

# **United States Academic Pentathlon®** **2023-24 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 2023–2024 U.S. Academic Pentathlon curriculum is *Technology and Humanity*. 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*

USAP’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 2023–2024 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 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 2023-24 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

United States Academic Pentathlon 2023-2024 Literature Resource Guide correlation with Common Core State Standards (CCSS) and The National Council of Teachers of English (NCTE) standards

Literature: An Introduction to Technology and the Interaction with Humanity

The literary choices for the 2023-2024 United States Academic Pentathlon require students to work through several CCSS standards for both informational and fictional texts. Specific relevant standards are listed by sections which correlate to this year's literature resource guide. All these standards additionally fall under the first **three 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/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 I**

### **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 II: *Cinder* and the theme of “Technology and Humanity”**

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.

## **Section III: Short Selections: Fiction**

### **Short Stories**

The short stories 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.

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.

### **Poetry**

All the poems in this 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.

#### **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.

### **Section IV**

Shorter Selections: Non-Fiction

#### **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.

### **Integration of Knowledge and Ideas**

- [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.

- [CCSS.ELA-LITERACY.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.

## **Science**

### **Next Generation Science Standards<sup>1</sup>: Middle School Physical Science – Disciplinary Core Ideas**

#### **MS-PS1: Matter and Its Interactions**

- [PS1.A: Structure and Properties of Matter](#)

- Substances are made from different types of atoms, which combine with one another in various ways. Atoms form molecules that range in size from two to thousands of atoms.

#### **MS-LS1: From Molecules to Organisms: Structures and Processes**

- [LS1.A: Structure and Function](#)

- All living things are made up of cells, which is the smallest unit that can be said to be alive. An organism may consist of one single cell (unicellular) or many different numbers and types of cells (multicellular).
- Within cells, special structures are responsible for particular functions, and the cell membrane forms the boundary that controls what enters and leaves the cell.
- In multicellular organisms, the body is a system of multiple interacting subsystems. These subsystems are groups of cells that work together to form tissues and organs that are specialized for particular body functions.

- [LS1.D: Information Processing](#)

- Each sense receptor responds to different inputs (electromagnetic, mechanical, chemical), transmitting them as signals that travel along nerve

cells to the brain. The signals are then processed in the brain, resulting in immediate behaviors or memories.

## **NGSS Science and Engineering Practices**

### **Practice 2: Developing and Using Models**

- Develop a model to predict and/or describe phenomena.
- Develop a model to describe unobservable mechanisms.

### **Practice 4: Analyzing and Interpreting Data**

- Analyze and interpret data to determine similarities and differences in findings.
- Analyze and interpret data to provide evidence for phenomena.
- Construct and interpret graphical displays of data to identify linear and nonlinear relationships.

### **Practice 5: Using Mathematics and Computational Thinking**

- Use mathematical representations to describe and/or support scientific conclusions and design solutions.

## **NGSS Understandings About the Nature of Science**

### **Scientific Investigations Use a Variety of Methods**

- Science investigations use a variety of methods and tools to make measurements and observations.
- Science depends on evaluating proposed explanations.

### **Scientific Knowledge is Based on Empirical Evidence**

- Science knowledge is based upon logical and conceptual connections between evidence and explanations.

### **Scientific Knowledge is Open to Revision in Light of New Evidence**

- Scientific explanations are subject to revision and improvement in light of new evidence.
- The certainty and durability of science findings varies.
- Science findings are frequently revised and/or reinterpreted based on new evidence

### **Science Models, Laws, Mechanisms, and Theories Explain Natural Phenomena**

- Theories are explanations for observable phenomena.
- Science theories are based on a body of evidence developed over time.
- Laws are regularities or mathematical descriptions of natural phenomena.
- A hypothesis is used by scientists as an idea that may contribute important new knowledge for the evaluation of a scientific theory.

### **Science is a Way of Knowing**

- Science knowledge is cumulative and many people, from many generations and nations, have contributed to science knowledge.

### **Scientific Knowledge Assumes an Order and Consistency in Natural Systems**

- Science assumes that objects and events in natural systems occur in consistent patterns that are understandable through measurement and observation.
- Science carefully considers and evaluates anomalies in data and evidence.

### **Science is a Human Endeavor**

- Men and women from different social, cultural, and ethnic backgrounds work as scientists and engineers.
- Scientists and engineers are guided by habits of mind such as intellectual honesty, tolerance of ambiguity, skepticism and openness to new ideas.
- Advances in technology influence the progress of science and science has influenced advances in technology.

### **Science Addresses Questions About the Natural and Material World**

- Science knowledge can describe consequences of actions but is not responsible for society's decisions.

## **Social Science**

### **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.
- CCSS.ELA-LITERACY.RH.6-8.3  
Identify key steps in a text's description of a process related to history/social studies...

### **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).

- CCSS.ELA-LITERACY.RH.6-8.6  
Identify aspects of a text that reveal an author's point of view or purpose (e.g., loaded language, inclusion or avoidance of particular facts).

### **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.
- CCSS.ELA-LITERACY.RH.6-8.8  
Distinguish among fact, opinion, and reasoned judgment in a text.
- CCSS.ELA-LITERACY.RH.6-8.9  
Analyze the relationship between a primary and secondary source on the same topic.

### **Range of Reading and Level of Text Complexity:**

- CCSS.ELA-LITERACY.RH.6-8.10  
By the end of grade 8, read and comprehend history/social studies texts in the grades 6-8 text complexity band independently and proficiently.

## **Mathematics**

### *U.S. Academic Pentathlon and the Common Core Standards for Math*

#### **GRADE 6:**

##### **Number System**

- CCSS.MATH.CONTENT.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.
- CCSS.MATH.CONTENT.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.
- 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.C  
Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.
- CCSS.MATH.CONTENT.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.
- CCSS.MATH.CONTENT.6.NS.C.7.C  
Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. *For example, for an account balance of -30 dollars, write  $|-30| = 30$  to describe the size of the debt in dollars.*
- CCSS.MATH.CONTENT.6.NS.A.1  
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  $(2/3) \div (3/4)$  and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that  $(2/3) \div (3/4) = 8/9$  because  $3/4$  of  $8/9$  is  $2/3$ . (In general,  $(a/b) \div (c/d) = ad/bc$ .) 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?*

### **Ratios and Proportions**

- CCSS.MATH.CONTENT.6.RP.A.2  
Understand the concept of a unit rate  $a/b$  associated with a ratio  $a:b$  with  $b \neq 0$ , 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."*
- CCSS.MATH.CONTENT.6.RP.A.3.B  
Solve unit rate problems including those involving unit pricing and constant speed. *For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?*
- CCSS.MATH.CONTENT.6.RP.A.3.C  
Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means  $30/100$  times the quantity); solve problems involving finding the whole, given a part and the percent.
- CCSS.MATH.CONTENT.6.RP.A.3.D  
Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.
- 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. *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.”*

- 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.

## Geometry

- CCSS.MATH.CONTENT.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.

- CCSS.MATH.CONTENT.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.

- CCSS.MATH.CONTENT.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  $V = lwh$  and  $V = bh$  to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.

## GRADE 7:

### Number System

- CCSS.MATH.CONTENT.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.

- CCSS.MATH.CONTENT.7.NS.A.3

Solve real-world and mathematical problems involving the four operations with rational numbers.

- CCSS.MATH.CONTENT.7.NS.A.1.A

Describe situations in which opposite quantities combine to make 0. *For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.*

- CCSS.MATH.CONTENT.7.NS.A.1.B

Understand  $p + q$  as the number located a distance  $|q|$  from  $p$ , in the positive or negative direction depending on whether  $q$  is positive or negative. Show that a number and its

opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.

- CCSS.MATH.CONTENT.7.NS.A.1.C  
Understand subtraction of rational numbers as adding the additive inverse,  $p - q = p + (-q)$ . Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.
- CCSS.MATH.CONTENT.7.NS.A.1.D  
Apply properties of operations as strategies to add and subtract rational numbers.
- CCSS.MATH.CONTENT.7.NS.A.2  
Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.
- CCSS.MATH.CONTENT.7.NS.A.2.A  
Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as  $(-1)(-1) = 1$  and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.
- CCSS.MATH.CONTENT.7.NS.A.2.B  
Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If  $p$  and  $q$  are integers, then  $-(p/q) = (-p)/q = p/(-q)$ . Interpret quotients of rational numbers by describing real-world contexts.
- CCSS.MATH.CONTENT.7.NS.A.2.C  
Apply properties of operations as strategies to multiply and divide rational numbers.
- CCSS.MATH.CONTENT.7.NS.A.2.D  
Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.

### **Ratios and Proportions**

- CCSS.MATH.CONTENT.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.*
- 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. *For example, if total cost  $t$  is proportional to the number  $n$  of items purchased at a constant price  $p$ , the relationship between the total cost and the number of items can be expressed as  $t = pn$ .*
- CCSS.MATH.CONTENT.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.

### Geometry

- CCSS.MATH.CONTENT.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.

## GRADE 8:

### Number System

- 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.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.,  $\pi^2$ ). *For example, by truncating the decimal expansion of  $\sqrt{2}$ , show that  $\sqrt{2}$  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

- CCSS.MATH.CONTENT.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.

### Geometry

- CCSS.MATH.CONTENT.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.

- CCSS.MATH.CONTENT.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.

## Source List

“Common Core State Standards” 26 July 2023 <<https://learning.ccsso.org/common-core-state-standards-initiative>>

“English Language Arts Standards » History/Social Studies » Grade 6-8.” *Common Core State Standards Initiative*, <http://www.thecorestandards.org/ELA-Literacy/RH/6-8/>. Accessed 9 Jul. 2023.

“Next Generation Science Standards: For States, By States.” 1 August 2023 <http://www.nextgenscience.org/> .

“Next Generation Science Standards.” National Science Teachers Association. 1 August 2023 < <https://www.nsta.org/science-standards>>.

“Standards for the English Language Arts.” The National Council of Teachers of English. 1 August 2023 <https://ncte.org/resources/standards/ncte-ira-standards-for-the-english-language-arts/>

“Standards for the Performing and Visual Arts for Grades 5-8.” The Kennedy Center: ArtsEdge. 26 July 2023 < <https://www.kennedy-center.org/education/resources-for-educators/classroom-resources> >