

Alignment of Science Olympiad Club Lesson Plans to Elementary to Common Core Language Arts, Mathematics and Next Generation Science Standards

A is for Anatomy

Next Generation Science Standards

- Life Science From Molecules to Organisms: Structures and Processes
 - MS-LS1-3: Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.

Common Core Mathematics

- Mathematical Practice
 - CCSS.MATH.PRACTICE.MP5: Use appropriate tools strategically.

Common Core English Language Arts Standards

- Reading: Informational Text: Integration of Knowledge and Ideas:
 - CCSS.ELA-LITERACY.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.
 - CCSS.ELA-LITERACY.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.
- Speaking and Listening:
 - CCSS.ELA-LITERACY.SL.4.1.B Follow agreed-upon rules for discussions and carry out assigned roles.
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- Language:
 - CCSS.ELA-LITERACY.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).
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For more information about Elementary Science Olympiad
visit soinc.org and find the Club Lesson Plans at store.soinc.org

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Aerodynamics Aloft

Next Generation Science Standards

- Physical Science Motion and Stability: Forces and Interactions
 - 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.
- Engineering Design
 - 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 Mathematics

- Mathematical Practice
 - CCSS.MATH.PRACTICE.MP5: Use appropriate tools strategically.
 - CCSS.MATH.PRACTICE.MP6: Attend to precision

Common Core English Language Arts Standards

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Bottle Music

Next Generation Science Standards

- Engineering Design
 - 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 Mathematics

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Common Core English Language Arts Standards

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Calculator Contest

Next Generation Science Standards

- Science and Engineering Practice 5: Using Mathematics and Computational Thinking
 - SEP5.6-8.e Use digital tools and/or mathematical concepts and arguments to test and compare proposed solutions to an engineering design problem.

Common Core Mathematics

- Mathematical Practice
 - CCSS.MATH.PRACTICE.MP5: Use appropriate tools strategically.
 - CCSS.MATH.PRACTICE.MP6: Attend to precision
 - CCSS.MATH.PRACTICE.MP8: Look for and express regularity in repeated reasoning.

Common Core English Language Arts Standards

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Circuit Wizardry

Next Generation Science Standards

- Physical Science: Energy
 - 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-PS3-4 Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.
- Science and Engineering Practice 6: Constructing Explanations and Designing Solutions
 - SEP.6.3-5.d Apply scientific ideas to solve design problems.

Common Core Mathematics

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Cool It!

Next Generation Science Standards

- Physical Science: Energy
 - MS-PS3-3: Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.
- Engineering Design
 - 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 Mathematics

- Mathematical Practice
 - CCSS.MATH.PRACTICE.MP5: Use appropriate tools strategically.
 - CCSS.MATH.PRACTICE.MP6: Attend to precision

Common Core English Language Arts Standards

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Gunk

Next Generation Science Standards

- Physical Science: Matter and Its Interactions
 - 5-PS1-4: Conduct an investigation to determine whether the mixing of two or more substances results in new substances.
- Science and Engineering Practice 3: Planning and Carrying Out Investigations
 - SEP3.3-5.c: Make observations and/or measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution.

Common Core Mathematics

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Metric Mastery

Next Generation Science Standards

- Science and Engineering Practice 5: Using Mathematics and Computational Thinking
 - SEP5.3-5.c: Describe, measure, estimate, and/or graph quantities (e.g., area, volume, weight, time) to address scientific and engineering questions and problems.

Common Core Mathematics

- Mathematical Practice
 - CCSS.MATH.PRACTICE.MP5: Use appropriate tools strategically.
 - CCSS.MATH.PRACTICE.MP6: Attend to precision.
 - CCSS.MATH.PRACTICE.MP7: Look for and make use of structure.
- Measurement:
 - CCSS.MATH.CONTENT.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.
 - CCSS.MATH.CONTENT.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.

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Monster Match

Next Generation Science Standards

- Science and Engineering Practice 6: Constructing Explanations and Designing Solutions
 - SEP.6.3-5.c Identify the evidence that supports particular points in an explanation.

Common Core Mathematics

- CCSS.MATH.PRACTICE.MP7: Look for and make use of structure.

Common Core English Language Arts Standards

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Pentathlon

Next Generation Science Standards

- Dependent upon science content

Common Core Mathematics

- Dependent upon science content

Common Core English Language Arts Standards

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Pond Study

Next Generation Science Standards

- Life Science: Ecosystems: Interactions, Energy, and Dynamics
 - 5-LS2-1: Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.
- Science and Engineering Practice 3: Planning and Carrying Out Investigations
 - SEP3.3-5.c: Make observations and/or measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution.
- Science and Engineering Practice 6: Constructing Explanations and Designing Solutions
 - SEP6.3-5.a Construct an explanation of observed relationships (e.g., the distribution of plants in the back yard).
 - SEP6.3-5.b Use evidence (e.g., measurements, observations, patterns) to construct or support an explanation or design a solution to a problem.
 - SEP6.3-5.c Identify the evidence that supports particular points in an explanation.

Common Core Mathematics

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- Reading: Informational Text: Integration of Knowledge and Ideas:
 - CCSS.ELA-LITERACY.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.
 - CCSS.ELA-LITERACY.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.
- Speaking and Listening:
 - CCSS.ELA-LITERACY.SL.4.1.B Follow agreed-upon rules for discussions and carry out assigned roles.
 - CCSS.ELA-LITERACY.SL.4.1.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.
 - CCSS.ELA-LITERACY.SL.4.1.D Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.
 - CCSS.ELA.LITERACY.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.
 - CCSS.ELA-LITERACY.SL.5.1.B Follow agreed-upon rules for discussions and carry out assigned roles.
 - CCSS.ELA-LITERACY.SL.5.1.C Pose and respond to specific questions by making comments that contribute to the discussion and elaborate on the remarks of others.
 - CCSS.ELA-LITERACY.SL.5.1.D Review the key ideas expressed and draw conclusions in light of information and knowledge gained from the discussions.
 - CCSS.ELA.LITERACY.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.
 - CCSS.ELA-LITERACY.SL.6.1.B Follow rules for collegial discussions, set specific goals and deadlines, and define individual roles as needed.
 - CCSS.ELA-LITERACY.SL.6.1.C Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion.
 - CCSS.ELA-LITERACY.SL.6.1.D Review the key ideas expressed and demonstrate understanding of multiple perspectives through reflection and paraphrasing.
 - CCSS.ELA.LITERACY.SL.6.4 Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.
- Language:
 - CCSS.ELA-LITERACY.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).
 - CCSS.ELA-LITERACY.L.5.6 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).
 - CCSS.ELA-LITERACY.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.

Rock Hound

Next Generation Science Standards

Science and Engineering Practice 3: Planning and Carrying Out Investigations

- SEP3.3-5.c: Make observations and/or measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution.

Common Core Mathematics

- Mathematical Practice
 - CCSS.MATH.PRACTICE.MP6: Attend to precision.

Common Core English Language Arts Standards

- Speaking and Listening:
 - CCSS.ELA-LITERACY.SL.4.1.B Follow agreed-upon rules for discussions and carry out assigned roles.
 - CCSS.ELA-LITERACY.SL.4.1.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.
 - CCSS.ELA-LITERACY.SL.4.1.D Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.
 - CCSS.ELA-LITERACY.SL.5.1.B Follow agreed-upon rules for discussions and carry out assigned roles.
 - CCSS.ELA-LITERACY.SL.5.1.C Pose and respond to specific questions by making comments that contribute to the discussion and elaborate on the remarks of others.
 - CCSS.ELA-LITERACY.SL.5.1.D Review the key ideas expressed and draw conclusions in light of information and knowledge gained from the discussions.
 - CCSS.ELA-LITERACY.SL.6.1.B Follow rules for collegial discussions, set specific goals and deadlines, and define individual roles as needed.
 - CCSS.ELA-LITERACY.SL.6.1.C Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion.
 - CCSS.ELA-LITERACY.SL.6.1.D Review the key ideas expressed and demonstrate understanding of multiple perspectives through reflection and paraphrasing.
- Language:
 - CCSS.ELA-LITERACY.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).
 - CCSS.ELA-LITERACY.L.5.6 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).
 - CCSS.ELA-LITERACY.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.

Science Bowl

Next Generation Science Standards

- Dependent upon science content

Common Core Mathematics

- Dependent upon science content

Common Core English Language Arts Standards

- Speaking and Listening:
 - CCSS.ELA-LITERACY.SL.4.1.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.
 - CCSS.ELA-LITERACY.SL.5.1.C Pose and respond to specific questions by making comments that contribute to the discussion and elaborate on the remarks of others.
 - CCSS.ELA-LITERACY.SL.6.1.C Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, of issue under discussion.
- Language:
 - CCSS.ELA-LITERACY.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).
 - CCSS.ELA-LITERACY.L.5.6 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).
 - CCSS.ELA-LITERACY.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.

Straw Tower

Next Generation Science Standards

- Engineering Design
 - 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 Mathematics

- Mathematical Practice
 - CCSS.MATH.PRACTICE.MP5: Use appropriate tools strategically.
 - CCSS.MATH.PRACTICE.MP6: Attend to precision

Common Core English Language Arts Standards

- Reading: Informational Text: Integration of Knowledge and Ideas:
 - CCSS.ELA-LITERACY.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.
 - CCSS.ELA-LITERACY.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.
 - CCSS.ELA-LITERACY.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.
- Speaking and Listening:
 - CCSS.ELA-LITERACY.SL.4.1.B Follow agreed-upon rules for discussions and carry out assigned roles.
 - CCSS.ELA-LITERACY.SL.4.1.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.
 - CCSS.ELA-LITERACY.SL.4.1.D Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.
 - CCSS.ELA-LITERACY.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.
 - CCSS.ELA-LITERACY.SL.5.1.B Follow agreed-upon rules for discussions and carry out assigned roles.
 - CCSS.ELA-LITERACY.SL.5.1.C Pose and respond to specific questions by making comments that contribute to the discussion and elaborate on the remarks of others.
 - CCSS.ELA-LITERACY.SL.5.1.D Review the key ideas expressed and draw conclusions in light of information and knowledge gained from the discussions.
 - CCSS.ELA-LITERACY.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.
 - CCSS.ELA-LITERACY.SL.6.1.B Follow rules for collegial discussions, set specific goals and deadlines, and define individual roles as needed.
 - CCSS.ELA-LITERACY.SL.6.1.C Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion.
 - CCSS.ELA-LITERACY.SL.6.1.D Review the key ideas expressed and demonstrate understanding of multiple perspectives through reflection and paraphrasing.
 - CCSS.ELA-LITERACY.SL.6.4 Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.
- Language:
 - CCSS.ELA-LITERACY.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).
 - CCSS.ELA-LITERACY.L.5.6 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).
 - CCSS.ELA-LITERACY.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.

Write It Do It

Next Generation Science Standards

- Dependent upon science content

Common Core Mathematics

- Mathematical Practice
 - CCSS.MATH.PRACTICE.MP6: Attend to precision

Common Core English Language Arts Standards

- Reading: Informational Text: Range of Reading and Level of Text Complexity:
 - CCSS.ELA-LITERACY.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.
 - CCSS.ELA-LITERACY.RI.5.10 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 independently and proficiently.
 - CCSS.ELA-LITERACY.RI.6.10 By the end of 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.
- Speaking and Listening:
 - CCSS.ELA-LITERACY.SL.4.1.B Follow agreed-upon rules for discussions and carry out assigned roles.
 - CCSS.ELA-LITERACY.SL.4.1.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.
 - CCSS.ELA-LITERACY.SL.4.1.D Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.
 - CCSS.ELA.LITERACY.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.
 - CCSS.ELA-LITERACY.SL.5.1.B Follow agreed-upon rules for discussions and carry out assigned roles.
 - CCSS.ELA-LITERACY.SL.5.1.C Pose and respond to specific questions by making comments that contribute to the discussion and elaborate on the remarks of others.
 - CCSS.ELA-LITERACY.SL.5.1.D Review the key ideas expressed and draw conclusions in light of information and knowledge gained from the discussions.
 - CCSS.ELA.LITERACY.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.
 - CCSS.ELA-LITERACY.SL.6.1.B Follow rules for collegial discussions, set specific goals and deadlines, and define individual roles as needed.
 - CCSS.ELA-LITERACY.SL.6.1.C Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, of issue under discussion.
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