



The United States Academic Pentathlon and Curriculum and Content Standards



Overview

The United States Academic Pentathlon's curriculum is an interdisciplinary curriculum in which a selected theme is integrated across five different subject areas: fine arts, literature, mathematics, science, and social science. The theme for the 2015–2016 U.S. Academic Pentathlon curriculum is *India*. While in most subjects the majority of the topics relate to the overall curricular theme, some topics that cover fundamentals may also be included to encourage a thorough understanding of the subject area as a whole. The U.S. Academic Pentathlon mathematics curriculum is unrelated to the theme and focuses on standard middle school mathematics topics.

Fine Arts

U.S. Academic Pentathlon and the National Standards for Music

U.S. Academic Pentathlon's curriculum allows students and teachers to address four of the nine content standards for music. The five standards that are not met all involve the performance, composition, or notation of music. U.S. Academic Pentathlon's music curriculum is centered on musicology (as opposed to composition or performance) and is designed to be accessible to all students, including those who cannot read musical notation and those who have no formal training in musical performance.

U.S. Academic Pentathlon's 2015–2016 music curriculum addresses aspects of the following national content standards for music:

- STANDARD 6: Listening to, Analyzing, and Describing Music
- STANDARD 7: Evaluating Music and Music Performances
- STANDARD 8: Understanding Relationships between Music, the Other Arts, and Disciplines outside the Arts
- STANDARD 9: Understanding Music in Relation to History and Culture

U.S. Academic Pentathlon's and the National Standards for Visual Arts

U.S. Academic Pentathlon's curriculum allows students and teachers to address five of the six content standards for visual arts. The only standard not directly met by U.S. Academic Pentathlon's curriculum (Standard 1: Understanding and Applying Media Techniques and

Processes), can easily be incorporated as a part of U.S. Academic Pentathlon’s curriculum by having students create their own works of art in addition to studying the works of others.

U.S. Academic Pentathlon’s 2015–2016 art curriculum addresses aspects of the following national content standards for visual arts:

- STANDARD 2: Using Knowledge of Structures and Functions
- STANDARD 3: Choosing and Evaluating a Range of Subject Matter, Symbols, and Ideas
- STANDARD 4: Understanding the Visual Arts in Relation to History and Cultures
- STANDARD 5: Reflecting Upon and Assessing the Characteristics and Merits of their Work and the Work of Others
- STANDARD 6: Making Connections between Visual Arts and Other Disciplines

Literature

The Jungle Books and Selected Literature of India

Overview

The literary choices for the U.S. Academic Pentathlon 2015–2016 curriculum require students to work through a number of Common Core State Standards (CCSS) standards for both informational and fictional texts. In addition, several of the shorter selections fall under the literacy standards for social studies. Specific relevant standards are listed by sections which correlate to this year’s literature resource guide. All of these standards additionally fall under the first three National Council of Teachers of English (NCTE) standards:

1. Students read a wide range of print and non-print texts to build an understanding of texts, of themselves, and of the cultures of the United States and the world; to acquire new information; to respond to the needs and demands of society and the workplace; and for personal fulfillment. Among these texts are fiction and nonfiction, classic and contemporary works.
2. Students read a wide range of literature from many periods in many genres to build an understanding of the many dimensions (e.g., philosophical, ethical, aesthetic) of human experience.
3. Students apply a wide range of strategies to comprehend, interpret, evaluate, and appreciate texts. They draw on their prior experience, their interactions with other readers and writers, their knowledge of word meaning and of other texts, their word identification strategies, and their understanding of textual features (e.g., sound-letter correspondence, sentence structure, context, graphics).

Section 1 Critical Reading

This section addresses and assesses numerous skills under CCSS. (Please note, even though these standards are the sixth grade standards, the same apply at grades 7 and 8.)

Craft and Structure:

- CCSS.ELA-LITERACY.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.
- CCSS.ELA-LITERACY.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.
- CCSS.ELA-LITERACY.RL.6.6 Explain how an author develops the point of view of the narrator or speaker in a text.

Section 2 The Jungle Books by Rudyard Kipling, 1894–1895

The entire collection of short stories by Kipling addresses the following standard:

Range of Reading and Level of Text Complexity:

- CCSS.ELA-LITERACY.RL.8.10 By the end of the year, read and comprehend literature, including stories, dramas, and poems, at the high end of grades 6–8 text complexity band independently and proficiently.

Additionally, the following standards are also addressed through the analysis tasks throughout the work:

Key Ideas and Details:

- CCSS.ELA-LITERACY.RL.6.1 Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
- CCSS.ELA-LITERACY.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.
- CCSS.ELA-LITERACY.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.

Section 3 Shorter Selections

All of nonfiction pieces in this section address the following standards for informational texts:

Range of Reading and Level of Text Complexity:

- CCSS.ELA-LITERACY.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.

Key Ideas and Details:

- CCSS.ELA-LITERACY.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.

Craft and Structure:

- CCSS.ELA-LITERACY.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.
- CCSS.ELA-LITERACY.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.

The nonfiction pieces also address the following literacy standards for social studies:

Key Ideas and Details:

- CCSS.ELA-LITERACY.RH.6-8.1 Cite specific textual evidence to support analysis of primary and secondary sources.
- CCSS.ELA-LITERACY.RH.6-8.2 Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.

Craft and Structure:

- CCSS.ELA-LITERACY.RH.6-8.4 Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history/social studies.
- CCSS.ELA-LITERACY.RH.6-8.5 Describe how a text presents information (e.g., sequentially, comparatively, causally).

Integration of Knowledge and Ideas:

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

In addition the poems in the section address the following CCSS standards:

Craft and Structure:

- CCSS.ELA-LITERACY.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.
- CCSS.ELA-LITERACY.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.

Mathematics

U.S. Academic Pentathlon's 2015–2016 mathematics curriculum addresses the following aspects of the Common Core Standards:

Grade 6: Common Core Standards

- CCSS.MATH.CONTENT.6.RP.A.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.
- CCSS.MATH.CONTENT.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.
- CCSS.MATH.CONTENT.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.
- CCSS.MATH.CONTENT.6.NS.C.6.A Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., $-(-3) = 3$, and that 0 is its own opposite.
- CCSS.MATH.CONTENT.6.NS.C.6.B Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.
- CCSS.MATH.CONTENT.6.NS.C.7.A Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.
- CCSS.MATH.CONTENT.6.EE.A.1 Write and evaluate numerical expressions involving whole-number exponents.

- CCSS.MATH.CONTENT.6.EE.A.2 Write, read, and evaluate expressions in which letters stand for numbers.
- CCSS.MATH.CONTENT.6.EE.A.2.A Write expressions that record operations with numbers and with letters standing for numbers.
- CCSS.MATH.CONTENT.6.EE.A.2.B Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity.
- CCSS.MATH.CONTENT.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).
- CCSS.MATH.CONTENT.6.EE.A.3 Apply the properties of operations to generate equivalent expressions.
- CCSS.MATH.CONTENT.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.
- CCSS.MATH.CONTENT.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.
- CCSS.MATH.CONTENT.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.
- CCSS.MATH.CONTENT.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.
- CCSS.MATH.CONTENT.6.SP.B.4 Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
- CCSS.MATH.CONTENT.6.SP.B.5.C Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.

Grade 7: Common Core Standards

- CCSS.MATH.CONTENT.7.RP.A.2 Recognize and represent proportional relationships between quantities.
- CCSS.MATH.CONTENT.7.RP.A.2.C Represent proportional relationships by equations.

- CCSS.MATH.CONTENT.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.
- CCSS.MATH.CONTENT.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.
- CCSS.MATH.CONTENT.7.EE.B.4.A Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p , q , and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.
- CCSS.MATH.CONTENT.7.EE.B.4.B Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p , q , and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem.
- CCSS.MATH.CONTENT.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.
- CCSS.MATH.CONTENT.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.
- CCSS.MATH.CONTENT.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.
- CCSS.MATH.CONTENT.7.SP.C.8 Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.

Grade 8: Common Core Standards

- CCSS.MATH.CONTENT.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.
- CCSS.MATH.CONTENT.8.EE.A.1 Know and apply the properties of integer exponents to generate equivalent numerical expressions.
- CCSS.MATH.CONTENT.8.EE.A.2 Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.

- CCSS.MATH.CONTENT.8.EE.C.7 Solve linear equations in one variable.
- CCSS.MATH.CONTENT.8.EE.C.8 Analyze and solve pairs of simultaneous linear equations.
- CCSS.MATH.CONTENT.8.EE.C.8.A Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.
- CCSS.MATH.CONTENT.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.
- CCSS.MATH.CONTENT.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.
- CCSS.MATH.CONTENT.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.

Science

Standards Background

The *Next Generation Science Standards* were developed by the National Research Council, the National Science Teachers Association, the American Association for the Advancement of Science, and Achieve (an independent, bipartisan, non-profit education reform organization) and were released for adoption in the spring of 2013. Each of the Next Generation Science Standards is comprised of three dimensions: Practices, Crosscutting Concepts, and Disciplinary Core Ideas.

The focus of this document will be on the dimension of Disciplinary Core Ideas. Rather than cover a broad spectrum of topics and scientific fields of study, U.S. Academic Pentathlon's science curriculum explores a specific topic in greater depth than is typical for a middle school-level curriculum. As a result, the number of the *Next Generation Science Standards* that are addressed each year by U.S. Academic Pentathlon's science curriculum may be limited; however, when viewed over the course of several years, U.S. Academic Pentathlon's science curricula have met many of the standards.

U.S. Academic Pentathlon and the Next Generation Science Standards

The Next Generation Science Standards delineate four main domains for Disciplinary Core Ideas: 1) earth and space science, 2) life science, 3) physical sciences, and 4) engineering, technology, and applications of science.

U.S. Academic Pentathlon’s 2015–2016 science curriculum addresses aspects of the following seven earth and space science Disciplinary Core Ideas for Grades 6–8:

- *ESS2.A: Earth Materials and Systems*
- *ESS2.C: The Roles of Water in Earth’s Processes*
- *ESS2.D: Weather and Climate*
- *ESS2.E: Biogeology*
- *ESS3.A: Natural Resources*
- *ESS3.C: Human Impacts on Earth Systems*
- *ESS3.D: Global Climate Change*

U.S. Academic Pentathlon’s 2015–2016 science curriculum addresses aspects of the following four physical science Disciplinary Core Ideas for Grades 6–8:

- *PS2.C: Stability and Instability in Physical Systems*
- *PS3.A: Definitions of Energy*
- *PS3.B: Conservation of Energy and Energy Transfer*
- *PS3.D: Energy in Chemical Processes and Everyday Life*

U.S. Academic Pentathlon’s 2015–2016 science curriculum addresses aspects of the following nine life science Disciplinary Core Ideas for Grades 6–8:

- LS1.B Growth and Development of Organisms
- LS1.C: Organization for Matter and Energy Flow in Organisms
- LS2.A: Interdependent Relationships in Ecosystems
- LS2.B: Cycles of Matter and Energy Transfer in Ecosystems
- LS2.C: Ecosystem Dynamics, Functioning, and Resilience
- LS2.D: Social Interactions and Group Behavior
- LS4.B: Natural Selection
- LS4.C: Adaptation
- LS4.D: Biodiversity and Humans

Social Science

Standards Background

The Curriculum Standards for Social Studies were developed by a Task Force of the National Council for the Social Studies (NCSS) and approved by the NCSS Board of Directors in April 1994 and revised in 2010. The NCSS standards focus on ten overarching themes, and the content standards include aspects of several different fields of study, including civics, geography, U.S. history, and world history.

U.S. Academic Pentathlon and the Curriculum Standards for Social Studies

Rather than cover a broad spectrum of topics, time periods, and cultures, U.S. Academic Pentathlon's social science curriculum explores a specific topic in greater depth than is typical for a middle school-level curriculum. As a result, the number of the NCSS standards that are addressed each year by U.S. Academic Pentathlon's social science curriculum may be limited; however, when viewed over the course of several years, U.S. Academic Pentathlon's social science curricula have met many of the NCSS standards.

U.S. Academic Pentathlon's 2015–2016 social science curriculum in concert with other subject areas addresses aspects of seven of the ten NCSS curricular themes:

- *Culture*
- *Time, Continuity, and Change*
- *People, Places, and Environments*
- *Individuals, Groups, and Institutions*
- *Power, Authority, and Governance*
- *Production, Distribution, and Consumption*
- *Global Connections*

U.S. Academic Pentathlon's 2015–2016 social science curriculum in concert with other subject areas addresses aspects of the standards within the following eras of focus delineated by the NCSS standards for Geography and World History for Grades 5–12:

- *Geography: NSS-G.K-12.2 - Places and Regions*
- *Geography: NSS-G.K-12.4 - Environment and Society*
- *World History: NSS-WH.5-12.6 - Era 6: The Emergence of the First Global Age, 1450–1770*
- *World History: NSS-WH.5-12.7 - Era 7: An Age of Revolutions, 1750–1914*
- *World History: NSS-WH.5-12.8 - Era 8: A Half-Century of Crisis and Achievement, 1900–1945*
- *World History: NSS-WH.5-12.9 - Era 9: The Twentieth Century since 1945: Promises and Paradoxes*

Source List

Common Core State Standards Initiative. 10 November 2015 <<http://www.corestandards.org/>>.

“National Curriculum Standards for Social Studies.” National Council for the Social Studies. 10 November 2015 <<http://www.socialstudies.org/standards/>>.

“Next Generation Science Standards: For States, By States.” 10 November 2015 <<http://www.nextgenscience.org/>>.

“Next Generation Science Standards.” National Science Teachers Association. 10 November 2015 <<http://www.nsta.org/about/standardsupdate/>>.

“Standards for the English Language Arts.” The National Council of Teachers of English. 10 November 2015 <<http://www.ncte.org/standards/ncte-ira/>>.

“Standards for the Performing and Visual Arts for Grades 5-8.” The Kennedy Center: ArtsEdge. 10 November 2015 <<http://artsedge.kennedy-center.org/educators/standards/full-text/5-8-standards/>>.