

1st Grade

NGSS Physical Science

1-PS4-1: Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.

1-PS4-2: Make observations to construct an evidence-based account that objects in darkness can be seen only when illuminated.

1-PS4-3: Plan and conduct investigations to determine the effect of placing objects made with different materials in the path of a beam of light.

1-PS4-4: Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.

Alaska State Speaking and Listening Standards

SL.1.1.a-c: Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups;

- a. Follow agreed-upon rules for discussions (e.g., listening to others with care, speaking one at a time about the topics and texts under discussion);
- b. Build on others' talk in conversations by responding to the comments of others through multiple exchanges;
- c. Ask questions to clear up any confusion about the topics and texts under discussion.

SL.1.2: Ask and answer questions about key details in a text read aloud or information presented orally or through other media.

SL.1.3: Ask and answer questions about what a speaker says in order to gather additional information or clarify something that is not understood.

SL.1.4: Describe people, places, things, and events with relevant details, expressing ideas and feelings clearly.

SL.1.5: Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings.

SL.1.6: Produce complete sentences when appropriate to task and situation.

Alaska State Reading Informational Texts Standards

RI.1.1: With prompting and support, elicit background/prior knowledge and experience in order to ask and answer questions about an informational text using key details from the text.

RI.1.2: Identify the main topic or author's purpose (e.g., to teach or tell us about ...) and retell key details of a text.

RI.1.3: Describe the connection between two individuals, events, ideas, or pieces of information in a text.

RI.1.4: Ask and answer questions to help determine or clarify the meaning of words and phrases in a text.

RI.1.6: Distinguish between information provided by photos or other graphics and information provided by the words in a text.

RI.1.7: Use the illustrations and details in a text to describe its key ideas.

RI.1.10L With prompting and support, read informational texts on a range of topics appropriately complex for grade 1, with scaffolding as needed.

2nd Grade

Alaska State Speaking and Listening Standards

SL.2.1.a-c: Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups;

- a. Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion);
- b. Build on others' talk in conversations by linking their comments to the remarks of others;
- c. Ask for clarification and further explanation as needed about the topics and texts under discussions.

SL.2.2: Retell or describe key ideas or details from a text read aloud or information presented orally or through other media.

SL.2.3: Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issue.

SL.2.4: Tell a story or retell an experience with relevant facts and relevant, descriptive details, speaking audibly in coherent sentences.

3rd Grade

Alaska State Reading and 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;

- a. After learning a protocol (e.g., Socratic method), come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion;
- b. Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion);
- c. Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others;
- d. Explain their own ideas and understanding in light of the discussion.

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.

4th Grade

NGSS Physical Science Standards

4-PS4-3: Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.

4-PS4-3: Generate and compare multiple solutions that use patterns to transfer information.

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

Alaska State Speaking and Listening Standards

SL.4.1.a-d: 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;

- a. Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion;
- b. Follow agreed-upon rules for discussions and carry out assigned roles;
- c. Pose and respond to specific questions to clarify or follow up on information, and make comments that contribute to the discussion and link to the remarks of others;
- d. Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.

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

SL.4.3: Identify the reasons and evidence a speaker provides to support particular points (e.g., using a graphic organizer to show connections between reasons given and support provided).

5th Grade

Alaska State Speaking and Listening Standards

SL.5.1.a-d: 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;

- a. Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion;
- b. Follow agreed-upon rules for discussions and carry out assigned roles;
- c. Pose and respond to specific questions by making comments that contribute to the discussion and elaborate on the remarks of others;
- d. Review the key ideas expressed and draw conclusions in light of information and knowledge gained from the discussions.

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 (e.g., use a graphic organizer or note cards completed while listening to summarize or paraphrase key ideas presented by a speaker).

6th Grade

Alaska State Speaking and 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.

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.

8th Grade

Alaska State Speaking and 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.

Middle School

NGSS Physical Science

MS-PS4-1: Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave.

MS-PS4-2: Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.

MS-PS4-3: Integrate qualitative scientific and technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals.

High School

NGSS Physical Science

HS-PS4-1: Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves traveling in various media.

HS-PS4-3: Evaluate the claims, evidence, and reasoning behind the idea that electromagnetic radiation can be described either by a wave model or a particle model, and that for some situations one model is more useful than the other.

HS-PS4-4: Evaluate the validity and reliability of claims in published materials of the effects that different frequencies of electromagnetic radiation have when absorbed by matter.

HS-PS4-5: Communicate technical information about how some technological devices use the principles of wave behavior and wave interactions with matter to transmit and capture information and energy.

NGSS Earth and Space Systems

HS-ESS1-3: Communicate scientific ideas about the way stars, over their life cycle, produce elements.

Alaska State Speaking and Listening Standards (9-12th grades)

SL.9-10.1.a-d: Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9–10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively;

- a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas;
- b. Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed;

- c. Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions;
- d. Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented.

SL11-12.1.a-d: Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11–12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively;

- a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas;
- b. Work with peers to promote civil, democratic discussions and decision-making, set clear goals and deadlines, and establish individual roles as needed.
- c. Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives;
- d. Respond thoughtfully to diverse perspectives or arguments; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.

SL.9-10.2: Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) evaluating the credibility and accuracy of each source and noting any discrepancies among data or information.

SL.11-12.2: Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data or information.

SL.9-10.3: Identify and evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, identifying any fallacious reasoning or exaggerated or distorted evidence.

SL.11-12.3: Identify and evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, assessing the stance, premises, links among ideas, word choice, points of emphasis, and tone used.