

NGSS Engineering Design Standards

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

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

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

Alaska State Speaking & Listening Standards

SL.3.1.a-d: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 3 topics and texts, building on others' ideas and expressing their own clearly;

SL.3.2: Determine the main ideas and supporting details of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.

SL.3.3: Ask and answer questions about information from a speaker, offering appropriate elaboration or explanations and detail.

SL.3.6: Speak in complete sentences when appropriate to task and situation in order to provide requested detail or clarification.

Alaska State Language Standards

L.3.1: Demonstrate command of the conventions of standard English grammar and usage when writing or speaking;

L.3.3: Use knowledge of language and its conventions when writing, speaking, reading, or listening;

L.3.6: Acquire and accurately use grade-appropriate conversational, general academic, and domain-specific words and phrases, including those that signal spatial and temporal relationship.

4th Grade

NGSS Engineering Design Standards

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

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

Physical Science Standards

4-PS3-1: Use evidence to construct an explanation relating the speed of an object to the energy of that object.

4-PS3-2: Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat and electric currents.

4-PS3-3: Ask questions and predict outcomes about the changes in energy that occur when objects collide.

Alaska State Language Standards

L.4.1: Demonstrate command of the conventions of standard English grammar and usage when writing or speaking;

L.4.3: Use knowledge of language and its conventions when writing, speaking, reading, or listening;

Alaska State Speaking and Listening Standards

SL.4.1: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly

SL.4.2: Paraphrase portions of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.

SL.4.5: Add audio recordings and visual displays to presentations when appropriate to enhance the development of main ideas or themes and to engage listeners more fully.

SL.4.6: Differentiate between contexts that call for formal English (e.g., presenting ideas) and situations where informal discourse is appropriate (e.g., small-group discussion); use formal English when appropriate to task and situation.

5th Grade

NGSS: Space Systems: Stars and the Solar System

5-PS2-1: Support an argument that the gravitational force exerted by Earth on objects is directed down.

5-ESS1-1: support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from the earth.

5-ESS1-2: represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.

NGSS Engineering Design Standards

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

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

Alaska State Speaking and Listening Standards

SL.5.1: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.

SL.5.2: Summarize a written text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.

SL.5.3: Summarize the points a speaker makes and explain how each claim is supported by reasons and evidence

Alaska State Language Standards

L.5.1: Demonstrate command of the conventions of standard English grammar and usage when writing or speaking

L.5.3: Use knowledge of language and its conventions when writing, speaking, reading, or listening;

L.5.4: Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 5 reading and content, choosing flexibly from a range of strategies;

L.5.6: Acquire and accurately use grade-appropriate general academic and domain-specific words and phrases, including those that signal contrast, addition, and other logical relationships.

6th Grade

NGSS MS. Space Systems

MS-ESS1-1: Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.

MS-ESS1-2: Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.

MS-ESS1-3: Analyze and interpret data to determine scale properties of objects in the solar system.

State of Alaska Speaking & Listening Standards

SL.6.1.a-d: 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;

- a. 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;
- b. Follow rules for collegial discussions (e.g., establishing norms: taking turns, paraphrasing, respecting diverse viewpoints), set specific goals and deadlines, and define individual roles as needed;
- c. Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion;
- d. Review the key ideas expressed and demonstrate understanding of multiple perspectives through reflection and paraphrasing.

SL.6.2: Interpret information presented in diverse media (including but not limited to podcasts) and formats (e.g., visually, quantitatively/ data-related, orally) and explain how it contributes to a topic, text, or issue under study.

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.

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.

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

SL.6.6: Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate.

Alaska State Language Standards

L.6.1.a-c: Demonstrate command of the conventions of standard English grammar and usage when writing or speaking;

- a. Ensure that pronouns are in the proper case (subjective, objective, possessive);
- b. Use intensive pronouns (e.g., myself, ourselves);
- c. Recognize and correct inappropriate shifts in pronoun number and person*;
- d. Recognize and correct vague pronouns (i.e., ones with unclear or ambiguous antecedents)*;
- e. Recognize variations from standard English in their own and others' writing and speaking, and identify and use strategies to improve expression in conventional language.

L.6.3.a-b: Use knowledge of language and its conventions when writing, speaking, reading, or listening;

- a. Vary sentence patterns for meaning, reader/listener interest, and style*;
- b. Maintain consistency in style and tone.

L.6.4.a-d: Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 6 reading and content, choosing flexibly from a range of strategies;

- a. Determine meaning of unfamiliar words by using knowledge of word structure (root words, prefixes, suffixes, abbreviations) and language structure through reading words in text (word order, grammar), context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase;
- b. Use common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., audience, auditory, audible);
- c. Consult reference materials (e.g., dictionaries, glossaries, thesauruses and specialized reference materials), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or its part of speech;

- d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).

L.6.6: Acquire and accurately use grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.

Middle School

NGSS Physical Science Standards

MS-PS2-4: Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects.

MS-PS2-5: Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.

NGSS Engineering Design

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.

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

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.

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.

NGSS Space Systems

MS-ESS1-1: Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun, moon and seasons.

MS-ESS1-2: Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.

MS-ESS1-3: Analyze and interpret data to determine scale properties of objects in the solar system.

Alaska State Standards for Reading and Literacy in History

RH.6-7-8.3: Identify key steps in a text's description of a process related to history/social studies (e.g., how a bill becomes law, how interest rates are raised or lowered).

RH.6-7-8.5: Describe how a text presents information (e.g., sequentially, comparatively, causally)

RH.6-7-8.7: Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.

RH.6-7-8.8: Distinguish among fact, opinion, and reasoned judgment in a text.

RH.6-7-8.9: Analyze the relationship between a primary and secondary source on the same topic.

7th Grade

State of Alaska Speaking and Listening Standards

SL.7.1.a-d: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 7 topics, texts, and issues, building on others' ideas and expressing their own clearly;

- a. Come to discussions prepared, having read or researched material under study; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion;
- b. Follow rules for collegial discussions (e.g., establishing norms: taking turns, paraphrasing, respecting diverse viewpoints), track progress toward specific goals and deadlines, and define individual roles as needed;
- c. Pose questions that elicit elaboration and respond to others' questions and comments with relevant observations and ideas that bring the discussion back on topic as needed;
- d. Acknowledge new information expressed by others and, when warranted, modify their own views.

SL.7.2: Analyze the main ideas and supporting details presented in diverse media and formats (e.g., visually, quantitatively/data-related, orally) and explain how the ideas clarify a topic, text, or issue under study.

SL.7.3: Delineate a speaker's argument and specific claims, evaluating the soundness of the reasoning and the relevance and sufficiency of the evidence.

SL.7.4: Present claims and findings, emphasizing salient points in a focused, coherent manner with pertinent descriptions, facts, details, and examples; use appropriate eye contact, adequate volume, and clear pronunciation.

SL.7.6: Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate.

State of Alaska Language Standards

L.7.1: Demonstrate command of the conventions of standard English grammar and usage when writing or speaking

L.7.3: Use knowledge of language and its conventions when writing, speaking, reading, or listening;

L.7.5: Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.

L.7.6: Acquire and accurately use grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.

Alaska State Reading Standards for Informational Text

RI.7.1: Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.

RI.7.2: Determine the central idea and subtopics in a text and analyze their development over the course of the text; restate and summarize the central idea or events, in correct sequence when necessary, after reading a text.

RI.7.3: Analyze the interactions between individuals, events, and ideas presented in a text (e.g., how ideas influence individuals or events, or how individuals influence ideas or events).

RI.7.4: Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the impact of a specific word choice on meaning and tone.

RI 7.9: By the end of the year, read and comprehend literary nonfiction, within a complexity band appropriate to grade 7 (from upper grade 6 to grade 8), with scaffolding as needed at the high end of the range.

8th Grade

State of Alaska Speaking & Listening Standards

SL.8.1.a-d: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly;

- a. Come to discussions prepared, having read or researched material under study; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion;
- b. Follow rules for collegial discussions (e.g., establishing norms: taking turns, paraphrasing, respecting diverse viewpoints), and decision-making (e.g., coming to consensus), track progress toward specific goals and deadlines, and define individual roles as needed;
- c. Pose questions that connect the ideas of several speakers and respond to others' questions and comments with relevant evidence, observations, and ideas;
- d. Acknowledge new information expressed by others, and, when warranted, qualify or justify their own views in light of the evidence presented.

SL.8.2: Analyze the purpose of information presented in diverse media and formats (e.g., visually, quantitatively/data-related, orally) and evaluate the motives (e.g., social, commercial, political) behind its presentation.

SL.8.3: Delineate a speaker's argument and specific claims, evaluating the soundness of the reasoning and relevance and sufficiency of the evidence and identifying when irrelevant evidence is introduced.

SL.8.4: Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate

Alaska State Reading Standards for Informational Text

RI.8.4: Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the impact of specific word choices on meaning and tone, including analogies or allusions to other texts.

RI.8.6: Determine an author's purpose (to inform, persuade, entertain, critique, etc.) and point of view in a text and analyze how the author acknowledges and responds to conflicting evidence or viewpoints.

RI.8.10: By the end of the year, read and comprehend literary nonfiction, within a complexity band appropriate to grade 8 (from upper grade 7 to grade 9), with scaffolding as needed at the high end of the range.