

WASHINGTON STATE LASER

Alignment of Washington 6-8
Science Standards by Lesson Number for

SEPUP

Exploring the Solar System

November 1, 2010

**Alignment of Washington 6-8 Science Standards with
SEPUP Exploring the Solar System ~ Activity 85**

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
APPA	People have always used technology to solve problems. Advances in human civilization are linked to advances in technology.	<ul style="list-style-type: none"> Describe how a technology has changed over time in response to societal challenges. 	SG pp G-4-6; TG pp G-3-6	Aligned with modifications (see comments)	The unit/lesson is an integral part of a learning progression. The teacher needs to intentionally take advantage of multiple opportunities to discuss change in technology over time. Teacher must make use of information found in TG as a minimum base for future activities.
APPC	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.	<ul style="list-style-type: none"> 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). 	SG pp G-4-6; TG pp G-3-6	Aligned with modifications (see comments)	The unit contains many opportunities to address the standards but the teacher must be intentional in directing students to think of the scientists and engineers in tandem (e.g., there would be no scientists in space had the engineers not built the space ships).
APPH	People in all cultures have made and continue to make contributions to society through science and technology.	<ul style="list-style-type: none"> Describe scientific or technological contributions to society by people in various cultures. 	SG pp G-4-6; TG pp G-3-6; Activity cards	Aligned with modifications (see comments)	This will better meet the standard if the teacher intentionally takes advantage of multiple opportunities to discuss contributions of other individuals from varying cultures and the synergy needed by all to accomplish the tasks of space exploration. Teacher must make use of information found in TG as a minimum base for future activities. Activity cards can serve as a good base.

**Alignment of Washington 6-8 Science Standards with
SEPUP Exploring the Solar System ~ Activity 86**

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
INQB	Different kinds of questions suggest different kinds of scientific investigations.	<ul style="list-style-type: none"> • 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. 	SG pp G-7-11; TG pp G-15-19	Aligned with modifications (see comments)	The unit/lesson contains many opportunities to discuss the different types of scientific investigations and methods in which to collect data. Having students participate in the extension, TG pp G-18 and SG pp G-10- and G-11 may help to solidify the different methods scientists use to observe our surroundings.
INQC	Collecting, analyzing, and displaying data are essential aspects of all investigations.	<ul style="list-style-type: none"> • Communicate results using pictures, tables, charts, diagrams, graphic displays, and text that are clear, accurate, and informative. • 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. 	SG pp G-7-11; TG pp G-15-19	Aligned as designed	
APPC	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.	<ul style="list-style-type: none"> • 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). 	SG p G-10; TG p G-18	Aligned with modifications (see comments)	The unit contains the opportunities to address the standards if teacher intentional discussed the use of telescopes as a technical engineering solution to a scientific problem.

**Alignment of Washington 6-8 Science Standards with
SEPUP Exploring the Solar System ~ Activity 86**

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
APPC	<p>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.</p>	<ul style="list-style-type: none"> • 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). 	<p>SG p G-7-10; TG p G-18</p>	<p>Aligned as designed</p>	
ES1B	<p>Earth is the third planet from the sun in a system that includes the Moon, the Sun, seven other major planets and their moons, and smaller objects such as asteroids, plutoids, dwarf planets, and comets. These bodies differ in many characteristics (e.g., size, composition, relative position).</p>	<ul style="list-style-type: none"> • Compare the relative sizes and distances of the Sun, Moon, Earth, other major planets, moons, asteroids, plutoids, and comets. 	<p>SG pp G-7-11; TG pp G-15-19</p>	<p>Aligned as designed</p>	

**Alignment of Washington 6-8 Science Standards with
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Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
APPC	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.	<ul style="list-style-type: none"> • 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). 	SG pp G-13-15; TG pp G-23-26	Aligned with modifications (see comments)	The unit/lesson is an integral part of a learning progression. The teacher needs to intentionally take advantage of multiple opportunities to discuss change in technology over time. Teacher must make use of information found in TG as a minimum base for future activities. Check sepuplhs.org for possible updates.
APPC	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.	<ul style="list-style-type: none"> • 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). 	SG pp G-12-16; TG pp. G-21-27	Aligned as designed	The unit contains multiple opportunities to address the standards if teacher emphasizes the use of telescopes as a technical engineering solution to a scientific problem.
APPH	People in all cultures have made and continue to make contributions to society through science and technology.	<ul style="list-style-type: none"> • Describe scientific or technological contributions to society by people in various cultures. 	SG pp G-13-15; TG pp G-23-26	Aligned as designed	The unit/lesson is an integral part of a learning progression. The teacher needs to intentionally take advantage of multiple opportunities to discuss contributions of other societies. TG provides excellent summary. Current events may be relevant.

**Alignment of Washington 6-8 Science Standards with
SEPUP Exploring the Solar System ~ Activity 88**

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
ES1B	Earth is the third planet from the sun in a system that includes the Moon, the Sun, seven other major planets and their moons, and smaller objects such as asteroids, plutoids, dwarf planets, and comets. These bodies differ in many characteristics (e.g., size, composition, relative position).	<ul style="list-style-type: none"> • Compare the relative sizes and distances of the Sun, Moon, Earth, other major planets, moons, asteroids, plutoids, and comets. 	SG pp G-17-19; TG pp G-29-35	Aligned with modifications (see comments)	Teacher must make use of information found at the SEPUP web site(sepuplhs.org). The teacher tab gives updated definitions for planets, dwarf planets and small solar system bodies. Click on "student book pages" to download an additional reading and questions for Pluto.

**Alignment of Washington 6-8 Science Standards with
SEPUP Exploring the Solar System ~ Activity 89**

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
ES1B	Earth is the third planet from the sun in a system that includes the Moon, the Sun, seven other major planets and their moons, and smaller objects such as asteroids, plutoids, dwarf planets, and comets. These bodies differ in many characteristics (e.g., size, composition, relative position).	<ul style="list-style-type: none"> • Compare the relative sizes and distances of the Sun, Moon, Earth, other major planets, moons, asteroids, plutoids, and comets. 	TG p G-39; Student sheet 89.1	Aligned with modifications (see comments)	Teacher must make use of information found on sepuplhs.org for publisher updates.

**Alignment of Washington 6-8 Science Standards with
SEPUP Exploring the Solar System ~ Activity 90**

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
INQE	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.	<ul style="list-style-type: none"> • 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. 	SG pp G-26-7; G-27 analysis question 2; TG pp G-45-47	Aligned as designed	
ES1B	Earth is the third planet from the sun in a system that includes the Moon, the Sun, seven other major planets and their moons, and smaller objects such as asteroids, plutoids, dwarf planets, and comets. These bodies differ in many characteristics (e.g., size, composition, relative position).	<ul style="list-style-type: none"> • Compare the relative sizes and distances of the Sun, Moon, Earth, other major planets, moons, asteroids, plutoids, and comets. 	SG p G-25; TG pp G-43, G-49	Aligned as designed	Teachers need to emphasize Earth's position.

**Alignment of Washington 6-8 Science Standards with
SEPUP Exploring the Solar System ~ Activity 91**

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
INQE	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.	<ul style="list-style-type: none"> • 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. 	SG pp G-28-31; TG pp G-55-67	Aligned as designed	The unit/lesson is strong in math connections. Some students may need additional support to complete the mathematics.
ES1B	Earth is the third planet from the sun in a system that includes the Moon, the Sun, seven other major planets and their moons, and smaller objects such as asteroids, plutoids, dwarf planets, and comets. These bodies differ in many characteristics (e.g., size, composition, relative position).	<ul style="list-style-type: none"> • Compare the relative sizes and distances of the Sun, Moon, Earth, other major planets, moons, asteroids, plutoids, and comets. 	TG p G-59; Student sheets G- 63, 65, 67	Aligned as designed	Teacher must make use of information found in the extension activity TG p 59 to better complete the performance expectation of comparing relative size and distance of planets.

**Alignment of Washington 6-8 Science Standards with
SEPUP Exploring the Solar System ~ Activity 92**

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
INQH	Science advances through openness to new ideas, honesty, and legitimate skepticism. Asking thoughtful questions, querying other scientists' explanations, and evaluating one's own thinking in response to the ideas of others are abilities of scientific inquiry.	<ul style="list-style-type: none"> • Recognize flaws in scientific claims, such as uncontrolled variables, over generalizations from limited data, and experimenter bias. • Listen actively and respectfully to research reports by other students. Critique their presentations respectfully, using logical argument and evidence. • Engage in reflection and self-evaluation. 	SG p G-92; TG p G-69	Aligned with modifications (see comments)	The unit/lesson contains many opportunities to discuss how science advances through openness to new ideas, honesty, and legitimate skepticism.
ES1E	Our Sun is one of hundreds of billions of stars in the Milky Way galaxy. Many of these stars have planets orbiting around them. The Milky Way galaxy is one of hundreds of billions of galaxies in the universe.	<ul style="list-style-type: none"> • Construct a physical model or diagram showing Earth's position in the Solar System, the Solar System's position in the Milky Way, and the Milky Way among other galaxies. 	SG pp G-33-34	Aligned as designed	
ES2B	The Sun is the major source of energy for phenomena on Earth's surface, such as winds, ocean currents, and the water cycle.	<ul style="list-style-type: none"> • Connect the uneven heating of Earth's surface by the Sun to global wind and ocean currents. • Describe the role of the Sun in the water cycle. 	SG pp 32-33	Aligned as designed	

**Alignment of Washington 6-8 Science Standards with
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Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
INQC	Collecting, analyzing, and displaying data are essential aspects of all investigations.	<ul style="list-style-type: none"> • Communicate results using pictures, tables, charts, diagrams, graphic displays, and text that are clear, accurate, and informative. • 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. 	SG pp G-38-40; TG pp G-75-77; Student sheet 93.1	Aligned as designed	The teacher needs to be intentional about supporting students to see the link between the data collected and the observed patterns representing the surface (topography) of the "planet".
INQE	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.	<ul style="list-style-type: none"> • 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. 	SG pp 38-40, TG pp 75-76	Aligned as designed	Teachers need to ask students to explain how and why the topographical map they create can be a model.
APPA	People have always used technology to solve problems. Advances in human civilization are linked to advances in technology.	<ul style="list-style-type: none"> • Describe how a technology has changed over time in response to societal challenges. 	SG p G-37; TG p G-75	Aligned as designed	The teacher needs to be intentional about discussing the standard and the problem involved, (i.e., how do you examine something you cannot see).

**Alignment of Washington 6-8 Science Standards with
SEPUP Exploring the Solar System ~ Activity 93**

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
APPC	<p>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.</p>	<ul style="list-style-type: none"> • 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). 	<p>SG p G-37; TG p G-75</p>	<p>Aligned as designed</p>	<p>The teacher needs to be intentional about discussing the standard and the problem involved, (i.e., how do you examine something you cannot see).</p>

**Alignment of Washington 6-8 Science Standards with
SEPUP Exploring the Solar System ~ Activity 94**

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
APPA	People have always used technology to solve problems. Advances in human civilization are linked to advances in technology.	<ul style="list-style-type: none"> Describe how a technology has changed over time in response to societal challenges. 	SG p G-41; TG p G-82	Aligned as designed	The teacher needs to be intentional about discussing the standard and the problem involved, (i.e., how do you examine something you cannot see or get close enough to touch).
APPC	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.	<ul style="list-style-type: none"> 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). 	SG p G-44; TG p G-82	Aligned with modifications (see comments)	The teacher needs to be intentional about discussing the standard and possibly giving other examples, (i.e., remind them about the telescope).

**Alignment of Washington 6-8 Science Standards with
SEPUP Exploring the Solar System ~ Activity 95**

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
INQC	Collecting, analyzing, and displaying data are essential aspects of all investigations.	<ul style="list-style-type: none"> • Communicate results using pictures, tables, charts, diagrams, graphic displays, and text that are clear, accurate, and informative. • 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. 	SG pp G-45-4; TG pp G-88-89	Aligned as designed	Teachers need to ask students to explain the linear relationship that exists between gravitational pull and mass of the object. Strong link to the Math Connections.
INQF	It is important to distinguish between the results of a particular investigation and general conclusions drawn from these results.	<ul style="list-style-type: none"> • 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. 	SG p G-4; TG pp G-88-89	Aligned with modifications (see comments)	Teachers need to emphasize the use of evidence (data in both question 3 & 4) to support inferences ("Explain" in question #3)
INQF	It is important to distinguish between the results of a particular investigation and general conclusions drawn from these results.	<ul style="list-style-type: none"> • 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. 	SG p G-47; Analysis questions 3-4; TG pp G-88-89	Aligned with modifications (see comments)	The unit contains many opportunities to address the standards but the teacher must be intentional in using the term "inference" and "evidence" when discussing and scoring analysis questions 3-4.

**Alignment of Washington 6-8 Science Standards with
SEPUP Exploring the Solar System ~ Activity 95**

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
ES1D	Gravity is the force that keeps planets in orbit around the Sun and governs the rest of the motion in the Solar System. Gravity alone holds us to the Earth's surface.	<ul style="list-style-type: none"> • Predict what would happen to an orbiting object if gravity were increased, decreased, or taken away. 	TG p G-89, Followup- #3.	Aligned as designed	The teacher needs to be intentional about discussing what might happen if the gravity of two objects were increased, decreased, or taken away (performance expectation).

**Alignment of Washington 6-8 Science Standards with
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Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
ES1D	Gravity is the force that keeps planets in orbit around the Sun and governs the rest of the motion in the Solar System. Gravity alone holds us to the Earth's surface.	<ul style="list-style-type: none"> Predict what would happen to an orbiting object if gravity were increased, decreased, or taken away. 	TG pp G-93-99; SG pp G-49-56	Aligned as designed	

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Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
INQH	Science advances through openness to new ideas, honesty, and legitimate skepticism. Asking thoughtful questions, querying other scientists' explanations, and evaluating one's own thinking in response to the ideas of others are abilities of scientific inquiry.	<ul style="list-style-type: none"> Recognize flaws in scientific claims, such as uncontrolled variables, over generalizations from limited data, and experimenter bias. Listen actively and respectfully to research reports by other students. Critique their presentations respectfully, using logical argument and evidence. Engage in reflection and self-evaluation. 	SG p G-63; TG pp G-105-107	Aligned as designed	Intentional use of the discussion protocol outlined in the teachers guide is necessary to facilitate student discussions that will meet this standard.
APPA	People have always used technology to solve problems. Advances in human civilization are linked to advances in technology.	<ul style="list-style-type: none"> Describe how a technology has changed over time in response to societal challenges. 	SG pp G-57-63; TG pp G-103-107	Aligned with modifications (see comments)	The teacher needs to be intentional about discussing the standard as it relates to application of technology developed for the space program to other human needs, (i.e. medicine, energy, transportation, etc.).
APPB	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.	<ul style="list-style-type: none"> Investigate several professions in which an understanding of science and technology is required. Explain why that understanding is necessary for success in each profession. 	SG pp G-57-63; TG pp G-103-107	Aligned with modifications (see comments)	The teacher needs to be intentional about discussing the standard as it relates to the activity. (3 different professions or viewpoints). Good springboard for discussion of the standard.

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Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
APPC	<p>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.</p>	<ul style="list-style-type: none"> • 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). 	<p>SG pp G-57-63; TG pp G-103-107</p>	<p>Aligned with modifications (see comments)</p>	<p>The teacher needs to be intentional about discussing the standard as it relates to the activity. Good springboard for discussion of the standard.</p>
APPF	<p>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.</p>	<ul style="list-style-type: none"> • 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. 	<p>SG pp G-57-63; TG pp G-103-107</p>	<p>Aligned with modifications (see comments)</p>	<p>The teacher needs to be intentional about discussing the standard as it applies to the choice between manned and unmanned exploration. Teachers need to emphasize that discussion must be persuasive, not personnel.</p>

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Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
INQH	Science advances through openness to new ideas, honesty, and legitimate skepticism. Asking thoughtful questions, querying other scientists' explanations, and evaluating one's own thinking in response to the ideas of others are abilities of scientific inquiry.	<ul style="list-style-type: none"> • Recognize flaws in scientific claims, such as uncontrolled variables, over generalizations from limited data, and experimenter bias. • Listen actively and respectfully to research reports by other students. Critique their presentations respectfully, using logical argument and evidence. • Engage in reflection and self-evaluation. 	SG p G-65; TG p G-113; TR pp 62-65	Aligned as designed	Teachers need to emphasize group discussion skills.
APPA	People have always used technology to solve problems. Advances in human civilization are linked to advances in technology.	<ul style="list-style-type: none"> • Describe how a technology has changed over time in response to societal challenges. 	SG pp G-66-67	Aligned as designed	
APPC	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.	<ul style="list-style-type: none"> • 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). 	TG pp G-113-115	Aligned as designed	The unit/lesson contains many opportunities to discuss how science and technology.