

<b>Common Core State Standards</b>	Snow Science (Winter Only)	Go with the Flow! (Aquatics)	Geology Rocks	Exploring Ecosystems	Awesome Adaptations	Engaging Energy	Inquiry Day	Weather / Energy Chores	Evening Programs *
<b>ENGLISH LANGUAGE ARTS STANDARDS</b>									
<b>Comprehension and Collaboration</b>									
CCSS.ELA-Literacy.SL.6.1a Come to discussions prepared, having read or studied required material; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.	Upon teacher request	Upon teacher request	Upon teacher request	Upon teacher request	Upon teacher request	Upon teacher request			
CCSS.ELA-Literacy.SL.6.1b Follow rules for collegial discussions, set specific goals and deadlines, and define individual roles as needed.	X	X	X	X	X	X	X		X
CCSS.ELA-Literacy.SL.6.1c Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion.	X	X	X	X	X	X	X	X	X
CCSS.ELA-Literacy.SL.6.1d Review the key ideas expressed and demonstrate understanding of multiple perspectives through reflection and paraphrasing.	X	X	X	X	X	X	X	X	X

CCSS.ELA-Literacy.SL.6.2 Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.	X	X	X	X	X	X	X	X	X
CCSS.ELA-Literacy.SL.6.3 Delineate a speaker's argument and specific claims, distinguishing claims that are supported by reasons and evidence from claims that are not.	X	X	X	X	X	X	X	X	X
<b>Presentation of Knowledge and Ideas</b>									
CCSS.ELA-Literacy.SL.6.4 Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.							X		X
CCSS.ELA-Literacy.SL.6.5 Include multimedia components (e.g., graphics, images, music, sound) and visual displays in presentations to clarify information.							X		X
CCSS.ELA-Literacy.SL.6.6 Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See grade 6 Language standards 1 and 3 here for specific expectations.)							X		X

MATH CONTENT									
<b>Understand ratio concepts and use ratio reasoning to solve problems</b>									
CCSS.Math.Content.6.RP.A.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.	X	X		X		X	X	X	X
CCSS.Math.Content.6.RP.A.3a Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.							X		
CCSS.Math.Content.6.RP.A.3b Solve unit rate problems including those involving unit pricing and constant speed.				X		X	X	X	X
CCSS.Math.Content.6.RP.A.3c Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.	X	X		X		X	X	X	X
CCSS.Math.Content.6.RP.A.3d Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.		X		X		X	X	X	X

<b>Apply and extend previous understandings of multiplication and division to divide fractions by fractions.</b>									
CCSS.Math.Content.6.NS.A.1 Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem.				X				X	X
<b>Apply and extend previous understanding of numbers to the system of rational numbers.</b>		X							
CCSS.Math.Content.6.NS.C.5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.								X	
CCSS.Math.Content.6.NS.C.6c Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.								X	

<b>Develop understanding of statistical variability.</b>									
CCSS.Math.Content.6.SP.A.1 Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.	X	X		X			X	X	X
<b>Summarize and describe disruptions.</b>									
CCSS.Math.Content.6.SP.B.4 Display numerical data in plots on a number line, including dot plots, histograms, and box plots.		X					X		
CCSS.Math.Content.6.SP.B.5 Summarize numerical data sets in relation to their context.	X	X					X		
<b>Next Generation Science Standards</b>									
<b>PHYSICAL SCIENCES</b>									
5-PS1-2 Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.	X								X

5-PS3-1 Use models to describe that that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.	X			X	X				
MS-PS3-3 Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.	X					X			
MS-PS3-4 Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample.	X								
MS-PS3-5 Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.	X					X			
<b>LIFE SCIENCES</b>									
5-LS1-1 Support an argument that plants get the materials they need for growth chiefly from air and water.				X	X	X			
5-LS2-2 Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.				X	X	X			
MS-LS2-1 Analyze and interpret data to provide evidence for the effects of resource availability on organisms	X		X	X	X				

and populations or organisms in an ecosystem.									
MS-LS2-2 Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.	X		X	X					
MS-LS2-3 Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.	X		X	X					
MS-LS2-4 Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.	X		X	X					
MS-LS2-5 Evaluate competing design solutions for maintain biodiversity and ecosystem services.					X		X		X
<b>EARTH AND SPACE SCIENCES</b>									
5-ESS2-2 Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.		X							
5-ESS3-1 Obtain and combine information about ways individual communities use science to protect the Earth's resources and environment.						X		X	
MS-ESS2-1 Develop a model to describe the cycling of Earth's		X	X						

materials and the flow of energy that drives this process.									
MS-ESS2-2 Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.			X						
MS-ESS2-4 Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.		X	X						
MS-ESS2-5 Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions.								X	
MS-ESS2-6 Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.								Upon Teacher Request	
MS-ESS3-1 Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.		X							
MS-ESS3-2 Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.						Upon Teacher Request		Upon Teacher Request	

MS-ESS3-3 Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.						X			X
MS-ESS3-4 Construct an argument supported by evidence for how increases in human population and per-capital consumption of natural resources impact Earth's systems.						X			X
MS-ESS3-5 Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.									X
<b>ENGINEERING, TECHNOLOGY, AND APPLICATION OF SCIENCE</b>									
3-5-ETS1-1 Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.									X
3-5-ETS1-2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.				X		X	X		X
3-5-ETS1-3 Plan and carry out fair test in which variable are controlled and failure points are considered to identify aspect of a model or prototype that can be improved.							X		X

MS-ETS1-1 Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.							X		X
MS-ETS1-2 Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.							X		X
MS-ETS1-3 Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.							X		X
MS-ETS1-4 Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.							X		X

\* Depends on the Evening Programs selected. See page 36 for more information about specific programs.

## MOSS Curriculum defined by Common Core State Standards and Next Generation Science Standards

### WINTER PROGRAMS

#### Humans and Winter

Students will:

- learn how to dress appropriately to stay warm and dry in winter weather
- learn how to use snowshoes to travel in snow environments
- discuss the importance of proper hydration and nutrition in staying warm and comfortable

#### Snow Science

Students will:

- learn about different snow crystal types and how snow changes when it is on the ground
- dig snow pits and compare the snowpack in different parts of Ponderosa State Park
- measure how much water is in the snow and compare this to data from SNOTel stations in our watershed
- discuss the importance of the snowpack to Idaho ecology, economy, energy generation, recreation and culture

#### Animal Tracking and Adaptations

Students will:

- learn track patterns of different animals
- measure tracks and use evidence to identify the animal that left them
- learn about strategies that different plants and animals have to surviving in our winter environment
- use tracks and signs to make inferences about animal adaptations and behavior in winter

### **Common Core State Standards – Snow Science Day (includes Animal Tracking and Adaptations)**

CCSS.ELA-Literacy.SL.6.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.

CCSS.ELA-Literacy.SL.6.1a Come to discussions prepared, having read or studied required material; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.

- At MOSS we don't typically provide reading materials for the students to review prior to the lesson but this can be done per teacher request. Materials can either be provided prior to arrival at MOSS of the day before each lesson.

CCSS.ELA-Literacy.SL.6.1b Follow rules for collegial discussions, set specific goals and deadlines, and define individual roles as needed.

- Throughout the day at MOSS, both in the field and in a large group in the classroom, the instructors will engage students in discussion, encouraging them to uphold rules needed for effective discussion as well as encourage them to take on various roles in the discussion.

CCSS.ELA-Literacy.SL.6.1c Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion.

- Throughout the day at MOSS, both in the field and in a large group in the classroom, the instructors will engage students in discussion. Students will be given an equal opportunity to respond to questions and asked to elaborate on their ideas. Students will also be challenged to see how each other's comments are related and to find a theme in their thoughts.

CCSS.ELA-Literacy.SL.6.1d Review the key ideas expressed and demonstrate understanding of multiple perspectives through reflection and paraphrasing.

- At MOSS students will interact in various games and activities that will require them to call upon what they have learned and make connections throughout the various lessons they have completed.
- Examples of such activities include: daily blogging, daily reflection both at the end of the day as well as at the end of lessons, games like Who Am I or Words You Might Hear offer a reflection component at the end and chance for students to explain what they have learned. Instructors will also be creating their own activities for students to participate in to offer their reflection and paraphrase what they have learned.

CCSS.ELA-Literacy.SL.6.2 Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.

- While at MOSS students will receive data in various forms including videos, graphs, graphics, orally, written, etc and will be asked to explain how it relates to what they are studying. This will happen both in small field groups as well as in the large group setting.
- Examples include: looking at the water cycle and explaining why it's snowing, watching a video of avalanches and explain what the trigger was or hearing about the different techniques animals use to survive in the winter and explain what techniques local animals employ.

CCSS.ELA-Literacy.SL.6.3 Delineate a speaker's argument and specific claims, distinguishing claims that are supported by reasons and evidence from claims that are not.

- Throughout each day at MOSS students will be in small groups that lends itself to richer discussions allowing students to define and explain their answer to instructor led prompts.

CCSS.Math.Content.6.RP.A.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.

- Students will collect data from snow pits they dig to measure the Snow Water Equivalence to compare how much water is in their snow pit if it all melt and how much would be in the area.
- While taking data from the snow pit they will also measure the various layers and examine how one layer compares to the overall height of the pit.

CCSS.Math.Content.6.RP.A.3 Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.

CCSS.Math.Content.6.RP.A.3c Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.

- In collecting the Snow Water Equivalence data for a snow pit, students determine the percent of water in the snow.
- Students also melt snow to determine what percentage of it is water.

CCSS.Math.Content.6.RP.A.3d Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

- With data collected from the snowpack, students will convert amount of snowfall to Snow Water Equivalent to understand how much water is currently outside in the snowpack.

CCSS.Math.Content.6.SP.A.1 Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.

- Students will use their snow pit data to represent the greater area's snow fall, relating the statistical representation of one part of the pit to the greater area.

CCSS.Math.Content.6.SP.B.5 Summarize numerical data sets in relation to their context.

- Students will be able to explain what the numerical data they collected from their snow pits means in terms of how much snow fell in various events and how much water content is in the snow.

## Next Generation Science Standards – Snow Science

### Physical Sciences

5-PS1-2 Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.

- Students will weigh out a container of snow to see how the mass and volume change after melting.

5-PS3-1 Use models to describe that that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.

- Students will discuss and explore how animals handle energy loss in frigid conditions in the winter. This may take form in a game, illustration or discussion.

MS-PS3-3 Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.

- On the first night at MOSS, students will create a "Heat Monster" in which small groups design a way to insulate their Monster from heat loss when placed in the snow.

MS-LS2-1 Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations or organisms in an ecosystem.

- Students will play a game in which they need to decide how much food to cache for the winter or how many calories to expend while hunting for food. The game is followed by a discussion of resource availability and temperature's impact on populations.

MS-LS2-2 Construct an explanation that predicts patters of interactions among organisms across multiple ecosystems.

- Through small group discussion and games, students will learn about tactics animal populations use to survive winter, such as migration, adaptation, or change in elevation. This leads to prediction that can be made on where to find specific species depending on the season.

MS-LS2-3 Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.

- The theme in discussing and learning about winter adaptations is energy and matter and how to manage the flow of it to survive in various ecosystems. Throughout the day student's will use games, visuals and stories to relate to this theme.
- Examples include games like MAD and the Survival Game.

MS-LS2-4 Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

- As students learn about winter impacts various ecosystems they will be able to use theory and data collection to show how cold temperatures and snowfall affect populations.

Go with the flow!

A study of water, its journey through the watershed, and the organisms that depend on it

- Watersheds
- Water quality (pH, dissolved oxygen, conductivity, transparency, temperature)
- Water cycle
- Erosion & the role of vegetation
- Things that live in and around water (fish, macros, amphibians)
- People's use of water and social issues
- Affects of vegetation on ground and surface water

### **Common Core State Standards - Go With The Flow (Aquatics)**

CCSS.ELA-Literacy.SL.6.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.

CCSS.ELA-Literacy.SL.6.1a Come to discussions prepared, having read or studied required material; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.

- At MOSS we don't typically provide reading materials for the students to review prior to the lesson but this can done per teacher request. Materials can either be provided prior to arrival at MOSS of the day before each lesson.

CCSS.ELA-Literacy.SL.6.1b Follow rules for collegial discussions, set specific goals and deadlines, and define individual roles as needed.

- Throughout the day at MOSS, both in the field and in a large group in the classroom, the instructors will engage students in discussion, encouraging them to uphold rules needed for effective discussion as well as encourage them to take on various roles in the discussion.

CCSS.ELA-Literacy.SL.6.1c Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion.

- Throughout the day at MOSS, both in the field and in a large group in the classroom, the instructors will engage students in discussion. Students will be given an equal opportunity to respond to questions and asked to elaborate

on their ideas. Students will also be challenged to see how each other's comments are related and to find a theme in their thoughts.

CCSS.ELA-Literacy.SL.6.1d Review the key ideas expressed and demonstrate understanding of multiple perspectives through reflection and paraphrasing.

- At MOSS students will interact in various games and activities that will require them to call upon what they have learned and make connections throughout the various lessons they have completed.
- Examples of such activities include: daily blogging, daily reflection both at the end of the day as well as at the end of lessons, games like Who Am I or Words You Might Hear offer a reflection component at the end and chance for students to explain what they have learned. Instructors will also be creating their own activities for students to participate in to offer their reflection and paraphrase what they have learned.

CCSS.ELA-Literacy.SL.6.2 Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.

- While at MOSS students will receive data in various forms including videos, graphs, graphics, orally, written, etc and will be asked to explain how it relates to what they are studying. This will happen both in small field groups as well as in the large group setting.
- Examples include: looking at the water cycle and explaining what stage clouds are in, using a chart of macroinvertebrates to determine what critter they have collected from the march, listening to an oral lesson about watersheds and creating a model of one in the sand.

CCSS.ELA-Literacy.SL.6.3 Delineate a speaker's argument and specific claims, distinguishing claims that are supported by reasons and evidence from claims that are not.

- Throughout each day at MOSS students will be in small groups that lends itself to richer discussions allowing students to define and explain their answer to instructor led prompts.

CCSS.Math.Content.6.RP.A.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.

- Students will take several measurements that use ratios, for example Dissolve Oxygen (mg/L), Conductivity (microsiemens/cm), pH (the ratio of Hydrogen ions to Hydroxide ions in a solution).
- Students will have several opportunities throughout the day to use ratios as comparison, for example, what percentage of fresh water there is to salt water, how many stoneflies there are to other organisms in their water sample, how much warmer is the water at Lily March compared to Duck Bay.

CCSS.Math.Content.6.RP.A.3c Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.

- Students will have several opportunities throughout the day to use percentages, for example, what percentage of fresh water there is to salt water, number of stoneflies there are to other organisms in their water sample, percent warmer the water is at Lily March compared to Duck Bay.

CCSS.Math.Content.6.SP.A.1 Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.

- Students will be able to extrapolate macroinvertebrate samples to the population of the whole body of water they are sampling from.

CCSS.Math.Content.6.SP.B.4 Display numerical data in plots on a number line, including dot plots, histograms, and box plots.

- Students will plot their water quality data on number lines to see where their data falls within the range of healthy trout conditions.

CCSS.Math.Content.6.SP.B.5 Summarize numerical data sets in relation to their context.

- Students will be taking various measurements of the bodies of water within and near Ponderosa State Park. This data will be represented in numbers but students will be able to explain which body of water has a higher temperature or higher dissolved oxygen and be able to explain why these numbers represent the physical factors associated with that water sample.

### **Next Generation Science Standards – Go With The Flow (aquatics)**

#### **Earth and Space Sciences**

5-ESS2-2 Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.

- Graduate students will demonstrate the percentages and quantity of salt water, fresh water and available drinking water on Earth. Upon teacher request this activity can be extended to involve more student demonstrations including graphing.

MS-ESS2-1 Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.

- Students will create a model of watershed that will help to explain the flow of water throughout a landscape.

MS-ESS2-4 Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.

- While at MOSS students will work with several models of how water is cycled throughout Earth including use of a water table, mini sand models and visuals.

MS-ESS3-1 Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.

- Students will explore how lakes and marshes came to be including past and current geoscience processes (glacial activity, erosion and succession).

## Geology Rocks!

An exploration of the geological history of McCall and its influence on present day vegetation

- Glacial geology / landforms
- Volcanoes / landforms
- Rock types / rock cycle
- Soil
- Erosion & the role of vegetation
- Succession
- Affects of vegetation on ground and surface water

### Common Core State Standards - Geology Rocks

CCSS.ELA-Literacy.SL.6.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.

CCSS.ELA-Literacy.SL.6.1a Come to discussions prepared, having read or studied required material; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.

- At MOSS we don't typically provide reading materials for the students to review prior to the lesson but this can be done per teacher request. Materials can either be provided prior to arrival at MOSS of the day before each lesson.

CCSS.ELA-Literacy.SL.6.1b Follow rules for collegial discussions, set specific goals and deadlines, and define individual roles as needed.

- Throughout the day at MOSS, both in the field and in a large group in the classroom, the instructors will engage students in discussion, encouraging them to uphold rules needed for effective discussion as well as encourage them to take on various roles in the discussion.

CCSS.ELA-Literacy.SL.6.1c Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion.

- Throughout the day at MOSS, both in the field and in a large group in the classroom, the instructors will engage students in discussion. Students will be given an equal opportunity to respond to questions and asked to elaborate on their ideas. Students will also be challenged to see how each other's comments are related and to find a theme in their thoughts.

CCSS.ELA-Literacy.SL.6.1d Review the key ideas expressed and demonstrate understanding of multiple perspectives through reflection and paraphrasing.

- At MOSS students will interact in various games and activities that will require them to call upon what they have learned and make connections throughout the various lessons they have completed.
- Examples of such activities include: daily blogging, daily reflection both at the end of the day as well as at the end of lessons, games like Who Am I or Words You Might Hear offer a reflection component at the end and chance for students to explain what they have learned. Instructors will also be creating their own activities for students to participate in to offer their reflection and paraphrase what they have learned.

CCSS.ELA-Literacy.SL.6.2 Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.

- While at MOSS students will receive data in various forms including videos, graphs, graphics, orally, written, etc and will be asked to explain how it relates to what they are studying. This will happen both in small field groups as well as in the large group setting.
- Examples include: looking at the rock cycle and explaining what stage a sample is in, using a soil chart to determine what type of soil they have in hand, listening to an oral lesson about glaciers and creating a model of how they move in the sand.

CCSS.ELA-Literacy.SL.6.3 Delineate a speaker's argument and specific claims, distinguishing claims that are supported by reasons and evidence from claims that are not.

- Throughout each day at MOSS students will be in small groups that lends itself to richer discussions allowing students to define and explain their answer to instructor led prompts.

## Next Generation Science Standards –Geology Rocks

### Life Sciences

MS-LS2-1 Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations or organisms in an ecosystem.

- Students will collect soil data (temperature, type, moisture content, pH) to explain why certain plant populations are found in the areas they are and why they are unable to exist in another area.

MS-LS2-2 Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.

- Students will be able to take the above data collected to explain the distribution of plant populations in various areas throughout Ponderosa State Park.

MS-LS2-3 Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.

- Students will create models of how rocks move through the rock cycle by playing games to demonstrate the movements, such as Rock, Rockety, Rock or creative, self-designed plays.

MS-LS2-4 Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

- From the soil data students have collected and the various ecosystems they visit in Ponderosa State Park they will be able to see how the physical components of the ecosystem affect various populations.

MS-ESS2-1 Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.

- Students will create models of how rocks move through the rock cycle by playing games to demonstrate the movement, such as Rock, Rockety, Rock or creative, self-designed plays.

MS-ESS2-2 Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.

- Students will learn how factors such as glaciers and weathering have shaped the area surrounding MOSS. Students will be able to explain in their own words what the processes are and the impact they have on the landscape.

MS-ESS2-4 Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.

- In conjunction with Go With the Flow day, students will explore the water cycle by learning the water cycle song, interacting with a water cycle app and explain demonstrations they see throughout the park.

---

## Exploring Ecosystems

### Comparing and contrasting ecosystems within Ponderosa State Park

- Ponderosa pine ecosystem / fire ecology
- Sagebrush steppe / rangeland ecology
- Aspen / dogwood ecosystem
- Nutrient cycling
- Diversity
- Succession
- Evaluating the value of a tree as biofuel and the amount of carbon it can sequester

#### **Common Core State Standards – Exploring Ecosystems**

CCSS.ELA-Literacy.SL.6.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.

CCSS.ELA-Literacy.SL.6.1a Come to discussions prepared, having read or studied required material; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.

- At MOSS we don't typically provide reading materials for the students to review prior to the lesson but this can be done per teacher request. Materials can either be provided prior to arrival at MOSS of the day before each lesson.

CCSS.ELA-Literacy.SL.6.1b Follow rules for collegial discussions, set specific goals and deadlines, and define individual roles as needed.

- Throughout the day at MOSS, both in the field and in a large group in the classroom, the instructors will engage students in discussion, encouraging them to uphold rules needed for effective discussion as well as encourage them to take on various roles in the discussion.

CCSS.ELA-Literacy.SL.6.1c Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion.

- Throughout the day at MOSS, both in the field and in a large group in the classroom, the instructors will engage students in discussion. Students will be given an equal opportunity to respond to questions and asked to elaborate on their ideas. Students will also be challenged to see how each other's comments are related and to find a theme in their thoughts.

CCSS.ELA-Literacy.SL.6.1d Review the key ideas expressed and demonstrate understanding of multiple perspectives through reflection and paraphrasing.

- At MOSS students will interact in various games and activities that will require them to call upon what they have learned and make connections throughout the various lessons they have completed.
- Examples of such activities include: daily blogging, daily reflection both at the end of the day as well as at the end of lessons, games like Who Am I or Words You Might Hear offer a reflection component at the end and chance for students to explain what they have learned. Instructors will also be creating their own activities for students to participate in to offer their reflection and paraphrase what they have learned.

CCSS.ELA-Literacy.SL.6.2 Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.

- While at MOSS students will receive data in various forms including videos, graphs, graphics, orally, written, etc and will be asked to explain how it relates to what they are studying. This will happen both in small field groups as well as in the large group setting.
- Examples include: looking at the rock cycle and explaining what stage a sample is in, using a soil chart to determine what type of soil they have in hand, listening to an oral lesson about glaciers and creating a model of how they move in the sand.

CCSS.ELA-Literacy.SL.6.3 Delineate a speaker's argument and specific claims, distinguishing claims that are supported by reasons and evidence from claims that are not.

- Throughout each day at MOSS students will be in small groups that lends itself to richer discussions allowing students to define and explain their answer to instructor led prompts.

CCSS.Math.Content.6.RP.A.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.

- Students will use ratios when talking about canopy cover for various ecosystems they will collect data from.
- Ratios will be apart of The Value of a Tree lesson in which students determine how much jet fuel could be produced from the slash of a tree.

CCSS.Math.Content.6.RP.A.3b Solve unit rate problems including those involving unit pricing and constant speed.

- In the Value of a Tree lesson students calculate the rate of carbon sequestration per year in a tree they are studying. Students will also calculate the rate of paper production and bio jet fuel production from the same tree.

CCSS.Math.Content.6.RP.A.3c Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.

- Students will use percentages in collecting measurements of canopy cover and soil moisture content from various ecosystems throughout Ponderosa State Park.

CCSS.Math.Content.6.NS.A.1 Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem.

- Students will use basic fractions in determine the canopy cover of the area they are collecting data from.

CCSS.Math.Content.6.SP.A.1 Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.

- In the lesson The Value of a Tree students will be examining how much carbon and jet fuel can be found in one tree and how this represents the best management practices for that tree and the larger area, introducing the concepts of statistical representation of a forest.

CCSS.Math.Content.6.G.A.1 Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.

- In the lesson The Value of a Tree students will be examining how much carbon and jet fuel can be found in one tree and how this represent the best management practices for that tree and the larger area, introducing the concepts of statistical representation of a forest.

## Next Generation Science Standards -Exploring Ecosystems

### Physical Sciences

5-PS3-1 Use models to describe that that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.

- Students will be able to work through the trophic level to see how a wolf ultimately gets it's energy from a plant.

### Life Sciences

5-LS1-1 Support an argument that plants get the materials they need for growth chiefly from air and water.

- Students will learn about photosynthesis of plants and their role in trophic levels of an ecosystem.

5-LS2-2 Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

- Students will learn and work with the various trophic levels understanding how they all interrelate.

MS-LS2-1 Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations or organisms in an ecosystem.

- Students will engage in game where the amount of pinecones they grab for one year's life determine how much more is available the next year, focusing on resources availability and population sustainability.
- From the data students collect in various ecosystems they will be able to explain the present composition based on canopy cover, soil pH and air temperature.

MS-LS2-2 Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.

- From trophic level discussions ecosystem data collection students will be able to explain the ebb and flow of resources and population dynamics across a greater landscape.

MS-LS2-3 Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.

- From trophic level discussions ecosystem data collection students will be able to explain the ebb and flow of resources and population dynamics across a greater landscape.

MS-LS2-4 Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

- From trophic level discussions ecosystem data collection students will be able to explain the ebb and flow of resources and population dynamics across a greater landscape.

### **Engineering, Technology, and Application of Science**

3-5-ETS1-2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

- Students will explore and debate the best uses of a tree they have measured, is it better to leave it to sequester carbon dioxide or to use it to build something and use the slash for jet fuel? They will explore the limitations and problems for both options.

---

### **Awesome Adaptations**

Investigating the unique characteristics of central Idaho's resident organisms

- Learn about the special forms and functions that allow plants and animals to live in this climate
- Individuals and their unique features (Ponderosa pine, lodgepole pine, sagebrush, aspen, insects, mule deer, ground squirrels, osprey, etc.)
- Succession

### **Common Core State Standards – Awesome Adaptations**

CCSS.ELA-Literacy.SL.6.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.

CCSS.ELA-Literacy.SL.6.1a Come to discussions prepared, having read or studied required material; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.

- At MOSS we don't typically provide reading materials for the students to review prior to the lesson but this can be done per teacher request. Materials can either be provided prior to arrival at MOSS of the day before each lesson.

CCSS.ELA-Literacy.SL.6.1b Follow rules for collegial discussions, set specific goals and deadlines, and define individual roles as needed.

- Throughout the day at MOSS, both in the field and in a large group in the classroom, the instructors will engage students in discussion, encouraging them to uphold rules needed for effective discussion as well as encourage them to take on various roles in the discussion.

CCSS.ELA-Literacy.SL.6.1c Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion.

- Throughout the day at MOSS, both in the field and in a large group in the classroom, the instructors will engage students in discussion. Students will be given an equal opportunity to respond to questions and asked to elaborate on their ideas. Students will also be challenged to see how each other's comments are related and to find a theme in their thoughts.

CCSS.ELA-Literacy.SL.6.1d Review the key ideas expressed and demonstrate understanding of multiple perspectives through reflection and paraphrasing.

- At MOSS students will interact in various games and activities that will require them to call upon what they have learned and make connections throughout the various lessons they have completed.
- Examples of such activities include: daily blogging, daily reflection both at the end of the day as well as at the end of lessons, games like Who Am I or Words You Might Hear offer a reflection component at the end and chance for students to explain what they have learned. Instructors will also be creating their own activities for students to participate in to offer their reflection and paraphrase what they have learned.

CCSS.ELA-Literacy.SL.6.2 Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.

- While at MOSS students will receive data in various forms including videos, graphs, graphics, orally, written, etc and will be asked to explain how it relates to what they are studying. This will happen both in small field groups as well as in the large group setting.
- Examples include: Activities where students relate food examples to plant defenses, costume articles to plant adaptations, and animal adaptations demonstrated through various games.

CCSS.ELA-Literacy.SL.6.3 Delineate a speaker's argument and specific claims, distinguishing claims that are supported by reasons and evidence from claims that are not.

- Throughout each day at MOSS students will be in small groups that lends itself to richer discussions allowing students to define and explain their answer to instructor led prompts.

### **Next Generation Science Standards –Awesome Adaptations**

#### **Physical Sciences**

5-PS3-1 Use models to describe that that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.

- Students will be able to work through the trophic level to see how a wolf ultimately gets its energy from a plant.

5-LS1-1 Support an argument that plants get the materials they need for growth chiefly from air and water.

- Students will learn about photosynthesis of plants and their role in trophic levels of an ecosystem.

5-LS2-2 Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

- Students will learn and work with the various trophic levels understanding how they all interrelate.

MS-LS2-1 Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations or organisms in an ecosystem.

- In discussing and learning about adaptations of plants and animals in the greater area, students will understand why certain species have come to live here and why other's won't be able to given the resources available.

MS-LS2-5 Evaluate competing design solutions for maintain biodiversity and ecosystem services.

- Students will engage in discussion of ecosystem structure and plant and animal characteristics that serve both human needs and animal needs within various ecosystems.

---

### Common Core State Standards – Engaging Energy

CCSS.ELA-Literacy.SL.6.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others’ ideas and expressing their own clearly.

CCSS.ELA-Literacy.SL.6.1a Come to discussions prepared, having read or studied required material; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.

- At MOSS we don’t typically provide reading materials for the students to review prior to the lesson but this can done per teacher request. Materials can either be provided prior to arrival at MOSS of the day before each lesson.

CCSS.ELA-Literacy.SL.6.1b Follow rules for collegial discussions, set specific goals and deadlines, and define individual roles as needed.

- Throughout the day at MOSS, both in the field and in a large group in the classroom, the instructors will engage students in discussion, encouraging them to uphold rules needed for effective discussion as well as encourage them to take on various roles in the discussion.

CCSS.ELA-Literacy.SL.6.1c Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion.

- Throughout the day at MOSS, both in the field and in a large group in the classroom, the instructors will engage students in discussion. Students will be given an equal opportunity to respond to questions and asked to elaborate on their ideas. Students will also be challenged to see how each other’s comments are related and to find a theme in their thoughts.

CCSS.ELA-Literacy.SL.6.1d Review the key ideas expressed and demonstrate understanding of multiple perspectives through reflection and paraphrasing.

- At MOSS students will interact in various games and activities that will require them to call upon what they have learned and make connections throughout the various lessons they have completed.
- Examples of such activities include: daily blogging, daily reflection both at the end of the day as well as at the end of lessons, games like Who Am I or Words You Might Hear offer a reflection component at the end and chance for students to explain what they have learned. Instructors will also be creating their own activities for students to participate in to offer their reflection and paraphrase what they have learned.

CCSS.ELA-Literacy.SL.6.2 Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.

- While at MOSS students will receive data in various forms including videos, graphs, graphics, orally, written, etc and will be asked to explain how it relates to what they are studying. This will happen both in small field groups as well as in the large group setting.
- Examples include: ???

CCSS.ELA-Literacy.SL.6.3 Delineate a speaker's argument and specific claims, distinguishing claims that are supported by reasons and evidence from claims that are not.

- Throughout each day at MOSS students will be in small groups that lends itself to richer discussions allowing students to define and explain their answer to instructor led prompts.

CCSS.ELA-Literacy.SL.6.4 Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.

- Students will learn about various types of energy and engage in a debate about the benefits and draw backs of each using the information they have learned.

CCSS.Math.Content.6.RP.A.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.

- Students will participate in a hands on activity involving the MOSS stream table where they will measure stream flow and will calculate possible hydropower energy based on discharge.

CCSS.Math.Content.6.RP.A.3b Solve unit rate problems including those involving unit pricing and constant speed.

- Students will participate in a hands on activity involving the MOSS stream table where they will measure stream flow and will calculate possible hydropower energy based on discharge.

CCSS.Math.Content.6.SP.A.1 Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.

- Students will use statistics about various types of energy to help fuel their debate about the benefits and draw backs of each type of energy.

### **Next Generation Science Standards -Engaging Energy**

#### **Physical Sciences**

5-PS3-1 Use models to describe that that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.

- Students will play an engaging game that demonstrates how energy moves up trophic levels, originating from the sun.

MS-PS3-5 Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.

- Students will play a version of Captain's Coming game where their action will demonstrate their understating of kinetic and potential energy.

### **Life Sciences**

5-LS1-1 Support an argument that plants get the materials they need for growth chiefly from air and water.

- Students will play an engaging game that demonstrates how energy moves up trophic levels from plants using air and water.

5-LS2-1 Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

- Students will play an engaging game that demonstrates how energy moves up trophic levels.

MS-LS2-1 Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations or organisms in an ecosystem.

- Students will play an engaging game that demonstrates how energy moves up trophic levels, demonstrating the limitations to higher level consumers based on producer's populations.

### **Earth and Space Sciences**

5-ESS3-1 Obtain and combine information about ways individual communities use science to protect the Earth's resources and environment.

- Student's will track how much energy is being consumed while at MOSS and will brainstorm ways humans can reduce the amount of energy they consume.

MS-ESS3-3 Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.

- While tracking the amount of energy used at MOSS student's will have the opportunity to create an energy use goal, hypothesize how they can meet it and test if they come close to it.

MS-ESS3-4 Construct an argument supported by evidence for how increases in human population and per-capital consumption of natural resources impact Earth's systems.

- Students will participate in an energy debate that will focus on various benefits and limitation of various forms of energy, including their ability to meet human population needs and impacts on the environment.

### **Engineering, Technology, and Application of Science**

3-5-ETS1-2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

- Students will be given a Makey Makey (an electrical board with alligator clips) to create a keyboard through any material that can conduct electricity. They will be tasked with creating the goal and determining what objects to use.
- Using our stream table students will brainstorm ways to increase the productivity of their damn using measurements and various models.

3-5-ETS1-3 Plan and carry out fair test in which variable are controlled and failure points are considered to identify aspect of a model or prototype that can be improved.

- Students will be given a Makey Makey (an electrical board with alligator clips) to create a keyboard through any material that can conduct electricity. They will be tasked with creating the goal and determining what objects to use.
- Using our stream table students will brainstorm ways to increase the productivity of their damn using measurements and various models.

MS-ETS1-1 Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.

- Using our stream table students will brainstorm ways to increase the productivity of their damn using measurements and various models.

MS-ETS1-2 Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

- Students will be given a Makey Makey (an electrical board with alligator clips) to create a keyboard through any material that can conduct electricity. They will be tasked with creating the goal and determining what objects to use.
- Using our stream table students will brainstorm ways to increase the productivity of their damn using measurements and various models.

MS-ETS1-3 Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.

- Students will be given a Makey Makey (an electrical board with alligator clips) to create a keyboard through any material that can conduct electricity. They will be tasked with creating the goal and determining what objects to use.
- Using our stream table students will brainstorm ways to increase the productivity of their damn using measurements and various models.

MS-ETS1-4 Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

- Using our stream table students will brainstorm ways to increase the productivity of their dam using measurements and various models.

---

### Common Core State Standards - Inquiry Day

CCSS.ELA-Literacy.SL.6.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.

CCSS.ELA-Literacy.SL.6.1a Come to discussions prepared, having read or studied required material; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.

- At MOSS we don't typically provide reading materials for the students to review prior to the lesson but this can be done per teacher request. Materials can either be provided prior to arrival at MOSS of the day before each lesson.

CCSS.ELA-Literacy.SL.6.1b Follow rules for collegial discussions, set specific goals and deadlines, and define individual roles as needed.

- Students will prepare a presentation based on a scientific question they have asked, explored, collected data from and made conclusions from. The presentation will be prepared the second to last day at MOSS and the presentation will be given the last day to the whole group. Presentations will include visual aspects including but not limited to graphs, video, PowerPoint, and artifacts.
- Projects and presentations depend on what the field group has decided to pursue, so certain elements may or may not be included depending on what the group has decided. Teachers can request certain themes if desired.

CCSS.ELA-Literacy.SL.6.1c Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion.

- Students will prepare a presentation based on a scientific question they have asked, explored, collected data from and made conclusions from. The presentation will be prepared the second to last day at MOSS and the presentation will be given the last day to the whole group. Presentations will include visual aspects including but not limited to graphs, video, PowerPoint, and artifacts.
- Projects and presentations depend on what the field group has decided to pursue, so certain elements may or may not be included depending on what the group has decided. Teachers can request certain themes if desired.
- Students will be asked questions following their presentations and will need to further explain and/or defend their claims.
- Students will also be encouraged to ask their peers thoughtful questions regarding their projects.

CCSS.ELA-Literacy.SL.6.1d Review the key ideas expressed and demonstrate understanding of multiple perspectives through reflection and paraphrasing.

- Students will prepare a presentation based on a scientific question they have asked, explored, collected data from and made conclusions from. The presentation will be prepared the second to last day at MOSS and the presentation will be given the last day to the whole group. Presentations will include visual aspects including but not limited to graphs, video, PowerPoint, and artifacts.
- Projects and presentations depend on what the field group has decided to pursue, so certain elements may or may not be included depending on what the group has decided. Teachers can request certain themes if desired.

CCSS.ELA-Literacy.SL.6.2 Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.

- Students will prepare a presentation based on a scientific question they have asked, explored, collected data from and made conclusions from. The presentation will be prepared the second to last day at MOSS and the presentation will be given the last day to the whole group. Presentations will include visual aspects including but not limited to graphs, video, PowerPoint, and artifacts.
- Projects and presentations depend on what the field group has decided to pursue, so certain elements may or may not be included depending on what the group has decided. Teachers can request certain themes if desired.

CCSS.ELA-Literacy.SL.6.3 Delineate a speaker's argument and specific claims, distinguishing claims that are supported by reasons and evidence from claims that are not.

- Students will prepare a presentation based on a scientific question they have asked, explored, collected data from and made conclusions from. The presentation will be prepared the second to last day at MOSS and the presentation will be given the last day to the whole group. Presentations will include visual aspects including but not limited to graphs, video, PowerPoint, and artifacts.
- Projects and presentations depend on what the field group has decided to pursue, so certain elements may or may not be included depending on what the group has decided. Teachers can request certain themes if desired.
- Students will be asked questions following their presentations and will need to further explain and/or defend their claims.

CCSS.ELA-Literacy.SL.6.4 Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.

- Students will prepare a presentation based on a scientific question they have asked, explored, collected data from and made conclusions from. The presentation will be prepared the second to last day at MOSS and the presentation will be given the last day to the whole group. Presentations will include visual aspects including but not limited to graphs, video, PowerPoint, and artifacts.

- Projects and presentations depend on what the field group has decided to pursue, so certain elements may or may not be included depending on what the group has decided. Teachers can request certain themes if desired.

CCSS.ELA-Literacy.SL.6.5 Include multimedia components (e.g., graphics, images, music, sound) and visual displays in presentations to clarify information.

- Students will prepare a presentation based on a scientific question they have asked, explored, collected data from and made conclusions from. The presentation will be prepared the second to last day at MOSS and the presentation will be given the last day to the whole group. Presentations will include visual aspects including but not limited to graphs, video, PowerPoint, and artifacts.
- Projects and presentations depend on what the field group has decided to pursue, so certain elements may or may not be included depending on what the group has decided. Teachers can request certain themes if desired.

CCSS.ELA-Literacy.SL.6.6 Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See grade 6 Language standards 1 and 3 here for specific expectations.)

- Students will prepare a presentation based on a scientific question they have asked, explored, collected data from and made conclusions from. The presentation will be prepared the second to last day at MOSS and the presentation will be given the last day to the whole group. Presentations will include visual aspects including but not limited to graphs, video, PowerPoint, and artifacts.
- Projects and presentations depend on what the field group has decided to pursue, so certain elements may or may not be included depending on what the group has decided. Teachers can request certain themes if desired.
- Expectations for presentation include professional language and presentation style.

### **Next Generation Science Standards -Inquiry Day**

#### **Physical Sciences**

##### Math and Next Generation Science Standards

The nature of each group's presentations will vary a fair bit. Some standards may be included while others are not, depending on what the field group has decided. Teachers are welcome to make recommendations to encourage a focus on more specific standards if desired.

---

### **Common Core State Standards - Weather/Energy Chores**

CCSS.ELA-Literacy.SL.6.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.

CCSS.ELA-Literacy.SL.6.1a Come to discussions prepared, having read or studied required material; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.

- At MOSS we don't typically provide reading materials for the students to review prior to the lesson but this can be done per teacher request. Materials can either be provided prior to arrival at MOSS of the day before each lesson.

CCSS.ELA-Literacy.SL.6.1b Follow rules for collegial discussions, set specific goals and deadlines, and define individual roles as needed.

- Throughout the day at MOSS, both in the field and in a large group in the classroom, the instructors will engage students in discussion, encouraging them to uphold rules needed for effective discussion as well as encourage them to take on various roles in the discussion.

CCSS.ELA-Literacy.SL.6.1c Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion.

- Throughout the day at MOSS, both in the field and in a large group in the classroom, the instructors will engage students in discussion. Students will be given an equal opportunity to respond to questions and asked to elaborate on their ideas. Students will also be challenged to see how each other's comments are related and to find a theme in their thoughts.

CCSS.ELA-Literacy.SL.6.1d Review the key ideas expressed and demonstrate understanding of multiple perspectives through reflection and paraphrasing.

- At MOSS students will interact in various games and activities that will require them to call upon what they have learned and make connections throughout the various lessons they have completed.
- Examples of such activities include: daily blogging, daily reflection both at the end of the day as well as at the end of lessons, games like Who Am I or Words You Might Hear offer a reflection component at the end and chance for students to explain what they have learned. Instructors will also be creating their own activities for students to participate in to offer their reflection and paraphrase what they have learned.

CCSS.ELA-Literacy.SL.6.2 Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.

- While at MOSS students will receive data in various forms including videos, graphs, graphics, orally, written, etc and will be asked to explain how it relates to what they are studying. This will happen both in small field groups as well as in the large group setting.
- Examples include: ???

CCSS.ELA-Literacy.SL.6.3 Delineate a speaker's argument and specific claims, distinguishing claims that are supported by reasons and evidence from claims that are not.

- Throughout each day at MOSS students will be in small groups that lends itself to richer discussions allowing students to define and explain their answer to instructor led prompts.

CCSS.Math.Content.6.RP.A.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.

- In the Toil for Oil activity students use red beans and black beans to represent earth and oil to demonstrate oil extraction and availability. The red or black beans to overall beans uses ratios.

CCSS.Math.Content.6.RP.A.3b Solve unit rate problems including those involving unit pricing and constant speed.

- In the Toil for Oil activity students are extracting as black beans as possible in a given amount of time demonstrating extraction rate.

CCSS.Math.Content.6.RP.A.3c Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.

- In the Toil for Oil activity students use red beans and black beans to represent earth and oil to demonstrate oil extraction and availability. The red or black beans to overall beans uses ratios and percentages.

CCSS.Math.Content.6.NS.C.5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.

- Daily weather discussions include converting to Centigrade from Fahrenheit and back again. Winter temperatures include negative numbers.

CCSS.Math.Content.6.NS.C.6c Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.

- This is apart of daily weather discussions.

CCSS.Math.Content.6.SP.A.1 Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.

- Included in daily discussions of weather is defining the difference between weather and climate. This brings up the discussion of temperature averages and the variance that occurs within the averages.

## Next Generation Science Standards -Engaging Energy

### Earth and Space Sciences

5-ESS3-1 Obtain and combine information about ways individual communities use science to protect the Earth's resources and environment.

- Both in the Toil for Oil and Energy Audit activity groups will discuss ways that students can conserve energy or use more sustainable options of energy.

MS-ESS2-5 Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions.

- This is discussed during the daily weather lesson.

---

### Common Core State Standards - Evening Programs

CCSS.ELA-Literacy.SL.6.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.

CCSS.ELA-Literacy.SL.6.1a Come to discussions prepared, having read or studied required material; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.

- At MOSS we don't typically provide reading materials for the students to review prior to the lesson but this can done per teacher request. Materials can either be provided prior to arrival at MOSS of the day before each lesson.

CCSS.ELA-Literacy.SL.6.1b Follow rules for collegial discussions, set specific goals and deadlines, and define individual roles as needed.

- Fuel Debate, Renewable Energy and Biofuel – students examine the benefit we get from various sources of fuel and the limitations they bring.
- Town Hall Meeting – students take on the role of various community members and debate the impact of a predetermined issue such as fire, water rights, town planning etc. Teacher can select the Climate Change as the theme for this Town Hall meeting.

CCSS.ELA-Literacy.SL.6.1c Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion.

- Fuel Debate, Renewable Energy and Biofuel – students examine the benefit we get from various sources of fuel and the limitations they bring.

- Town Hall Meeting – students take on the role of various community members and debate the impact of a predetermined issue such as fire, water rights, town planning etc. Teacher can select the Climate Change as the theme for this Town Hall meeting.

CCSS.ELA-Literacy.SL.6.1d Review the key ideas expressed and demonstrate understanding of multiple perspectives through reflection and paraphrasing.

- Fuel Debate, Renewable Energy and Biofuel – students examine the benefit we get from various sources of fuel and the limitations they bring.
- Town Hall Meeting – students take on the role of various community members and debate the impact of a predetermined issue such as fire, water rights, town planning etc. Teacher can select the Climate Change as the theme for this Town Hall meeting.

CCSS.ELA-Literacy.SL.6.2 Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.

- Biofuels – students examine various types of biofuels including their limitations and benefits.
- Planes in Flight – students examine various types of jet fuel including their limitations and benefits.
- Fuel Debate & Renewable Energy – students examine design limitations in various types of fuel.

CCSS.ELA-Literacy.SL.6.3 Delineate a speaker’s argument and specific claims, distinguishing claims that are supported by reasons and evidence from claims that are not.

- Biofuels – students examine various types of biofuels including their limitations and benefits.
- Planes in Flight – students examine various types of jet fuel including their limitations and benefits.
- Fuel Debate & Renewable Energy – students examine design limitations in various types of fuel.

CCSS.Math.Content.6.RP.A.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.

- Bridge Building?
- Biofuel – students use ratios to look at fuel usage in the US

CCSS.Math.Content.6.RP.A.3b Solve unit rate problems including those involving unit pricing and constant speed.

- Egg Drop?
- Biofuel – Students examine the rate of use of petroleum in the US
- Lifecycle of a Fuel – Students explore the rate at which costs are added onto a fuel.

CCSS.Math.Content.6.RP.A.3c Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.

- Bridge building – students use pennies to determine how much weight their bridge can hold and can relate that to the weight of their bridge - need to add!!
- Biofuel – students use ratios and percentages to look at fuel usage in the US
- Lifecycle of a Fuel – students can compare the percentage of added costs to the cost of a fuel.

CCSS.Math.Content.6.SP.A.1 Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.

- Bridge building – students relate their models to larger structures
- Biofuel, Planes in Flight, Lifecycle of a Fuel – students analyze data and the variability related to it.

### **Next Generation Science Standards -Engaging Energy**

#### **Physical Sciences**

5-PS1-2 Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.

- The first Evening Program during the winter includes designing and making Heat Monsters, containers with water that have various insulating materials that are then placed in the snow.

#### **Life Sciences**

MS-LS2-5 Evaluate competing design solutions for maintain biodiversity and ecosystem services.

- Fuel Debate, Renewable Energy and Biofuel – students examine the benefit we get from various sources of fuel and the limitations they bring.

#### **Earth and Space Sciences**

MS-ESS3-3 Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.

- Fuel Debate, Renewable Energy and Biofuel – students examine the benefit we get from various sources of fuel and the limitations they bring.
- Town Hall Meeting – students take on the role of various community members and debate the impact of a predetermined issue such as fire, water rights, town planning etc.

MS-ESS3-4 Construct an argument supported by evidence for how increases in human population and per-capital consumption of natural resources impact Earth's systems.

- Fuel Debate, Renewable Energy and Biofuel – students examine the benefit we get from various sources of fuel and the limitations they bring.

- Town Hall Meeting – students take on the role of various community members and debate the impact of a predetermined issue such as fire, water rights, town planning etc.

MS-ESS3-5 Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.

- Fuel Debate, Renewable Energy and Biofuel – students examine the benefit we get from various sources of fuel and the limitations they bring.
- Town Hall Meeting – students take on the role of various community members and debate the impact of a predetermined issue such as fire, water rights, town planning etc. Teacher can select the Climate Change as the theme for this Town Hall meeting.

### **Engineering, Technology, and Application of Science**

3-5-ETS1-1 Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

- Bridge Building – students work in small teams to design their own bridge with limited resources to see how many pennies it can hold
- Egg Drop – students work in small teams to design their own packaging for their egg to hopefully prevent it from breaking when dropped.
- Biofuels – students examine various types of biofuels including their limitations and benefits.
- Planes in Flight – students examine various types of jet fuel including their limitations and benefits.
- Fuel Debate & Renewable Energy – students examine design limitations in various types of fuel.

3-5-ETS1-2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. Bridge Building – students work in small teams to design their own bridge with limited resources to see how many pennies it can hold

- Bridge Building – students work in small teams to design their own bridge with limited resources to see how many pennies it can hold
- Egg Drop – students work in small teams to design their own packaging for their egg to hopefully prevent it from breaking when dropped.
- Biofuels – students examine various types of biofuels including their limitations and benefits.
- Planes in Flight – students examine various types of jet fuel including their limitations and benefits.
- Fuel Debate & Renewable Energy – students examine design limitations in various types of fuel.

3-5-ETS1-3 Plan and carry out fair test in which variable are controlled and failure points are considered to identify aspect of a model or prototype that can be improved.

- Bridge Building – students work in small teams to design their own bridge with limited resources to see how many pennies it can hold
- Egg Drop – students work in small teams to design their own packaging for their egg to hopefully prevent it from breaking when dropped.

MS-ETS1-1 Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.

- Bridge Building – students work in small teams to design their own bridge with limited resources to see how many pennies it can hold
- Egg Drop – students work in small teams to design their own packaging for their egg to hopefully prevent it from breaking when dropped.
- Biofuels – students examine various types of biofuels including their limitations and benefits.
- Planes in Flight – students examine various types of jet fuel including their limitations and benefits.
- Fuel Debate & Renewable Energy – students examine design limitations in various types of fuel.

MS-ETS1-2 Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

- Bridge Building – students work in small teams to design their own bridge with limited resources to see how many pennies it can hold
- Egg Drop – students work in small teams to design their own packaging for their egg to hopefully prevent it from breaking when dropped.
- Biofuels – students examine various types of biofuels including their limitations and benefits.
- Planes in Flight – students examine various types of jet fuel including their limitations and benefits.
- Fuel Debate & Renewable Energy – students examine design limitations in various types of fuel.

MS-ETS1-3 Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.

- Bridge Building – students work in small teams to design their own bridge with limited resources to see how many pennies it can hold
- Egg Drop – students work in small teams to design their own packaging for their egg to hopefully prevent it from breaking when dropped.

MS-ETS1-4 Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

- Bridge Building – students work in small teams to design their own bridge with limited resources to see how many pennies it can hold
- Egg Drop – students work in small teams to design their own packaging for their egg to hopefully prevent it from breaking when dropped.