

2023-24 Academic Pentathlon Fine Arts Resource Guide Outline

Section I. Introduction to Music and Art History.....	16%
A. Introduction to Music	
B. Pitch, Rhythm, and Harmony	
C. Form in Music	
D. Music Summary	
E. Introduction to Art History	
F. Elements of Art	
G. Processes and Techniques	
H. Art Summary	
Section II. Premodern Advances in Technology.....	8%
A. Concrete in Ancient Rome	
B. The Concrete Revolution	
C. Selected Works	
Section III. Building from the Familiar.....	32%
A. The Vaudeville Foundation	
B. Listening Companions	
C. Romantic Gestures in a Modern Genre	
D. Listening Companions	
E. Exploring New Timbres	
F. Music by a Master	
G. Listening Companion	
H. Bleeps and Bloops	
I. Listening Companions	
Section IV. Art, Technology, and the Advent of Global Trade.....	8%
A. The Compass and the Full-Rigged Ship Forge a New World	
B. Gutenberg's Printing Press	
C. Selected Works	
D. The Invention of Cristallo Glass	
E. Selected Works	
Section V. Music Plays a Role.....	18%
A. Listening to Aliens	
B. Listening Companion	

- C. Communicating with Aliens
- D. Listening Companion
- E. Music Tells Time
- F. Listening Companion
- G. Music Humanizes
- H. Listening Companion
- I. Awakened by Music
- J. Listening Companion

Section VI. Scientific Innovations in Paint, the Advent of Photography, and the Machine as Art and Artist.....18%

- A. Selected Works
- B. The Advent of Photography
- C. Selected Works
- D. The Machine as Art and Artist
- E. Selected Works

2023-24 Academic Pentathlon Literature Resource Guide Outline

Section I. Critical Reading.....	8%
Section II. <i>Cinder and the Theme of "Technology and Humanity"</i>	36%
A. Overview of Marissa Meyer'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.....	27%
Section IV. Shorter Works - Nonfiction	29%

2023-24 Academic Pentathlon Mathematics Resource Guide Outline

Section I. General Mathematics.....25%

- A. Interest
- B. Basic Counting
- C. Probability

Section II. Geometry.....75%

- A. Triangles
- B. Coordinate Geometry
- C. Polygons
- D. Quadrilaterals
- E. Three Dimensional Figures
- F. Circles

2023-24 Academic Pentathlon Science Resource Guide Outline

Section I. Cells and the Anatomy of the Brain.....33%

- A. Neurons
- B. GLIA
- C. The Anatomy of the Central Nervous System
- D. The Anatomy of the Peripheral Nervous System
- E. Neural Communication

Section II. The Sensory, Motor, and Memory Systems.....45%

- A. The Visual System
- B. The Auditory System
- C. The Chemical Senses
- D. The Somatosensory System
- E. The Motor System
- F. Memory Systems

Section III. Technology and Neuroscience.....22%

- A. Methods of Perturbing the Brain
- B. Methods of Recording from the Brain
- C. Computational Neuroscience
- D. Computational Psychiatry

2023-24 Academic Pentathlon Social Science Resource Guide Outline

Section I: Early Information Processing.....16%

- A. Early Information Processing in Great Britain
- B. Early Information Processing in the United States
- C. Early Office Automation Devices
- D. Early Information Processing in Germany and the Work of Konrad Zuse

Section II: General-Purpose Electronic Computers.....30%

- A. The ENIAC
- B. Progress in England
- C. The Completion of the EDVAC
- D. The Eckert-Mauchly Computer Corporation (EMCC)
- E. The Growth of IBM
- F. Other Players in the Midtwentieth-Century Computer Industry
- G. Advances in Hardware
- H. Software
- I. The ENIAC Patent Case

Section III: Toward “Personal Computing”28%

- A. Project Whirlwind
- B. Timesharing
- C. DEC and the Rise of Microcomputers
- D. Networking
- E. PARC
- F. XEROX
- G. The Microprocessor
- H. Personal Computers
- I. Video Games
- J. The IBM PC
- K. The Apple Macintosh
- L. PC Clones
- M. The Graphical User Interface goes Mainstream

Section IV: The Internet, Social Media, and Mobile Computing26%

- A. The GNU Project and the Open Source Movement
- B. Hypertext
- C. Browser Wars
- D. Search Engines
- E. The Dot-Com Bubble
- F. JAVA
- G. NeXT
- H. The iMAC
- I. Microsoft's Gradual Decline
- J. Mobile Computing
- K. Smartphones
- L. Web 2.0
- M. Tables
- N. Moore's Law and Multi-Core Processors
- O. Cloud Computing
- P. COVID-19
- Q. Blockchain
- R. Artificial Intelligence
- S. Quantum Computing