Iowa Core Standards Alignment

Literacy

Legend

●	The standard is clearly addressed by program activities.
-	This standard potentially could be addressed as part of *FIRST*® LEGO® League Challenge either by actions that the coach or teacher takes when working with the students or by conditions established by the program.

Grade 4

	Indicator	Indicator Statement	Addressed
Reading: Literature	RL.4.1	Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.	-
	RL.4.2	Determine a theme of a story, drama, or poem from details in the text; summarize the text.	
	RL.4.3	Describe in depth a character, setting, or event in a story or drama, drawing on specific details in the text (e.g., a character's thoughts, words, or actions).	
	RL.4.4	Determine the meaning of words and phrases as they are used in a text, including those that allude to significant characters found in mythology (e.g., Herculean).	
	RL.4.5	Explain major differences between poems, drama, and prose, and refer to the structural elements of poems (e.g., verse, rhythm, meter) and drama (e.g., casts of characters, settings, descriptions, dialogue, stage directions) when writing or speaking about a text.	
	RL.4.6	Compare and contrast the point of view from which different stories are narrated, including the difference between first- and third-person narrations.	
	RL.4.7	Make connections between the text of a story or drama and a visual or oral presentation of the text, identifying where each version reflects specific descriptions and directions in the text.	
	RL.4.8	(not applicable to literature)	
	RL.4.9	Compare and contrast the treatment of similar themes and topics (e.g., opposition of good and evil) and patterns of events (e.g., the quest) in stories, myths, and traditional literature from different cultures.	
	RL.4.10	By the end of the year, read and comprehend literature, including stories, dramas, and poetry, in the grades 4–5 text complexity band proficiently, with scaffolding as needed at the high end of the range.	
Reading: Informational Text	RI.4.1	Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.	●
	RI.4.2	Determine the main idea of a text and explain how it is supported by key details; summarize the text.	●
	RI.4.3	Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.	-
	RI.4.4	Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a grade 4 topic or subject area.	●
	RI.4.5	Describe the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in a text or part of a text.	-
	RI.4.6	Compare and contrast a firsthand and secondhand account of the same event or topic; describe the differences in focus and the information provided.	-
	RI.4.7	Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.	●
	RI.4.8	Explain how an author uses reasons and evidence to support particular points in a text.	-
	RI.4.9	Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably.	●
	RI.4.10	By the end of year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 4–5 text complexity band proficiently, with scaffolding as needed at the high end of the range.	-
Re	RF.4.3	Know and apply grade-level phonics and word analysis skills in decoding words.	-
	RF.4.4	Read with sufficient accuracy and fluency to support comprehension.	-
W	W.4.1	Write opinion pieces on topics or texts, supporting a point of view with reasons and information.	-

	W.4.2	Write informative/explanatory texts to examine a topic and convey ideas and information clearly.	-
	W.4.3	Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.	-
	W.4.4	Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)	●
	W.4.5	With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grade 4 on page 29.)	-
	W.4.6	With some guidance and support from adults, use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of one page in a single sitting.	-
	W.4.7	Conduct short research projects that build knowledge through investigation of different aspects of a topic.	●
	W.4.8	Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources.	●
	W.4.9	Draw evidence from literary or informational texts to support analysis, reflection, and research.	●
	W.4.10	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	-
Speaking & Listening	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.4.3	Identify the reasons and evidence a speaker provides to support particular points.	-
	SL.4.4	Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.	●
	SL.4.5	Add audio recordings and visual displays to presentations when appropriate to enhance the development of main ideas or themes.	-
	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. (See grade 4 Language standards 1 on page 28 for specific expectations.)	-
Language	L.4.1	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.	●
	L.4.2	Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.	-
	L.4.3	Use knowledge of language and its conventions when writing, speaking, reading, or listening.	●
	L.4.4	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 4 reading and content, choosing flexibly from a range of strategies.	-
	L.4.5	Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.	
	L.4.6	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases, including those that signal precise actions, emotions, or states of being (e.g., quizzed, whined, stammered) and that are basic to a particular topic (e.g., wildlife, conservation, and endangered when discussing animal preservation).	-

Grade 5

	Indicator	Indicator Statement	Addressed
Reading: Literature	RL.5.1	Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.	-
	RL.5.2	Determine a theme of a story, drama, or poem from details in the text, including how characters in a story or drama respond to challenges or how the speaker in a poem reflects upon a topic; summarize the text.	
	RL.5.3	Compare and contrast two or more characters, settings, or events in a story or drama, drawing on specific details in the text (e.g., how characters interact).	
	RL.5.4	Determine the meaning of words and phrases as they are used in a text, including figurative language such as metaphors and similes.	
	RL.5.5	Explain how a series of chapters, scenes, or stanzas fits together to provide the overall structure of a particular story, drama, or poem.	
	RL.5.6	Describe how a narrator's or speaker's point of view influences how events are described.	
	RL.5.7	Analyze how visual and multimedia elements contribute to the meaning, tone, or beauty of a text (e.g., graphic novel, multimedia presentation of fiction, folktale, myth, poem).	

	RL.5.8	(not applicable to literature)	
	RL.5.9	Compare and contrast stories in the same genre (e.g., mysteries and adventure stories) on their approaches to similar themes and topics.	
	RL.5.10	By the end of the year, read and comprehend literature, including stories, dramas, and poetry, at the high end of the grades 4–5 text complexity band independently and proficiently.	
Reading: Informational Text	RI.5.1	Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.	●
	RI.5.2	Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text.	●
	RI.5.3	Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.	-
	RI.5.4	Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 5 topic or subject area.	●
	RI.5.5	Compare and contrast the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in two or more texts.	-
	RI.5.6	Analyze multiple accounts of the same event or topic, noting important similarities and differences in the point of view they represent.	-
	RI.5.7	Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.	●
	RI.5.8	Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point(s).	-
	RI.5.9	Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably.	●
	RI.5.10	By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, at the high end of the grades 4–5 text complexity band independently and proficiently.	-
Re	RF.5.3	Know and apply grade-level phonics and word analysis skills in decoding words.	-
	RF.5.4	Read with sufficient accuracy and fluency to support comprehension.	-
Writing	W.5.1	Write opinion pieces on topics or texts, supporting a point of view with reasons and information.	-
	W.5.2	Write informative/explanatory texts to examine a topic and convey ideas and information clearly.	-
	W.5.3	Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.	-
	W.5.4	Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)	●
	W.5.5	With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grade 5 on page 29.)	-
	W.5.6	With some guidance and support from adults, use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of two pages in a single sitting.	-
	W.5.7	Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic.	●
	W.5.8	Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources.	●
	W.5.9	Draw evidence from literary or informational texts to support analysis, reflection, and research.	●
	W.5.10	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	-
Speaking & Listening	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.	-
	SL.5.4	Report on a topic or text or present an opinion, sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.	●
	SL.5.5	Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes.	-
	SL.5.6	Adapt speech to a variety of contexts and tasks, using formal English when appropriate to task and situation. (See grade 5 Language standards 1 and 3 on page 28 for specific expectations.)	-

Language	L.5.1	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.	●
	L.5.2	Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.	-
	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.5.5	Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.	
	L5.6	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases, including those that signal contrast, addition, and other logical relationships (e.g., however, although, nevertheless, similarly moreover, in addition).	-

Grade 6

	Indicator	Indicator Statement	Addressed
Reading: Literature	RL.6.1	Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	
	RL.6.2	Determine a theme or central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments.	
	RL.6.3	Describe how a particular story's or drama's plot unfolds in a series of episodes as well as how the characters respond or change as the plot moves toward a resolution.	
	RL.6.4	Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of a specific word choice on meaning and tone.	
	RL.6.5	Analyze how a particular sentence, chapter, scene, or stanza fits into the overall structure of a text and contributes to the development of the theme, setting, or plot.	
	RL.6.6	Explain how an author develops the point of view of the narrator or speaker in a text.	
	RL.6.7	Compare and contrast the experience of reading a story, drama, or poem to listening to or viewing an audio, video, or live version of the text, including contrasting what they "see" and "hear" when reading the text to what they perceive when they listen or watch.	
	RL.6.8	(not applicable to literature)	
	RL.6.9	Compare and contrast texts in different forms or genres (e.g., stories and poems; historical novels and fantasy stories) in terms of their approaches to similar themes and topics.	
	RL.6.10	By the end of the year, read and comprehend literature, including stories, dramas, and poems, in the grades 6–8 text complexity band proficiently, with scaffolding as needed at the high end of the range.	
Reading: Informational Text	RI.6.1	Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	●
	RI.6.2	Determine a central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments.	●
	RI.6.3	Analyze in detail how a key individual, event, or idea is introduced, illustrated, and elaborated in a text (e.g., through examples or anecdotes).	-
	RI.6.4	Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings.	●
	RI.6.5	Analyze how a particular sentence, paragraph, chapter, or section fits into the overall structure of a text and contributes to the development of the ideas.	-
	RI.6.6	Determine an author's point of view or purpose in a text and explain how it is conveyed in the text.	-
	RI.6.7	Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.	●
	RI.6.8	Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not.	-
	RI.6.9	Compare and contrast one author's presentation of events with that of another (e.g., a memoir written by and a biography on the same person)	
	RI.6.10	By the end of the year, read and comprehend literary nonfiction in the grades 6–8 text complexity band proficiently, with scaffolding as needed at the high end of the range.	-
Writing	W.6.1	Write arguments to support claims with clear reasons and relevant evidence.	-
	W.6.2	Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.	-
	W.6.3	Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.	-

	W.6.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)	●
	W.6.5	With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grade 6 on page 53.)	-
	W.6.6	Use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of three pages in a single sitting.	-
	W.6.7	Conduct short research projects to answer a question, drawing on several sources and refocusing the inquiry when appropriate.	●
	W.6.8	Gather relevant information from multiple print and digital sources; assess the credibility of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and providing basic bibliographic information for sources.	●
	W.6.9	Draw evidence from literary or informational texts to support analysis, reflection, and research.	●
	W.6.10	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	-
Speaking & Listening	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.	●
	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.	●
	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. (See grade 6 Language standards 1 and 3 above for specific expectations.)	-
Language	L.6.1	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.	●
	L.6.2	Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.	-
	L.6.3	Use knowledge of language and its conventions when writing, speaking, reading, or listening.	●
	L.6.4	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.	-
	L.6.5	Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.	
	L.6.6	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.	-

Grade 7

	Indicator	Indicator Statement	Addressed
Reading: Literature	RL.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.	
	RL.7.2	Determine a theme or central idea of a text and analyze its development over the course of the text; provide an objective summary of the text.	
	RL.7.3	Analyze how particular elements of a story or drama interact (e.g., how setting shapes the characters or plot).	
	RL.7.4	Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of rhymes and other repetitions of sounds (e.g., alliteration) on a specific verse or stanza of a poem or section of a story or drama.	
	RL.7.5	Analyze how a drama's or poem's form or structure (e.g., soliloquy, sonnet) contributes to its meaning.	
	RL.7.6	Analyze how an author develops and contrasts the points of view of different characters or narrators in a text.	
	RL.7.7	Compare and contrast a written story, drama, or poem to its audio, filmed, staged, or multimedia version, analyzing the effects of techniques unique to each medium (e.g., lighting, sound, color, or camera focus and angles in a film).	

	RL.7.8	(not applicable to literature)	
	RL.7.9	Compare and contrast a fictional portrayal of a time, place, or character and a historical account of the same period as a means of understanding how authors of fiction use or alter history.	
	RL.7.10	By the end of the year, read and comprehend literature, including stories, dramas, and poems, in the grades 6–8 text complexity band proficiently, with scaffolding as needed at the high end of the range.	
Reading: 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 two or more central ideas in a text and analyze their development over the course of the text; provide an objective summary of the text.	●
	RI.7.3	Analyze the interactions between individuals, events, and ideas 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.7.5	Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to the development of the ideas	-
	RI.7.6	Determine an author's point of view or purpose in a text and analyze how the author distinguishes his or her position from that of others.	-
	RI.7.7	Compare and contrast a text to an audio, video, or multimedia version of the text, analyzing each medium's portrayal of the subject (e.g., how the delivery of a speech affects the impact of the words).	-
	RI.7.8	Trace and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient to support the claims.	-
	RI.7.9	Analyze how two or more authors writing about the same topic shape their presentations of key information by emphasizing different evidence or advancing different interpretations of facts	-
	RI.7.10	By the end of the year, read and comprehend literary nonfiction in the grades 6–8 text complexity band proficiently, with scaffolding as needed at the high end of the range.	-
Writing	W.7.1	Write arguments to support claims with clear reasons and relevant evidence.	-
	W.7.2	Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.	-
	W.6.3	Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.	-
	W.7.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)	●
	W.7.5	With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grade 7 listed above.)	-
	W.7.6	Use technology, including the Internet, to produce and publish writing and link to and cite sources as well as to interact and collaborate with others, including linking to and citing sources.	-
	W.7.7	Conduct short research projects to answer a question, drawing on several sources and generating additional related, focused questions for further research and investigation.	●
	W.7.8	Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.	●
	W.7.9	Draw evidence from literary or informational texts to support analysis, reflection, and research.	●
	W.7.10	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	-
Speaking & Listening	SL.7.1	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.	●
	SL.7.2	Analyze the main ideas and supporting details presented in diverse media and formats (e.g., visually, quantitatively, 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.7.5	Include multimedia components and visual displays in presentations to clarify claims and findings and emphasize salient points.	-

	SL.7.6	Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See grade 7 Language standards 1 and 3 on page 53 for specific expectations.)	-
Language	L.7.1	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.	●
	L.7.2	Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.	-
	L.7.3	Use knowledge of language and its conventions when writing, speaking, reading, or listening.	●
	L.7.4	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 7 reading and content, choosing flexibly from a range of strategies.	-
	L.7.5	Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.	
	L.7.6	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.	-

Grade 8

	Indicator	Indicator Statement	Addressed
Reading: Literature	RL.8.1	Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.	
	RL.8.2	Determine a theme or central idea of a text and analyze its development over the course of the text, including its relationship to the characters, setting, and plot; provide an objective summary of the text.	
	RL.8.3	Analyze how particular lines of dialogue or incidents in a story or drama propel the action, reveal aspects of a character, or provoke a decision	
	RL.8.4	Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of specific word choices on meaning and tone, including analogies or allusions to other texts.	
	RL.8.5	Compare and contrast the structure of two or more texts and analyze how the differing structure of each text contributes to its meaning and style.	
	RL.8.6	Analyze how differences in the points of view of the characters and the audience or reader (e.g., created through the use of dramatic irony) create such effects as suspense or humor.	
	RL.8.7	Analyze the extent to which a filmed or live production of a story or drama stays faithful to or departs from the text or script, evaluating the choices made by the director or actors.	
	RL.8.9	Analyze how a modern work of fiction draws on themes, patterns of events, or character types from myths, traditional stories, or religious works such as the Bible, including describing how the material is rendered new.	
	RI.8.10	By the end of the year, read and comprehend literature, including stories, dramas, and poems, in the grades 6–8 text complexity band proficiently, with scaffolding as needed at the high end of the range.	
Reading: Informational Text	RI.8.1	Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.	●
	RI.8.2	Determine a central idea of a text and analyze its development over the course of the text, including its relationship to supporting ideas; provide an objective summary of the text.	●
	RI.8.3	Analyze how a text makes connections among and distinctions between individuals, ideas, or events (e.g., through comparisons, analogies, or categories).	-
	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.8.5	Analyze in detail the structure of a specific paragraph in a text, including the role of particular sentences in developing and refining a key concept.	-
	RI.8.6	Determine an author's point of view or purpose in a text and analyze how the author acknowledges and responds to conflicting evidence or viewpoints.	-
	RI.8.7	Evaluate the advantages and disadvantages of using different mediums (e.g., print or digital text, video, multimedia) to present a particular topic or idea.	-
	RI.8.8	Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient; recognize when irrelevant evidence is introduced.	-
	RI.8.9	Analyze a case in which two or more texts provide conflicting information on the same topic and identify where the texts disagree on matters of fact or interpretation.	-
	RI.8.10	By the end of the year, read and comprehend literary nonfiction at the high end of the grades 6–8 text complexity band independently and proficiently.	-
V	W.8.1	Write arguments to support claims with clear reasons and relevant evidence.	-

	W.8.2	Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.	-
	W.8.3	Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.	-
	W.8.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)	●
	W.8.5	With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grade 8 as shown above.)	-
	W.8.6	Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas efficiently as well as to interact and collaborate with others.	-
	W.8.7	Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.	●
	W.8.8	Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.	●
	W.8.9	Draw evidence from literary or informational texts to support analysis, reflection, and research.	●
	W.8.10	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	-
Speaking & Listening	SL.8.1	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.	●
	SL.8.2	Analyze the purpose of information presented in diverse media and formats (e.g., visually, quantitatively, 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	Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.	●
	SL.8.5	Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest.	-
	SL.8.6	Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See grade 8 Language standards 1 and 3 on page 53 for specific expectations.)	-
Language	L.8.1	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.	●
	L.8.2	Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.	-
	L.8.3	Use knowledge of language and its conventions when writing, speaking, reading, or listening.	●
	L.8.4	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 8 reading and content, choosing flexibly from a range of strategies.	-
	L.8.5	Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.	-
	L.8.6	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.	-

Grade 6-8

Cluster	Indicator	Indicator Statement	Addressed
Reading Standards for Literacy in History/Social	RST.6-8.1	Cite specific textual evidence to support analysis of science and technical texts.	●
	RST.6-8.2	Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.	-
	RST.6-8.3	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.	●
	RST.6-8.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6–8 texts and topics.	●
	RST.6-8.5	Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic	-

	RST.6-8.6	Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.	-
	RST.6-8.7	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).	-
	RST.6.-8.8	Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.	●
	RST.6-8.9	Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.	-
	RST.6-8.10	By the end of grade 8, read and comprehend science/technical texts in the grades 6–8 text complexity band independently and proficiently.	●
Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects	WHST.6-8.1	Write arguments focused on discipline-specific content.	-
	WHST.6-8.2	Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.	-
	WHST.6-8.3	(See note; not applicable as a separate requirement)	
	WHST.6-8.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	●
	WHST.6-8.5	With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed	-
	WHST.6-8.6	Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.	-
	WHST.6-8.7	Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.	●
	WHST.6-8.8	Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.	●
	WHST.6-8.9	Draw evidence from informational texts to support analysis, reflection, and research.	●
	WHST.6-8.10	Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	-

Iowa Core Standards Alignment

Mathematics

Legend

●	The standard is clearly addressed by program activities.
-	This standard potentially could be addressed as part of *FIRST*® LEGO® League Challenge either by actions that the coach or teacher takes when working with the students or by conditions established by the program.

All Grades

Cluster	Indicator	Indicator Statement	Addressed
Mathematical Practice	MP1	Make sense of problems and persevere in solving them.	●
	MP2	Reason abstractly and quantitatively.	●
	MP3	Construct viable arguments and critique the reasoning of others.	●
	MP4	Model with mathematics.	●
	MP5	Use appropriate tools strategically.	●
	MP6	Attend to precision.	●
	MP7	Look for and make use of structure.	●
	MP8	Look for and express regularity in repeated reasoning.	●

Grade 4

	Indicator	Indicator Statement	Addressed
Operations and Algebraic Thinking	4.OA.A.1	Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 x 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.	-
	4.OA.A.2	Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.	-
	4.OA.A.3	Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.	-
	4.OA.B.4	Find all factor pairs for a whole number in the range 1-100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1-100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1-100 is prime or composite.	-
	4.OA.C.5	Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. *For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.*	●
Number and Operations in Base Ten	4.NBT.A.1	Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. *For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division.*	-
	4.NBT.A.2	Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.	-
	4.NBT.A.3	Use place value understanding to round multi-digit whole numbers to any place.	-
	4.NBT.B.4	Fluently add and subtract multi-digit whole numbers using the standard algorithm.	-
	4.NBT.B.5	Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	-
	4.NBT.B.6	Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	-

Number and Operations - Fractions	4.NF.A.1	Explain why a fraction a/b is equivalent to a fraction (n × a)/(n × b) by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.	-
	4.NF.A.2	Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.	-
	4.NF.B.3	Understand a fraction a/b with a > 1 as a sum of fractions 1/b.	-
	4.NF.B.4	Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.	-
	4.NF.C.5	Express a fraction with denominator 10 as an equivalent fraction with denominator 100 and use this technique to add two fractions with respective denominators 10 and 100.4 For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100.	
	4.NF.C.6	Use decimal notation for fractions with denominators 10 or 100. For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram.	
	4.NF.C.7	Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual model.	
Measurement and Data	4.MD.A.1	Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two column table. For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36)	●
	4.MD.A.2	Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.	-
	4.MD.A.3	Apply the area and perimeter formulas for rectangles in real world and mathematical problems. For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.	●
	4.MD.B.4	Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.	-
	4.MD.C.5	Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:	●
	4.MD.C.6	Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.	-
	4.MD.C.7	Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.	-
Geometry	4.G.A.1	Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.	-
	4.G.A.2	Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.	-
	4.G.A.3	Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.	-

Grade 5

	Indicator	Indicator Statement	Addressed
Operations and	5.OA.A.1	Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.	-
	5.OA.A.2	Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. For example, express the calculation “add 8 and 7, then multiply by 2” as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product.	-

	5.OA.B.3	Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.	-
Number and Operations in Base Ten	5.NBT.A.1	Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.	-
	5.NBT.A.2	Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.	-
	5.NBT.A.3	Read, write, and compare decimals to thousandths.	-
	5.NBT.A.4	Use place value understanding to round decimals to any place.	-
	5.NBT.B.5	Fluently multiply multi-digit whole numbers using the standard algorithm.	-
	5.NBT.B.6	Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	-
	5.NBT.B.7	Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.	-
Number and Operations - Fractions	5.NF.A.1	Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. For example, 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b + c/d = (ad + bc)/bd.)	
	5.NF.A.2	Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. For example, recognize an incorrect result 2/5 + 1/2 = 3/7, by observing that 3/7 < 1/2.	
	5.NF.B.3	Interpret a fraction as division of the numerator by the denominator (a/b = a ÷ b). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. For example, interpret 3/4 as the result of dividing 3 by 4, noting that 3/4 multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size 3/4. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?	
	5.NF.B.4	Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.	
	5.NF.B.5	Interpret multiplication as scaling (resizing), by:	-
	5.NF.B.6	Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.	-
	5.NF.B.7	Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.	-
Measurement and Data	5.MD.A.1	Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.	•
	5.MD.B.2	Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.	
	5.MD.C.3	Recognize volume as an attribute of solid figures and understand concepts of volume measurement.	
	5.MD.C.4	Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.	
	5.MD.C.5	Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.	
Geometry	5.G.A.1	Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to	-

		travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).	
	5.G.A.2	Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.	-
	5.G.B.3	Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.	●
	5.G.B.4	Classify two-dimensional figures in a hierarchy based on properties.	-

Grade 6

	Indicator	Indicator Statement	Addressed
Ratios and Proportional Relationships	6.RP.A.1	Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."	-
	6.RP.A.2	Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ 0, and use rate language in the context of a ratio relationship. For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar." "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger."1	-
	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.	-
The Number System	6.NS.A	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. For example, create a story context for (2/3) ÷ (3/4) and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that (2/3) ÷ (3/4) = 8/9 because 3/4 of 8/9 is 2/3. (In general, (a/b) ÷ (c/d) = ad/by.) How much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 3/4-cup servings are in 2/3 of a cup of yogurt? How wide is a rectangular strip of land with length 3/4 mi and area 1/2 square mi?	
	6.NS.B.2	Fluently divide multi-digit numbers using the standard algorithm.	-
	6.NS.B.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.	-
	6.NS.B.4	Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor. For example, express 36 + 8 as 4 (9 + 2).	
	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.	-
	6.NS.C.6	Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.	-
	6.NS.C.8	Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate. dollars represents a debt greater than 30 dollars.	-
Expressions and Equations	6.EE.A.1	Write and evaluate numerical expressions involving whole-number exponents.	
	6.EE.A.2	Write, read, and evaluate expressions in which letters stand for numbers.	-
	6.EE.A.2.C	Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). For example, use the formulas $V = s^3$ and $A = 6 s^2$ to find the volume and surface area of a cube with sides of length s = 1/2.	-
	6.EE.A.3	Apply the properties of operations to generate equivalent expressions. For example, apply the distributive property to the expression 3 (2 + x) to produce the equivalent expression 6 + 3x; apply the distributive property to the expression 24x + 18y to produce the equivalent expression 6 (4x + 3y); apply properties of operations to y + y + y to produce the equivalent expression 3y.	-
	6.EE.A.4	Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). For example, the expressions y + y + y and 3y are equivalent because they name the same number regardless of which number y stands for.	-

	6.EE.B.5	Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.	-
	6.EE.B.6	Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.	-
	6.EE.B.7	Solve real-world and mathematical problems by writing and solving equations of the form x + p = q and px = q for cases in which p, q and x are all nonnegative rational numbers.	-
	6.EE.B.8	Write an inequality of the form x > c or x < c to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form x > c or x < c have infinitely many solutions; represent solutions of such inequalities on number line diagrams.	-
	6.EE.C.9	Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation d = 65t to represent the relationship between distance and time.	-
Geometry	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.	-
	6.G.A.2	Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas V = l w h and V = b h to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.	
	6.G.A.3	Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.	-
	6.G.A.4	Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.	
Statistics and Probability	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. For example, “How old am I?” is not a statistical question, but “How old are the students in my school?” is a statistical question because one anticipates variability in students’ ages.	-
	6.SP.A.2	Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.	-
	6.SP.A.3	Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.	-
	6.SP.B.4	Display numerical data in plots on a number line, including dot plots, histograms, and box plots.	-
	6.SP.B.5	Summarize numerical data sets in relation to their context, such as by:	-

Grade 7

	Indicator	Indicator Statement	Addressed
Ratios and Proportional	7.RP.A.1	Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction 1/2/1/4 miles per hour, equivalently 2 miles per hour.	-
	7.RP.A.2	Recognize and represent proportional relationships between quantities.	-
	7.RP.A.3	Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.	-
The Number System	7.NS.A.1	Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.	-
	7.NS.A.2	Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.	
	7.NS.A.3	Solve real-world and mathematical problems involving the four operations with rational numbers.	-
Expressions	7.EE.A.1	Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.	-

	7.EE.A.2	Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. For example, a + 0.05a = 1.05a means that "increase by 5%" is the same as "multiply by 1.05."	-
	7.EE.B.3	Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.	-
	7.EE.B.4	Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.	-
Geometry	7.G.A.1	Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.	
	7.G.A.2	Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.	
	7.G.A.3	Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.	
	7.G.B.4	Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.	-
	7.G.B.5	Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.	-
	7.G.B.6	Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.	
Statistics and Probability	7.SP.A.1	Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.	
	7.SP.A.2	Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.	
	7.SP.B.3	Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable.	
	7.SP.B.4	Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book.	
	7.SP.C.5	Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.	-
	7.SP.C.6	Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.	
	7.SP.C.7	Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.	
	7.SP.C.8	Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.	

Grade 8

	Indicator	Indicator Statement	Addressed
The Number System	8.NS.A.1	Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.	
	8.NS.A.2	Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π2). For example, by truncating the decimal expansion of √2, show that √2 is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.	
Expressions and Equations	8.EE.A.1	Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, 32 × 3–5 = 3–3 = 1/33 = 1/27.	
	8.EE.A.2	Use square root and cube root symbols to represent solutions to equations of the form x2 = p and x3 = p, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that √2 is irrational.	
	8.EE.A.3	Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. For example, estimate the population of the United States as 3 × 108 and the population of the world as 7 × 109, and determine that the world population is more than 20 times larger.	
	8.EE.A.4	Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.	
	8.EE.B.5	Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.	-
	8.EE.B.6	Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation y = mx for a line through the origin and the equation y = mx + b for a line intercepting the vertical axis at b.	
	8.EE.C.7	Solve linear equations in one variable.	
	8.EE.C.8	Analyze and solve pairs of simultaneous linear equations.	
Functions	8.F.A.1	Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.1	-
	8.F.A.2	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.	
	8.F.A.3	Interpret the equation y = mx + b as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. For example, the function $A = s^2$ giving the area of a square as a function of its side length is not linear because its graph contains the points (1,1), (2,4) and (3,9), which are not on a straight line.	
	8.F.B.4	Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.	
	8.F.B.5	Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.	
	8.G.A.1	Verify experimentally the properties of rotations, reflections, and translations:	-
	8.G.A.2	Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.	-
	8.G.A.3	Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.	
	8.G.A.4	Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.	
	8.G.A.5	Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of	

		triangles. For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so.	
	8.G.B.6	Explain a proof of the Pythagorean Theorem and its converse.	
	8.G.B.7	Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.	-
	8.G.B.8	Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	-
	8.G.C.9	Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.	
Statistics and Probability	8.SP.A.1	Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.	
	8.SP.A.2	Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.	
	8.SP.A.3	Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.	
	8.SP.A.4	Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?	

Iowa Core Standards Alignment

Science

Legend

•	The standard is clearly addressed by program activities.
-	This standard potentially could be addressed as part of *FIRST*® LEGO® League Challenge either by actions that the coach or teacher takes when working with the students or by conditions established by the program.

Grade 4

Cluster	Indicator	Indicator Statement	Addressed
Energy	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.	-
	4-PS3-4	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	-
Waves and Their Applications in Technologies for Information Transfer	4-PS4-1	Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.	
	4-PS4-2	Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.	
	4-PS4-3	Generate and compare multiple solutions that use patterns to transfer information.	
From Molecules to Organisms: Structures and Processes	4-LS1-1	Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.	
	4-LS1-2	Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.	
Earth's Place in the Universe	4-ESS1-1	Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.	
Earth's Systems	4-ESS2-1	Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.	
	4-ESS2-2	Analyze and interpret data from maps to describe patterns of Earth's features.	
Earth and Human Activity	4-ESS3-1	Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.	-
	4-ESS3-2	Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.	-

Grade 5

Cluster	Indicator	Indicator Statement	Addressed
Matter and Its Interactions	5-PS1-1	Develop a model to describe that matter is made of particles too small to be seen.	
	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.	

	5-PS1-3	Make observations and measurements to identify materials based on their properties.	
	5-PS1-4	Conduct an investigation to determine whether the mixing of two or more substances results in new substances.	
Motion and Stability: Forces and Interactions	5-PS2-1	Support an argument that the gravitational force exerted by Earth on objects is directed down.	-
Energy	5-PS3-1	Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.	
From Molecules to Organisms: Structures and Processes	5-LS1-1	Support an argument that plants get the materials they need for growth chiefly from air and water.	
Ecosystems: Interactions, Energy, and Dynamics	5-LS2-1	Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.	
Earth's Place in the Universe	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 Earth.	
Earth's Systems	5-ESS2-1	Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.	
	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.	
Earth and Human Activity	5-ESS3-1	Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.	-

Grade 3-5

Cluster	Indicator	Indicator Statement	Addressed
Engineering Design	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.	●
	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.	-

Grade 6-8

Cluster	Indicator	Indicator Statement	Addressed
Motion and Stability: Forces and Interactions	MS-PS2-1	Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects.	-
	MS-PS2-2	Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.	-
	MS-PS2-3	Ask questions about data to determine the factors that affect the strength of electric and magnetic forces.	
	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.	
Energy	MS-PS3-1	Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.	-

	MS-PS3-2	Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system.	
	MS-PS3-3	Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.	
	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.	
	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.	-
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.	-
Only Middle School science standards that could be addressed are listed in this table instead of the full standard listing.			

Iowa Core Standards Alignment

Universal Constructs

Legend

●	The standard is clearly addressed by program activities.
-	This standard potentially could be addressed as part of *FIRST*® LEGO® League Challenge either by actions that the coach or teacher takes when working with the students or by conditions established by the program.

	Indicator Statement	Addressed
CRITICAL THINKING	Critical thinking is the ability to access and analyze key information to develop solutions to complex problems that may have no clear answer. It incorporates reflective and visionary processes. Critical thinking utilizes abstractions and non-rules based strategies to guide decisions, behaviors and actions. Twenty-first century critical thinking reflects:	●
	thoughtful questioning that challenges assumptions, promotes higher order thinking, leads to new insights and validates perceptions.	●
	metacognition that supports reflective practice.	●
	processes that analyze, select, use and evaluate various approaches to develop solutions.	●
	critical issues that develop innovative responses.	●
	analysis and synthesis of multiple sources and points of information.	●
	intentional use of disciplinary frameworks to analyze complex issues and information.	●
	suspension of judgment while collecting evidence to make determinations.	●
COMPLEX COMMUNICATION	Complex communication is based on the successful sharing of information through multiple means that include visual, digital, verbal and nonverbal interactions. The message is purposeful, clear and concise and leads to an accurate exchange of information and ideas. Complex communication in the 21st Century reflects:	●
	negotiation processes that generate mutually satisfactory solutions.	●
	managing and resolving conflicts.	●
	interacting effectively with people of different cultures.	●
	selection and integration of various communication processes.	●
	integration of appropriate forms of informative communication technology.	●
	understanding the interactions among modes of communication.	●
	meaningful and engaging interactions.	●
	focus, energy and passion around the key message.	●
	navigation through nuances of effective communication.	●
CREATIVITY	Creativity incorporates curiosity and innovation to generate new or original thoughts, interpretations, products, works or techniques. Creativity is nurtured, advanced and modeled through numerous approaches that include inquiry-based learning, abstract thinking and student-focused learning. Twenty-first century creativity reflects:	●
	a disciplined process that includes skill, knowledge, imagination, inspiration and evaluation.	●
	capturing or collecting new ideas for current or future use.	●
	a combination of seemingly unrelated ideas into something new.	-
	a respectful exchange of ideas.	●
	engagement in formal and informal learning experiences.	●
	divergent thinking.	●
	entrepreneurial thinking that encourages unique thoughts and applications.	-
	a comfort level with open-ended challenges that reflect multiple approaches and results.	●
	reconfiguration of current thought within a new context.	●
	pattern recognition across disciplines that results in an innovative outcome.	-

COLLABORATION	Collaboration is working among and across personal and global networks to achieve common goals. It requires cultural competence and personal and civic responsibility in all environments. Collaboration also requires open and flexible approaches to leadership. Twenty-first century collaboration reflects:	●
	non-hierarchical leadership based on individual skill sets.	●
	respect for a complex process that requires individuals to contribute and participate in meaningful interactions.	●
	the belief that group synergy enhances productivity.	●
	understanding and application of effective group processes to solve problems.	●
	productive group interactions.	●
	respectful disagreement.	●
FLEXIBILITY AND ADAPTABILITY	Flexibility and adaptability include responding and adjusting to situational needs, and changing to meet the challenges of new roles, paradigms and environments. Flexibility and adaptability include the thoughtful balance between an individual's core beliefs and appropriate reaction to change. These dispositions are nurtured through lifelong learning and continuous improvement. Twenty-first century flexibility and adaptability reflect:	●
	engagement in innovation and creativity.	●
	intellectual agility.	●
	embracing change.	●
	expecting and accepting the emotions inherent in change while supporting those who are involved.	●
	respect for unique qualities of others and self.	●
	purposeful and thoughtful response to disruptions.	●
	acknowledging and responding to dissonance in productive ways.	●
	the potential for positive and negative outcomes in risk-taking.	●
	proactive and reactive approaches to change.	●
	acknowledging ambiguity is inherent in a changing environment.	-
PRODUCTIVITY AND ACCOUNTABILITY	Productivity is prioritizing, planning and applying knowledge and skills to make decisions that create quality results in an ever-changing environment. Individuals and teams demonstrate initiative, self-direction and personal responsibility to add value to the world around them. Individuals demonstrate accountability through efficient time management, appropriate resource allocation, personal integrity and self-monitoring to meet the demands of productivity. Individuals and teams recognize interconnectedness of their actions at all levels. Twenty-first century productivity and accountability reflect:	●
	the ability to acquire new learning on one's own.	●
	application of appropriate processes and tools to facilitate task completion.	●
	self-sufficiency as required in a complex environment.	●
	identification of available opportunities.	●
	motivation and commitment to achieve.	●
	assuming leadership roles.	●
	building on prior learning and experience to apply knowledge and skills in a variety of contexts.	●
	self-confidence and self-respect	●

Iowa Core Standards Alignment

Social Studies

Legend

●	The standard is clearly addressed by program activities.
-	This standard potentially could be addressed as part of *FIRST*® LEGO® League Challenge either by actions that the coach or teacher takes when working with the students or by conditions established by the program.

	Indicator Statement	Addressed
Grade 4	**SS.4.1.** Explain how a compelling question represents key ideas in the field.	-
	SS.4.2. Use supporting questions to help answer the compelling question in an inquiry.	-
	SS.4.3. Cite evidence that supports a response to supporting or compelling questions.	-
	SS.4.4. Construct responses to compelling questions using reasoning, examples, and relevant details.	●
	SS.4.5. Identify challenges and opportunities when taking action to address problems, including predicting possible results.	●
	SS.4.6. Use a range of deliberative and democratic procedures to make decisions about and act on civic problems in their classrooms.	-
	SS.4.7. Explain causes of conflict or collaboration among different social groups.	●
Grade 5	**SS.5.1.** Identify the disciplinary concepts and ideas associated with a compelling question.	-
	SS.5.2. Use supporting questions to help answer the compelling question in an inquiry.	-
	SS.5.3. Determine the credibility of multiple sources.	●
	SS.5.4. Identify evidence that draws information from multiple perspectives and sources in response to a compelling question.	●
	SS.5.5. With teacher direction, construct responses to compelling questions supported by reasoning and evidence.	●
	SS.5.6. Identify challenges and opportunities when taking action to address problems, including predicting possible results.	●
	SS.5.7. Use a range of consensus-building and democratic procedures to make decisions about and act on civic problems in the classroom.	-
Grade 6	**SS.6.1.** Explain how disciplinary concepts and ideas are associated with a compelling question.	-
	SS.6.2. Identify the relationship between supporting questions and compelling questions in an inquiry.	-
	SS.6.3. Gather relevant information from primary and secondary sources using the origin and authority of the source to guide the selection.	●
	SS.6.4. With teacher direction, evaluate the credibility of primary and secondary sources by determining their relevance and intended use.	-
	SS.6.5. With teacher direction, identify evidence that draws information from multiple perspectives and sources to support claims, noting evidentiary limitations.	●
	SS.6.6. With teacher direction, develop claims and counterclaims while pointing out the strengths and limitations of both.	-
	SS.6.7. With teacher direction, construct arguments using claims and evidence from multiple sources.	●
	SS.6.8. With guided practice, construct responses to compelling questions supported by reasoning and evidence.	●
	SS.6.9. Present original arguments based on credible sources using a variety of media to authentic audiences.	●
	SS.6.10. With teacher direction, analyze the disciplinary arguments of peers' for credibility.	-
	SS.6.11. Explain the challenges and opportunities people face when taking action to address problems, including predicting possible results.	●
	SS.6.12. Apply a range of deliberative and democratic procedures to make decisions and take action in classrooms, schools, and communities.	-
Grade 7	**SS.7.1.** Compare disciplinary concepts and ideas associated with a compelling question.	-
	SS.7.2. Create supporting questions to help answer the compelling question in an inquiry.	-
	SS.7.3. Gather relevant information from primary and secondary sources using the origin, authority, structure, and context of the sources to guide the selection.	●

	SS.7.4. With guided practice, evaluate the credibility of primary and secondary sources by determining their relevance and intended use.	-
	SS.7.5. With guided practice, identify evidence that draws information from multiple perspectives and sources to support claims, noting evidentiary limitations.	●
	SS.7.6. With guided practice, develop claims and counterclaims while pointing out the strengths and limitations of both.	-
	SS.7.7. With guided practice, construct arguments using claims and evidence from multiple sources.	●
	SS.7.8. Independently construct responses to compelling questions supported by reasoning and evidence.	●
	SS.7.9. Present original arguments based on credible sources using a variety of media to authentic audiences.	●
	SS.7.10. With guided practice, analyze disciplinary arguments of peers for credibility.	-
	SS.7.11. Explain the challenges people face and opportunities they create in addressing local, regional, and global problems at various times and places.	●
	SS.7.12. Apply a range of deliberative and democratic procedures to make decisions and take action in classrooms, schools, and communities.	-
Grade 8	**SS.8.1.** Explain points of agreement and disagreement of disciplinary concepts and ideas associated with a compelling question.	-
	SS.8.2. Construct supporting questions that demonstrate the relationship between them and the compelling question in an inquiry.	-
	SS.8.3. Gather relevant information from multiple sources using the origin, authority, structure, context, and corroborative value of the sources to guide the selection.	●
	SS.8.4. Independently, evaluate the credibility of primary and secondary sources by determining their relevance and intended use.	-
	SS.8.5. Independently, identify evidence that draws information from multiple perspectives and sources to support claims, noting evidentiary limitations.	●
	SS.8.6. Independently, develop claims and counterclaims while pointing out the strengths and limitations of both.	-
	SS.8.7. Independently, construct arguments using claims and evidence from multiple sources.	●
	SS.8.8. Construct responses to compelling questions supported by reasoning and evidence while acknowledging the strengths and weaknesses of the explanations.	●
	SS.8.9. Present original arguments based on credible sources using a variety of media to authentic audiences.	●
	SS.8.10. Independently, analyze disciplinary arguments of peers for credibility.	-