WASHINGTON STATE LASER

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

SEPUP

Earth in Space

November 1, 2010

Alignment of Washington 6-8 Science Standards with
SEPUP Earth in Space ~ Activity 71

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
INQA	Scientific inquiry involves asking and answering questions and comparing the answer with what scientists already know about the world.	• Generate a question that can be answered through scientific investigation. This may involve refining or refocusing a broad and ill-defined question.	SG pp F-4-9; TG pp F-4-5; Student Sheet 71.a, 71.b	**Aligned with modifications (see comments)**	Teacher needs to ask students to explain what questions they would ask and how they would test them. The unit/lesson is an integral part of a learning progression.
INQB	Different kinds of questions suggest different kinds of scientific investigations.	• 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 F-11; TG pp F-5-9	**Aligned with modifications (see comments)**	The unit/lesson contains many opportunities to discuss different kinds of scientific investigations. This unit/lesson is a part of a conceptual sequence.
INQC	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. • 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 F-5-9; TG pp F-5-9	**Aligned with modifications (see comments)**	Must use discussion guides from TG. The teacher needs to intentionally take advantage of multiple opportunities to discuss how scientists work.

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Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
INQF	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.	TG p F-7, Follow up Question 4	**Aligned with modifications (see comments)**	Teacher must be intentional about sharing that Tyler has not stated a conclusion, but is using inferential logic and evidence from his experiment.
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.	• 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 F-4; TG p F-5	**Aligned with modifications (see comments)**	Talking it over and Analysis questions are very important to proper development. Teacher may be guided by TG in these discussions.
ES1C	Most objects in the Solar System are in regular and predictable motion. These motions explain such phenomena as the day, the year, phases of the moon, and eclipses.	• Use a simple physical model or labeled drawing of the Earth-Sun-Moon system to explain day and night, phases of the Moon, and eclipses of the Moon and Sun.	SG p F-10, TG pp F-5-7	**Aligned as designed**	The unit/lesson is an integral part of a learning progression. This unit/lesson is a part of a conceptual sequence and provides a base for conceptually understanding the movement of bodies in the solar system.

Alignment of Washington 6-8 Science Standards with
SEPUP Earth in Space ~ Activity 72

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
INQA	Scientific inquiry involves asking and answering questions and comparing the answer with what scientists already know about the world.	• Generate a question that can be answered through scientific investigation. This may involve refining or refocusing a broad and ill-defined question.	SG pp F-11-12; TG pp F-16-18	**Aligned with modifications (see comments)**	Students are not technically generating a question. Good discussion opportunity. The unit/lesson is an integral part of a learning progression.
INQB	Different kinds of questions suggest different kinds of scientific investigations.	• 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 F-11-13; TG pp F-14-16	**Aligned with modifications (see comments)**	When students are designing their investigation they need to ask a question that can be answered scientifically and develop a hypothesis to test that question.
INQC	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. • 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 p F-12; TG pp F-16-17	**Aligned as designed**	Recommend using scoring material from TG section TR 162-4.

Alignment of Washington 6-8 Science Standards with
SEPUP Earth in Space ~ Activity 72

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
INQD	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.	• 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.	SG pp F-11-12; TG pp F-16-17	**Aligned with modifications (see comments)**	Teacher must be intentional about use of the terms (vocabulary) responding, manipulated, and controlled variables.
ES1C	Most objects in the Solar System are in regular and predictable motion. These motions explain such phenomena as the day, the year, phases of the moon, and eclipses.	• Use a simple physical model or labeled drawing of the Earth-Sun-Moon system to explain day and night, phases of the Moon, and eclipses of the Moon and Sun.	SG pp F-12-13, TG p F-19, pp F-23-25	**Aligned as designed**	The unit/lesson is an integral part of a learning progression. This unit/lesson is a part of a conceptual sequence and provides a base for conceptually understanding the movement of bodies in the solar system.

Alignment of Washington 6-8 Science Standards with
SEPUP Earth in Space ~ Activity 73

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.	• 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 F-14-16; TG pp F-29-30	**Aligned with modifications (see comments)**	Teacher must make use of information found in TG about modeling and how to present the model for this section.
ES1C	Most objects in the Solar System are in regular and predictable motion. These motions explain such phenomena as the day, the year, phases of the moon, and eclipses.	• Use a simple physical model or labeled drawing of the Earth-Sun-Moon system to explain day and night, phases of the Moon, and eclipses of the Moon and Sun.	SG. p F-16; TG pp F-32; Student sheet 73.1-73.3	**Aligned with modifications (see comments)**	The unit/lesson is an integral part of a learning progression and makes specific reference to the length of earth's day. Teachers need to emphasize Analysis question 3 to connect to learning from previous lessons.

Alignment of Washington 6-8 Science Standards with
SEPUP Earth in Space ~ Activity 74

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.	• Describe how a technology has changed over time in response to societal challenges.	SG Reading selection pp F-19-21	**Aligned as designed**	The unit/lesson contains many opportunities to discuss how advances in human civilization are linked to advances in technology.
APPH	People in all cultures have made and continue to make contributions to society through science and technology.	• Describe scientific or technological contributions to society by people in various cultures.	SG reading p F-19; Extension p F-22; TG p F-43	**Aligned as designed**	The unit/lesson contains many opportunities to discuss/research how people in all cultures make contributions to society through science and technology.
ES1C	Most objects in the Solar System are in regular and predictable motion. These motions explain such phenomena as the day, the year, phases of the moon, and eclipses.	• Use a simple physical model or labeled drawing of the Earth-Sun-Moon system to explain day and night, phases of the Moon, and eclipses of the Moon and Sun.	SG pp F-17-19; TG pp F-42-44	**Aligned with modifications (see comments)**	This unit/lesson is a part of a conceptual sequence. Teachers need to ask students to explain their current understanding of the day/night cycle. Analysis 6 is a good discussion source.

Alignment of Washington 6-8 Science Standards with
SEPUP Earth in Space ~ Activity 75

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
INQC	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. • 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 F24-25; TG pp F-51-52	**Aligned as designed**	This unit/lesson is a part of a conceptual sequence. Students are asked to complete a graph based on existing data, and analyze the trends.
ES1C	Most objects in the Solar System are in regular and predictable motion. These motions explain such phenomena as the day, the year, phases of the moon, and eclipses.	• Use a simple physical model or labeled drawing of the Earth-Sun-Moon system to explain day and night, phases of the Moon, and eclipses of the Moon and Sun.	SG p F-25; TG pp F51-53; Student Sheet 75.1b	**Aligned with modifications (see comments)**	The unit/lesson contains opportunities for the use of terms "year," "seasons," and "predictable motion" but it requires the intentional use by teachers when discussing patterns in the student graphs and the discussion questions.

Alignment of Washington 6-8 Science Standards with
SEPUP Earth in Space ~ Activity 76

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.	• 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 F-27-29; TG pp F-62-63	**Aligned as designed**	

Alignment of Washington 6-8 Science Standards with
SEPUP Earth in Space ~ Activity 77

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.	• 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 F-32-34; TG pp F-73-75	**Aligned as designed**	

Alignment of Washington 6-8 Science Standards with
SEPUP Earth in Space ~ Activity 78

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
ES1C	Most objects in the Solar System are in regular and predictable motion. These motions explain such phenomena as the day, the year, phases of the moon, and eclipses.	• Use a simple physical model or labeled drawing of the Earth-Sun-Moon system to explain day and night, phases of the Moon, and eclipses of the Moon and Sun.	SG pp F-35-40; TG pp F-79-81; Student Sheet 78.1	**Aligned with modifications (see comments)**	The unit/lesson contains many opportunities to discuss what students understand about the day/night cycle and the yearly cycle.

Alignment of Washington 6-8 Science Standards with
SEPUP Earth in Space ~ Activity 79

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
ES1A	The Moon's monthly cycle of phases can be explained by its changing relative position as it orbits Earth. An eclipse of the Moon occurs when the Moon enters Earth's shadow. An eclipse of the Sun occurs when the Moon is between the Earth and Sun, and the Moon's shadow falls on the Earth.	• Use a physical model or diagram to explain how the Moon's changing position in its orbit results in the changing phases of the Moon as observed from Earth. • Explain how the cause of an eclipse of the Moon is different from the cause of the Moon's phases.	SG p F-42; TG pp F-86-90; Transparency 19.1; Student Sheet 79.1, 79.2	**Aligned with modifications (see comments)**	The unit/lesson has intentional use of terms, but teacher must make sure to use and check for understanding. Student sheet 79.1 should be distributed at the start of the unit. Do not wait until this lesson. Eclipse not covered.
ES1C	Most objects in the Solar System are in regular and predictable motion. These motions explain such phenomena as the day, the year, phases of the moon, and eclipses.	• Use a simple physical model or labeled drawing of the Earth-Sun-Moon system to explain day and night, phases of the Moon, and eclipses of the Moon and Sun.	SG pp F-42-44; Student sheet 79.1; TG pp F-86-90	**Aligned as designed**	The unit/lesson has intentional use of terms, but teacher must make sure to use and check for understanding. Student sheet 79.1 should be distributed at the start of the unit. Do not wait until this lesson.

Alignment of Washington 6-8 Science Standards with
SEPUP Earth in Space ~ Activity 80

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
ES1A	The Moon's monthly cycle of phases can be explained by its changing relative position as it orbits Earth. An eclipse of the Moon occurs when the Moon enters Earth's shadow. An eclipse of the Sun occurs when the Moon is between the Earth and Sun, and the Moon's shadow falls on the Earth.	• Use a physical model or diagram to explain how the Moon's changing position in its orbit results in the changing phases of the Moon as observed from Earth. • Explain how the cause of an eclipse of the Moon is different from the cause of the Moon's phases.	SG pp F-45-50; TG pp F-97-105	**Aligned with modifications (see comments)**	Teacher must be intentional about sharing and modeling information about a lunar eclipse. See TG pp F-101 (last paragraph)- F-102.
ES1C	Most objects in the Solar System are in regular and predictable motion. These motions explain such phenomena as the day, the year, phases of the moon, and eclipses.	• Use a simple physical model or labeled drawing of the Earth-Sun-Moon system to explain day and night, phases of the Moon, and eclipses of the Moon and Sun.	SG pp F-45-50; TG pp F-97-105	**Aligned as designed**	

Alignment of Washington 6-8 Science Standards with
SEPUP Earth in Space ~ Activity 81

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
INQC	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. • 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 p F-50 Question 3, 5	**Aligned with modifications (see comments)**	Students are asked to analyze and explain understanding using pictures as well as words. The unit/ lesson contains opportunities for the use of terms related to the Moon's phases, but it requires the intentional use by teachers.
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.	• 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 F-48-50; Student Sheet 71.1b	**Aligned with modifications (see comments)**	Students are asked to use an existing computer model. They also compare it to the demonstration from Activity 80.
ES1A	The Moon's monthly cycle of phases can be explained by its changing relative position as it orbits Earth. An eclipse of the Moon occurs when the Moon enters Earth's shadow. An eclipse of the Sun occurs when the Moon is between the Earth and Sun, and the Moon's shadow falls on the Earth.	• Use a physical model or diagram to explain how the Moon's changing position in its orbit results in the changing phases of the Moon as observed from Earth. • Explain how the cause of an eclipse of the Moon is different from the cause of the Moon's phases.	SG p F-48; TG p F-108; TG pp F-109-11; SG p F-50 extension	**Aligned with modifications (see comments)**	Teacher must make use of information found in the extension to cover needed information about eclipses of the Sun and Moon.

Alignment of Washington 6-8 Science Standards with
SEPUP Earth in Space ~ Activity 81

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
ES1C	Most objects in the Solar System are in regular and predictable motion. These motions explain such phenomena as the day, the year, phases of the moon, and eclipses.	• Use a simple physical model or labeled drawing of the Earth-Sun-Moon system to explain day and night, phases of the Moon, and eclipses of the Moon and Sun.	SG p F-48; TG p F-108; TG pp F-109-11; SG p F-50 extension	**Aligned with modifications (see comments)**	Teacher must make use of information found in the extension to cover needed information about eclipses of the Sun and Moon.

Alignment of Washington 6-8 Science Standards with
SEPUP Earth in Space ~ Activity 82

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
ES1C	Most objects in the Solar System are in regular and predictable motion. These motions explain such phenomena as the day, the year, phases of the moon, and eclipses.	• Use a simple physical model or labeled drawing of the Earth-Sun-Moon system to explain day and night, phases of the Moon, and eclipses of the Moon and Sun.	SG pp F-51-54; TG pp F-113-125	**Aligned with modifications (see comments)**	This unit/lesson is a part of a conceptual sequence and the concept of the predictable motion of tides will later connect to unit G when students explore gravitational force. See Background information, TG pp F-114 to F-115.

Alignment of Washington 6-8 Science Standards with
SEPUP Earth in Space ~ Activity 83

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
APPH	People in all cultures have made and continue to make contributions to society through science and technology.	• Describe scientific or technological contributions to society by people in various cultures.	SG pp F-55-63; TG pp F-127-137	**Aligned as designed**	
ES1C	Most objects in the Solar System are in regular and predictable motion. These motions explain such phenomena as the day, the year, phases of the moon, and eclipses.	• Use a simple physical model or labeled drawing of the Earth-Sun-Moon system to explain day and night, phases of the Moon, and eclipses of the Moon and Sun.	SG pp F-55-63; TG pp F-127-137	**Aligned as designed**	

Alignment of Washington 6-8 Science Standards with
SEPUP Earth in Space ~ Activity 84

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
ES1C	Most objects in the Solar System are in regular and predictable motion. These motions explain such phenomena as the day, the year, phases of the moon, and eclipses.	• Use a simple physical model or labeled drawing of the Earth-Sun-Moon system to explain day and night, phases of the Moon, and eclipses of the Moon and Sun.	SG pp F-64-66; TG pp F-139-149; Student Sheet 84.1; TR 84.1	**Aligned as designed**	Students are asked to apply concepts of the unit to new imaginary planets.

Alignment of Washington 6-8 Science Standards with
SEPUP Earth in Space ~ Activity 93

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
APPE	Scientists and engineers often work together to generate creative solutions to problems and decide which ones are most promising.	• Collaborate with other students to generate creative solutions to a problem, and apply methods for making tradeoffs to choose the best solution.	SG pp 39-40, TG p 76	**Aligned as designed**	Students are asked to work collaboratively to determine the the shape of the surface of a "planet" simulating the use of technical tool (engineer) while also seeking to understand the formations found on planets (scientists).