

## 2022-23 Academic Pentathlon Fine Arts Resource Guide Outline

Section I. Basic Elements in Music and Art.....	18%
A. Introduction to Music	
B. The Physics of Musical Sound	
C. Pitch, Rhythm, and Harmony	
D. Form in Music	
E. Music Summary	
F. Introduction to Art History	
G. Elements of Art	
H. Processes and Techniques	
I. Art Summary	
Section II. Music of the American Revolution and the New World.....	26%
A. Singing the News	
B. Listening Companion	
C. Listening Companion	
D. Listening Companion	
E. Listening Companion	
Section III. Colonial Portraiture.....	16%
A. History of Early American Portraiture	
B. Selected Works	
Section IV. Early History Painting.....	15%
A. The Academy and the Development of History Painting	
B. Selected Works	
Section V. Neoclassical Art and Architecture.....	12%
A. The Rise of Neoclassicism in the United States	
B. Selected Works	
Section VI. Nature and Nation.....	13%
A. Engaging with Nature in Early America	
B. Selected Works	

# 2022-23 Academic Pentathlon Literature Resource Guide Outline

Section I. Critical Reading.....	8%
Section II. <i>Chains</i> and the theme of the “American Revolution” .....	51%
A. Overview of Laurie Halse Anderson’s life and work	
B. Historical and Cultural Contexts for the Novel	
C. Characters	
D. Chapter Summaries and Analyses	
E. Literary Elements and Rhetorical Devices	
Section III. Shorter Works - Fiction.....	25%
Section IV. Shorter Works - Nonfiction .....	16%

## 2022-23 Academic Pentathlon Mathematics Resource Guide Outline

Section I. Algebra.....70%

- A. Basic Properties of Real Numbers
- B. Exponents
- C. Algebraic Expressions and Formulas
- D. Polynomials
- E. Linear Equations and Inequalities
- F. Graphing
- G. Quadratic Equations
- H. Functions

Section II. Introduction to Trigonometry.....30%

- A. Angles and Their Measures
- B. Right Triangles

## 2022-23 Academic Pentathlon Science Resource Guide Outline

Section I. The Structure of Matter.....35%

- A. Introduction
- B. The “Scientific Revolution”
- C. Atomic Theory and Atomic Structure
- D. John Dalton’s Law of Partial Pressures and Atomic Theory
- E. Chemical Bonding and Intermolecular Forces
- F. Henry Cavendish and the Discovery of Hydrogen
- G. Molecular Models
- H. Nuclear Chemistry

Section II. States of Matter.....30%

- A. Introduction
- B. Gasses
- C. Jacques Charles and Charles’s Law
- D. Amedeo Avogadro and Avogadro’s Law
- E. Carl Wilhelm Scheele, Joseph Priestley, Antoine Lavoisier, and the Discovery of Oxygen
- F. Liquids
- G. Solids
- H. Phase Diagrams of One-Component Systems
- I. Joseph Black and the Discovery of Carbon Dioxide
- J. Solutions

Section III.

Reactions.....35%

- A. Introduction
- B. Types of Reactions
- C. Antoine Lavoisier, the Conservation of Mass, and the Birth of Modern Chemistry
- D. Acid-Base Reactions
- E. Precipitation Reactions
- F. Oxidation-Reduction Reactions
- G. Electrochemistry
- H. Luigi Brugnatelli and the Development of Electroplating
- I. Stoichiometry
- J. Joseph-Louis Proust and the Law of Definite Proportions
- K. Equilibrium
- L. Kinetics
- M. Thermodynamics
- N. Joseph Black and Latent Heat

## 2022-23 Academic Pentathlon Social Science Resource Guide Outline

Section I: Revolutionary Origins 1763-74.....19%

- A. Native and European Societies in North America
- B. The Seven Years' War/French and Indian War and its Aftermath
- C. Massachusetts and the Origins of the Revolution

Section II: The Revolutionary War 1775-83.....30%

- A. New England: The Beginnings of War
- B. The Mid-Atlantic: Stalemate
- C. The South: Civil War
- D. The Revolutionary Homefront

Section III: Creating a New Nation: The Political Revolution, 1776-1800.....32%

- A. The Second Continental Congress
- B. The Congress of the Confederation
- C. The Federal Constitution
- D. The Washington Administrations, 1789-96
- E. The Adams Administration, 1797-1801
- F. The Election of 1800

Section IV: Creating a New World – The Social Revolution.....19%

- A. The Age of Revolution
- B. Revolutionary Legacies: Women
- C. Revolutionary Legacies: Black Americans
- D. Revolutionary Limitations: Native Americans
- E. Revolutionary Achievement: Yeoman Farmers and Artisans