

National Inventors Hall of Fame Education Programs® In the Game Aligned to Next Generation Science and Common Core State Standards	
Kindergarten	
Core Idea	Standard
Next Generation Science Standards	
K-PS2 Motion and Stability: Forces and Interactions	K-PS2-1. Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.
	K-PS2-2. Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.
K-2-ETS1 Engineering Design	K-2-ETS1-1. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
	K-2-ETS1-2. Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
	K-2-ETS1-3. Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.
Common Core Standards for Mathematics	
Counting and Cardinality: <i>Compare numbers.</i>	K.CC6. Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies.
Measurement and Data: <i>Describe and compare measurable attributes.</i>	K.MD1. Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.
	K.MD2. Directly compare two objects with a measurable attribute in common, to see which object has “more of”/“less of” the attribute, and describe the difference. For example, directly compare the heights of two children and describe one child as taller/shorter.
Geometry: <i>Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).</i>	K.G1. Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to.
Geometry: <i>Analyze, compare, create, and compose shapes.</i>	K.G5. Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.
Common Core Standards for English Language Arts	
Reading Standards for Informational Text K-6	RI1. With prompting and support, ask and answer questions about key details in a text.
	RI3. With prompting and support, describe the connection between two individuals, events, ideas, or pieces of information in a text.
	RI4. With prompting and support, ask and answer questions about unknown words in a text.
	RI5. Identify the front cover, back cover, and title page of a book.
	RI7. With prompting and support, describe the relationship between illustrations and the text in which they appear (e.g., what person, place, thing, or idea in the text an illustration depicts).
Reading Standards: Foundational Skills K-5	RF1. Demonstrate understanding of the organization and basic features of print.
	a. Follow words from left to right, top to bottom, and page by page.

Common Core Standards for English Language Arts	
Writing Standards K-6	W8. With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.
Speaking and Listening Standards K-6	SL1. Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups.
	a. Follow agreed-upon rules for discussions (e.g., listening to others and taking turns speaking about the topics and texts under discussion).
	b. Continue a conversation through multiple exchanges.
	SL2. Confirm understanding of a text read aloud or information presented orally or through other media by asking and answering questions about key details and requesting clarification if something is not understood.
	SL4. Describe familiar people, places, things, and events and, with prompting and support, provide additional detail.
	SL5. Add drawings or other visual displays to descriptions as desired to provide additional detail.
	SL6. Speak audibly and express thoughts, feelings, and ideas clearly.
Language Standards K-6	L6. Use words and phrases acquired through conversations, reading and being read to, and responding to texts.

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Grade One

Core Idea	Standard
Next Generation Science Standards	
K-2-ETS1 Engineering Design	K-2-ETS1-1. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
	K-2-ETS1-2. Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
	K-2-ETS1-3. Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.
Common Core Standards for Mathematics	
Number and Operations in Base Ten: <i>Extend the counting sequence.</i>	1.NBT1. Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.
Number and Operations in Base Ten: <i>Use place value understanding and properties of operations to add and subtract.</i>	1.NBT4. Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, 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. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.
Measurement and Data: <i>Represent and interpret data.</i>	1.MD4. Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.
Geometry: <i>Reason with shapes and their attributes.</i>	1.G2. Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.
Common Core Standards for English Language Arts	
Reading Standards for Informational Text K-6	RI1. Ask and answer questions about key details in a text.
	RI3. Describe the connection between two individuals, events, ideas, or pieces of information in a text.
	RI4. Ask and answer questions to help determine or clarify the meaning of words and phrases in a text.
	RI5. Know and use various text features (e.g., headings, tables of contents, glossaries, electronic menus, icons) to locate key facts or information in a text.
	RI7. Use the illustrations and details in a text to describe its key ideas.
Reading Standards: Foundational Skills K-5	RF1. Demonstrate understanding of the organization and basic features of print.
	RF2. Demonstrate understanding of spoken words, syllables, and sounds (phonemes).
Writing Standards K-6	W8. With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.

Common Core Standards for English Language Arts

Speaking and Listening Standards K-6	SL1. Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups.
	a. Follow agreed-upon rules for discussions (e.g., listening to others with care, speaking one at a time about the topics and texts under discussion).
	b. Build on others' talk in conversations by responding to the comments of others through multiple exchanges.
	SL2. Ask and answer questions about key details in a text read aloud or information presented orally or through other media.
	SL3. Ask and answer questions about what a speaker says in order to gather additional information or clarify something that is not understood.
	SL4. Describe people, places, things, and events with relevant details, expressing ideas and feelings clearly.
	SL5. Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings.
Language Standards K-6	L6. Use words and phrases acquired through conversations, reading and being read to, and responding to texts, including using frequently occurring conjunctions to signal simple relationships (e.g., because).

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Grade Two

Core Idea	Standard
Next Generation Science Standards	
2-PS1 Matter and its Interactions	2-PS1-1. Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.
	2-PS1-2. Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.
K-2-ETS1 Engineering Design	K-2-ETS1-1. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
	K-2-ETS1-2. Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
	K-2-ETS1-3. Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.
Common Core Standards for Mathematics	
Number and Operations in Base Ten: <i>Use place value understanding and properties of operations to add and subtract.</i>	2.NBT5. Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
Common Core Standards for English Language Arts	
Reading Standards for Informational Text K-6	RI3. Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.
	RI4. Determine the meaning of words and phrases in a text relevant to a grade 2 topic or subject area.
	RI5. Know and use various text features (e.g., captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key facts or information in a text efficiently.
Writing Standards K-6	RI7. Explain how specific images (e.g., a diagram showing how a machine works) contribute to and clarify a text. W8. Recall information from experiences or gather information from provided sources to answer a question.

Common Core Standards for English Language Arts	
Speaking and Listening Standards K-6	SL1. Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.
	a. Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion).
	b. Build on others' talk in conversations by linking their comments to the remarks of others.
	SL3. Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issue.
	SL4. Tell a story or recount an experience with appropriate facts and relevant, descriptive details, speaking audibly in coherent sentences.
	SL6. Produce complete sentences when appropriate to task and situation in order to provide requested detail or clarification. (See grade 2 Language standards 1 and 3 on page 26 for specific expectations.)
Language Standards K-6	L6. Use words and phrases acquired through conversations, reading and being read to, and responding to texts, including using adjectives and adverbs to describe (e.g., When other kids are happy that makes me happy).

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Grade Three	
Core Idea	Standard
Next Generation Science Standards	
3-PS2 Motion and Stability: Forces and Interactions	3-PS2-1. Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.
	3-PS2-2. Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.
3-5-ETS1 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.
Common Core Standards for English Language Arts	
Reading Standards for Informational Text K-6	RI3. Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.
	RI4. Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 3 topic or subject area.
	RI7. Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).
Speaking and Listening Standards K-6	SL1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacherled) with diverse partners on grade 3 topics and texts, building on others' ideas and expressing their own clearly.
	b. Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion).
	d. Explain their own ideas and understanding in light of the discussion.
	SL3. Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.
	SL4. Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.
Language Standards K-6	L6. Acquire and use accurately grade-appropriate conversational, general academic, and domainspecific words and phrases, including those that signal spatial and temporal relationships (e.g., After dinner that night we went looking for them).

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Grade Four	
Core Idea	Standard
Next Generation Science Standards	
3-5-ETS1 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.
Common Core Standards for English Language Arts	
Reading Standards for Informational Text K-6	RI.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.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.
Writing Standards K-6	W.2. Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
	d. Use precise language and domain-specific vocabulary to inform about or explain the topic.
Speaking and Listening Standards K-6	SL.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacherled) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly.
	b. Follow agreed-upon rules for discussions and carry out assigned roles.
	c. Pose and respond to specific questions to clarify or follow up on information, and make comments that contribute to the discussion and link to the remarks of others.
	d. Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.
	SL.4. 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.
Language Standards K-6	L.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).

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Grade Five	
Core Idea	Standard
Next Generation Science Standards	
5-PS1 Matter and Its Interactions	5-PS1-3. Make observations and measurements to identify materials based on their properties.
5-PS2 Motion and Stability: Forces and Interactions	5-PS2-1. Support an argument that the gravitational force exerted by Earth on objects is directed down.
3-5-ETS1 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.
Common Core Standards for English Language Arts	
Reading Standards for Informational Text K-6	RI.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.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.
Writing Standards K-6	W.2. Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
	d. Use precise language and domain-specific vocabulary to inform about or explain the topic.
Speaking and Listening Standards K-6	SL.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacherled) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.
	b. Follow agreed-upon rules for discussions and carry out assigned roles.
	c. Pose and respond to specific questions by making comments that contribute to the discussion and elaborate on the remarks of others.
	d. Review the key ideas expressed and draw conclusions in light of information and knowledge gained from the discussions.
	SL.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.
Language Standards K-6	L.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).

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Grade Six	
Core Idea	Standard
Next Generation Science Standards	
MS-PS2 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-PS2-4. Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects.
MS-PS3 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-ETS1 Engineering Design	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.
Common Core Standards for English Language Arts	
Reading Standards for Informational Text K-6	RI4. Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings.
	RI7. 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.
Speaking and Listening Standards K-6	SL1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacherled) with diverse partners on grade 6 topics, texts, and issues, building on others’ ideas and expressing their own clearly.
	b. Follow rules for collegial discussions, set specific goals and deadlines, and define individual roles as needed.
	c. Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion.
	SL2. 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.
	SL4. 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.
Language Standards K-6	L6. 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.
Reading Standards for Literacy in History/Social Studies 6-8	RH4. Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history/social studies.
Reading Standards for Literacy in Science and Technical Subjects 6-8	RST3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
	RST4. 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.