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Investigation 01	Aligned as designed	Investigation 1 part 2 pp 46-58; Lab Notebook pp 9-11	The lesson contains the opportunity for the students to write a procedure leading to a scientific report that could be repeated.
Investigation 04	Aligned as designed	Investigation 4 parts 1 and 2 pp 122-138; Lab notebook pp 32-35	The opportunity for writing a repeatable procedure is there if the teacher allows students more independence beyond the lab notebook.
Investigation 05	Aligned as designed	Investigation 5 part 1 pp 153-158; Lab Notebook p 43	The lesson contains the opportunity for the students to write a procedure leading to a scientific report that could be repeated.
Investigation 08	Aligned as designed	Investigation 8 part 2 pp 256-262; Lab Notebook pp 78-79	The investigation contains an opportunity to address the standards but the teacher must be intentional in allowing students to independently write an accurate procedure.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Chemical Interactions
Inquiry ~ INQG**

Content Standard

Scientific reports should enable another investigator to repeat the study to check the results.

Performance Expectation

• Prepare a written report of an investigation by clearly describing the question being investigated, what was done, and an objective summary of results. The report should provide evidence to accept or reject the hypothesis, explain the relationship between two or more variables, and identify limitations of the investigation.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Investigation 09	Aligned as designed	Investigation 9 part 4 pp 308-312; Lab Notebook pp 99	The lesson contains the opportunity for the students to write a procedure leading to a scientific report that could be repeated.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Chemical Interactions
Application ~ APPA**

Content Standard People have always used technology to solve problems. Advances in human civilization are linked to advances in technology.

Performance Expectation • Describe how a technology has changed over time in response to societal challenges.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Investigation 02	Aligned as designed	Resource Book pp 3-8	The reading in the Resource Book contains many opportunities to address the standards but the teacher must be intentional in leading the discussion towards addressing them.
Investigation 09	Aligned as designed	Resource Book pp 69-72	The reading in the Resource Book contains many opportunities to address the standards but the teacher must be intentional in leading the discussion towards addressing them.
Investigation 10	Aligned as designed	Resource Book pp 80-83	The reading in the Resource Book contains many opportunities to address the standards but the teacher must be intentional in leading the discussion towards addressing those standards.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Chemical Interactions
Application ~ APPB**

Content Standard Scientists and technological designers (including engineers) have different goals. Scientists answer questions about the natural world; technological designers solve problems that help people reach their goals.

Performance Expectation • Investigate several professions in which an understanding of science and technology is required. Explain why that understanding is necessary for success in each profession.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Investigation 02	Aligned as designed	Resource Book pp 3-8	The reading in the Resource Book contains many opportunities to address the standards but the teacher must be intentional in leading the discussion towards addressing them.
Investigation 09	Aligned as designed	Resource Book pp 69-72	The reading in the Resource Book contains many opportunities to address the standards but the teacher must be intentional in leading the discussion towards addressing them.
Investigation 10	Aligned as designed	Resource Book pp 80-83	The reading in the Resource Book contains many opportunities to address the standards but the teacher must be intentional in leading the discussion towards addressing them.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Chemical Interactions
Application ~ APPC**

Content Standard Science and technology are interdependent. Science drives technology by demanding better instruments and suggesting ideas for new designs. Technology drives science by providing instruments and research methods.

Performance Expectation • Give examples to illustrate how scientists have helped solve technological problems (e.g., how the science of biology has helped sustain fisheries) and how engineers have aided science (e.g., designing telescopes to discover distant planets).

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Investigation 02	Aligned as designed	Resource Book pp 3-8	The reading in the Resource Book contains many opportunities to address the standards but the teacher must be intentional in leading the discussion towards addressing them.
Investigation 09	Aligned as designed	Resource Book pp 69-72	The reading in the Resource Book contains many opportunities to address the standards but the teacher must be intentional in leading the discussion towards addressing them.
Investigation 10	Aligned as designed	Resource Book pp 80-83	The reading in the Resource Book contains many opportunities to address the standards but the teacher must be intentional in leading the discussion towards addressing them.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Chemical Interactions
Application ~ APPD**

Content Standard

The process of technological design begins by defining a problem and identifying criteria for a successful solution, followed by research to better understand the problem and brainstorming to arrive at potential solutions.

Performance Expectation

- Define a problem that can be solved by technological design and identify criteria for success.
- Research how others solved similar problems.
- Brainstorm different solutions.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Investigation 09	Aligned as designed	Resource Book pp 69-72	The reading in the Resource Book contains many opportunities to address the standards but the teacher must be intentional in leading the discussion towards addressing them.
Investigation 10	Aligned as designed	Resource Book pp 80-83	The reading in the Resource Book contains many opportunities to address the standards but the teacher must be intentional in leading the discussion towards addressing them.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Chemical Interactions
Application ~ APPE**

Content Standard Scientists and engineers often work together to generate creative solutions to problems and decide which ones are most promising.

Performance Expectation • Collaborate with other students to generate creative solutions to a problem, and apply methods for making tradeoffs to choose the best solution.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Investigation 07	Aligned as designed	Investigation 7 part 4 pp 222-228; Lab Notebook pp 69-71	This investigation contains the opportunity to discuss the use of salt to change the freezing point so roads are safer in the winter.
Investigation 10	Aligned as designed	Resource Book pp 80-83	The reading in the Resource Book contains many opportunities to address the standards but the teacher must be intentional in leading the discussion towards addressing them.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Chemical Interactions
Application ~ APPF**

Content Standard Solutions must be tested to determine whether or not they will solve the problem. Results are used to modify the design, and the best solution must be communicated persuasively.

Performance Expectation

- Test the best solution by building a model or other representation and using it with the intended audience. Redesign as necessary.
- Present the recommended design using models or drawings and an engaging presentation.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Investigation 09	Aligned as designed	Resource Book pp 69-72	The reading in the Resource Book contains many opportunities to address the standards but the teacher must be intentional in leading the discussion towards addressing them.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Chemical Interactions
Application ~ APPH**

Content Standard People in all cultures have made and continue to make contributions to society through science and technology.

Performance Expectation • Describe scientific or technological contributions to society by people in various cultures.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Investigation 09	Aligned as designed	Resource Book pp 78-79	The reading in the Resource Book contains many opportunities to address the standards but the teacher must be intentional in leading the discussion towards addressing them.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Chemical Interactions
Physical Science ~ PS2A**

Content Standard Substances have characteristic intrinsic properties such as density, solubility, boiling point, and melting point, all of which are independent of the amount of the sample.

Performance Expectation • Use characteristic intrinsic properties such as density, boiling point, and melting point to identify an unknown substance.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Investigation 01	Aligned as designed	Investigation 1 parts 1 and 2 pp 41-58; Lab Notebook pp 5-11	
Investigation 07	Aligned as designed	Investigation 7 parts 1-4 pp 204-228; Lab Notebook pp 61, 63, 64, and 69-71	Investigation 7 is strong in melting points.
Investigation 08	Aligned as designed	Investigation 8 part 1 pp 248-255; Resource book pp 49-53	Investigation 8 is strong in solubility.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Chemical Interactions
Physical Science ~ PS2B**

Content Standard

Mixtures are combinations of substances whose chemical properties are preserved. Compounds are substances that are chemically formed and have different physical and chemical properties from the reacting substances.

Performance Expectation

- Separate a mixture using differences in properties (e.g., solubility, size, magnetic attraction) of the substances used to make the mixture.
- Demonstrate that the properties of a compound are different from the properties of the reactants from which it was formed.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Investigation 01	Aligned as designed	Investigation 1 parts 1 and 2 pp 51-58; Lab Notebook pp 5-11; CD-ROM: "Two-Substance Reactions"; Resource book pp 97-101	Teacher must be intentional about use of the terms compound, mixtures, chemical, and physical properties when the students are attempting to identify their mystery mixture.
Investigation 08	Aligned as designed	Investigation 8 part 1 pp 248-255; Resource book pp 49-53; CD-ROM: "Explore Dissolving"	This investigation defines mixtures, but the teacher should still be using the vocabulary words compound, physical properties, and chemical properties.
Investigation 09	Aligned as designed	Investigation 9 parts 1-4 pp 280-312; Lab Notebook pp 86-93; Resource book pp 63-68, 73-77, and 96	Investigation 9 contains many opportunities to discuss the differences between the properties of a compound and the reactants from which it was formed.
Investigation 10	Aligned as designed	Investigation 10 part 2 pp 330- 336; Lab Notebook p 103; Video: "Atoms and Molecules"	Teacher needs to emphasize the colors of the reactants compared to the compound that has formed.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Chemical Interactions
Physical Science ~ PS2C**

Content Standard

All matter is made of atoms. Matter made of only one type of atom is called an element.

Performance Expectation

• Explain that all matter is made of atoms, and give examples of common elements—substances composed of just one kind of atom.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Investigation 02	Aligned as designed	Investigation 2 parts 1 and 2, pp 70-81; Lab Notebook pp 13, 16, and 17	Investigations 2 and 3 are part of a learning progression. The term atom will be introduced in Investigation 9.
Investigation 03	Aligned as designed	Investigation 3 parts 2 and 3 pp 99-113; Resource book pp 14-15	Investigations 2 and 3 are part of a learning progression. The term atom will be introduced in Investigation 9.
Investigation 09	Aligned as designed	Investigation 9 parts 1-3 pp 280-307; Lab Notebook pp 86-87; Resource book p 96	Investigations 2 and 3 introduce the concept of atoms leading up to this investigation.
Investigation 10	Aligned as designed	Video: "Atoms and Molecules"	

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Chemical Interactions
Physical Science ~ PS2D**

Content Standard Compounds are composed of two or more kinds of atoms, which are bound together in well-defined molecules or arrays.

Performance Expectation • Demonstrate with a labeled diagram and explain the relationship among atoms, molecules, elements, and compounds.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Investigation 01	Aligned as designed	Investigation 1 part 2 pp 48-58; Lab Notebook p 7; Resource book pp 97-101	Investigations 1, 2, and 3 are learning progressions leading up to Investigation 9. The terms atoms and compounds are not used until Investigation 9.
Investigation 02	Aligned as designed	Investigation 2 part 1 pp 70-74; Lab Notebook p 13	Investigations 1, 2, and 3 are learning progressions leading up to Investigation 9. The terms atoms, molecules, and compounds are not used until Investigation 9.
Investigation 03	Aligned as designed	Investigation 3 part 3 pp 108-113; Resource book pp 14-15	Investigations 1, 2, and 3 are learning progressions leading up to Investigation 9. The terms atoms, molecules, and compounds are not used until Investigation 9.
Investigation 09	Aligned as designed	Investigation 9 parts 1-3 pp 280-307; Lab Notebook pp 86, 87, and 91; Resource book pp 63-68, 73-77, and 96	Teacher must be intentional about use of the terms atoms, molecules, and compounds. Investigations 1, 2, and 3 are learning progressions leading up to Investigation 9.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Chemical Interactions
Physical Science ~ PS2D**

Content Standard Compounds are composed of two or more kinds of atoms, which are bound together in well-defined molecules or arrays.

Performance Expectation • Demonstrate with a labeled diagram and explain the relationship among atoms, molecules, elements, and compounds.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Investigation 10	Aligned as designed	Resource book pp 80-83; Video: "Atoms and Molecules"	Investigation reading has the intentional use of the term "well-ordered arrays."

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Chemical Interactions
Physical Science ~ PS2E**

Content Standard

Solids, liquids, and gases differ in the motion of individual particles. In solids, particles are packed in a nearly rigid structure; in liquids, particles move around one another; and in gases, particles move almost independently.

Performance Expectation

- Describe how solids, liquids, and gases behave when put into a container (e.g., a gas fills the entire volume of the container). Relate these properties to the relative movement of the particles in the three states of matter.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Investigation 03	Aligned as designed	Investigation 3 part 3, pp 108-113; Lab Notebook pp 26-27, 31; CD-ROM: "Gas in a Syringe"; Resource book pp 16-22	Investigation 3 part 3 is part of a conceptual sequence that introduces the particle movement of gas.
Investigation 04	Aligned as designed	Investigation 4 parts 1-3 pp 122-142; Lab Notebook pp 34-37; CD-ROM: "Particles in Solids, Liquids, and Gases"; Resource book pp 23-27	Investigation 4 is strong in use of kinetic theory to explain expansion and contraction in the three states of matter.
Investigation 07	Aligned as designed	Investigation 7 parts 1-5 pp 204-234; Lab Notebook pp 61, 64, 65, and 67; Resource book pp 42-48; CD-ROM: "Particles in Solids, Liquids, and Gases"	

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Chemical Interactions
Physical Science ~ PS2F**

Content Standard When substances within a closed system interact, the total mass of the system remains the same. This concept, called conservation of mass, applies to all physical and chemical changes.

Performance Expectation • Apply the concept of conservation of mass to correctly predict changes in mass before and after chemical reactions, including reactions that occur in closed containers, and reactions that occur in open containers where a gas is given off.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Investigation 03	Aligned as designed	Investigation 3 parts 1 and 2 pp 92-107; Lab Notebook pp 26, 27; CD-ROM: "Gas in a Syringe"	The teacher needs to be intentional about discussing the standard.
Investigation 09	Aligned as designed	Investigation 9 part 3 pp 298-307; Lab Notebook pp 93-95; Resource book pp 63-68	The teacher needs to be intentional about discussing the standard.
Investigation 10	Aligned as designed	Investigation 10 parts 1 and 2, pp 323-336; Lab Notebook pp 101, 103	The teacher needs to be intentional about discussing the standard.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Chemical Interactions
Physical Science ~ PS3A**

Content Standard Energy exists in many forms: heat, light, chemical, electrical, motion of objects, and sound. Energy can be transformed from one form to another and transferred from one place to another.

- Performance Expectation**
- List different forms of energy (e.g., thermal, light, chemical, electrical, kinetic, and sound energy).
 - Describe ways in which energy is transformed from one form to another and transferred from one place to another (e.g., chemical to electrical energy in a battery, electrical to light energy in a bulb).

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Investigation 04	Aligned with modifications (see comments)	Investigation 4 parts 1-3 pp 122-142; Resource book pp 23-27	Teacher needs to be intentional about discussing different energy forms. These investigations discuss energy transfer but not transformation and only address heat energy.
Investigation 05	Aligned with modifications (see comments)	Investigation 5 parts 1-3 pp 153-171; Lab Notebook pp 43-53; Resource book pp 32-37; CD-ROM: "Energy Transfer, Energy Flow"	Teacher needs to be intentional about discussing different energy forms. These investigations discuss energy transfer but not transformation and only address heat energy.
Investigation 06	Aligned with modifications (see comments)	Investigation 6 pp 178-187; Lab Notebook pp 54-59; Resource book pp 38-41	Teacher needs to be intentional about discussing different energy forms. These investigations discuss energy transfer but not transformation and only address heat energy.
Investigation 07	Aligned with modifications (see comments)	Investigation 7 parts 1-5 pp 204-234; Lab Notebook p 73; Resource book pp 42-48; CD-ROM: "Particles in Solid, Liquid, and Gas"	Teacher needs to be intentional about discussing different energy forms. These investigations discuss energy transfer but not transformation and only address heat energy. In Part 3 there is a nice opportunity to discuss energy transformation.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Chemical Interactions
Physical Science ~ PS3B**

Content Standard

Conduction, radiation, and convection, or mechanical mixing, are means of energy transfer.

Performance Expectation

• Use everyday examples of conduction, radiation, and convection, or mechanical mixing, to illustrate the transfer of energy from warmer objects to cooler ones until the objects reach the same temperature.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Investigation 05	Aligned as designed	Investigation 5 parts 1-3 pp 153-171; Lab Notebook pp 43-53; Resource book pp 32-37; CD-ROM: "Thermometer", "Energy Flow"	
Investigation 06	Aligned as designed	Investigation 6 pp 178-187; Lab Notebook pp 54-59; Resource book pp 38-41	
Investigation 07	Aligned as designed	Resource book pp 42-48	

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Chemical Interactions
Physical Science ~ PS3C**

Content Standard

Heat (thermal energy) consists of random motion and the vibrations of atoms and molecules. The higher the temperature, the greater the atomic or molecular motion. Thermal insulators are materials that resist the flow of heat.

Performance Expectation

• Explain how various types of insulation slow transfer of heat energy based on the atomic-molecular model of heat (thermal energy).

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Investigation 04	Aligned with modifications (see comments)	Investigation 4 parts 1-3 pp 122-142; Lab Notebook pp 34-37; Resource book pp 23-27	Teacher must intentionally discuss thermal insulators at some point in the module.
Investigation 05	Aligned with modifications (see comments)	Investigation 5 parts 1-3 pp 153-171; Lab notebook pp 43-53; Resource book pp 32-37; CD-ROM: "Thermometer"	Teacher must intentionally discuss thermal insulators at some point in the module.
Investigation 07	Aligned with modifications (see comments)	Investigation 7 parts 1, 3, and 5, pp 204-209, 215-221, and 229-234; Lab Notebook pp 60-61, 64-65, 67, and 73; Resource book pp 42-48; CD-ROM: "Particles in Solids, Liquids, and Gases"	Investigation 7 part 1 contains the opportunity to introduce the thermal insulator concept. After completing the Dissolve or Melt investigation in part 1, lab notebook p 61, teachers need to ask students to explain what would happen if another material was used to create the cup. If time allows, students can conduct the same investigation with the foam cups and compare the results to the foil cup.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Chemical Interactions
Earth Science ~ ES2A**

Content Standard The atmosphere is a mixture of nitrogen, oxygen, and trace gases that include water vapor. The atmosphere has different properties at different elevations.

Performance Expectation • Describe the composition and properties of the troposphere and stratosphere.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Investigation 02	Module/Unit requires changes (see comments)	Resource book pp 9-13	This is a good Earth Science connection and discusses the composition of air but not how the atmosphere changes with elevation. The teacher could make the connection however with their Earth Science module.
Investigation 03	Aligned with modifications (see comments)	Investigation 3 parts 2 and 3 pp 99 and 113; Lab Notebook p 24	This is a good Earth Science connection and discusses the composition of air but not how the atmosphere changes with elevation. The teacher could make the connection however with their Earth Science module.
Investigation 07	Module/Unit requires changes (see comments)	Resource book pp 42-48	This is a good Earth Science connection and discusses the composition of air but not how the atmosphere changes with elevation. The teacher could make the connection however with their Earth Science module.
Investigation 08	Module/Unit requires changes (see comments)	Resource book pp 49-53	This is a good Earth Science connection and discusses the composition of air but not how the atmosphere changes with elevation. The teacher could make the connection however with their Earth Science module.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Chemical Interactions
Earth Science ~ ES2C**

Content Standard In the water cycle, water evaporates from Earth's surface, rises and cools, condenses to form clouds and falls as rain or snow and collects in bodies of water.

Performance Expectation • Describe the water cycle and give local examples of where parts of the water cycle can be seen.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Investigation 07	Aligned with modifications (see comments)	Investigation 7 parts 1-5 pp 189-234; Lab Notebook p 73; CD-ROM: "Particles in Solids, Liquids, and Gases"	This investigation teaches evaporation and condensation which is a nice connection to the water cycle. The teacher would have to be intentional about making the connection to the water cycle.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Chemical Interactions
Earth Science ~ ES2D**

Content Standard Water is a solvent. As it passes through the water cycle, it dissolves minerals and gases and carries them to the oceans.

Performance Expectation • Distinguish between bodies of saltwater and fresh water and explain how saltwater became salty.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Investigation 08	Aligned with modifications (see comments)	Investigation 8 parts 1-3 pp 248-265; Resource book pp 49-53; CD-ROM: "Explore Dissolving"	This investigation is about solubility and the teacher needs to be intentional about making connections to the standard.