United States Academic Pentathlon®
2025-26 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 2025–2026 U.S. Academic Pentathlon curriculum is *The Roaring Twenties.* 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 2025–2026 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 2025-26 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 2025 – 2026 Literature Resource Guide correlation with Common Core State Standards (CCSS) and The National Council of Teachers of English (NCTE) standards

Literature of the Jazz Age

The literature choices for the 2025 – 2026 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 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 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
A Brief Historical Overview of the Jazz Age
The historical context addresses the following CCSS standards:

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.

Section III
Born to Fly: The First Women's Air Race Across America **by Steve Sheinken**
The main literary work addresses the following CCSS standards:

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.

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.

Section IV
Shorter Selections

Nonfiction The two essays and *Ted Talk* address the following CCSS standards:
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.

Short Story: "The Curious Case of Benjamin Button" by F. Scott Fitzgerald
The short story addresses 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.

The Poetry of Langston Hughes
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.

Science

Next Generation Science Standards[i]: Middle School Science – Disciplinary Core Ideas

Energy (MS-PS3)

- **Recognize that electrical phenomena involve the movement of electrons** and that electric charge is conserved (cannot be created or destroyed).
    - **PE:** MS-PS3-5 – Construct, use, and present arguments to support the claim that energy can be transferred by electric currents.

- **DCI:** PS3.A – Definitions of Energy; PS3.B – Conservation of Energy.
- **SEP:** Constructing Explanations and Designing Solutions.
- **CCC:** Energy and Matter.

Nature of Science & History Connections

- **Relate historical experiments** (Leyden jar, Franklin's kite, Coulomb's torsion balance) to the development of our modern model of electric forces and atomic structure.
  - **PE:** Connections to Nature of Science in NGSS – Scientific knowledge is based on empirical evidence.
  - **DCI:** NOS – Science is a human endeavor.
  - **SEP:** Analyzing and Interpreting Data.
  - **CCC:** Stability and Change.

MS-PS1-1 – Structure and Properties of Matter

- Substances are made from atoms containing positively charged protons, negatively charged electrons, and neutral neutrons.
- The number of protons determines the element; electrons can move between objects, creating electric charge.
- Electrons have much less mass than protons or neutrons and are responsible for most electric phenomena.

MS-PS2-3 – Electric and Magnetic Forces

- Electric charge causes attraction or repulsion between objects, depending on whether charges are opposite or the same.
- Charged objects exert forces without touching, with strength depending on the size of the charges and the distance between them.
- The force between charges follows an inverse square law: doubling the distance reduces the force to one-fourth.

MS-PS2-4 – Forces at a Distance

- Electric forces can be stronger than gravitational forces because gravitational attraction depends only on mass, while electric forces depend on charge and can attract or repel.
- At the atomic scale, electric forces dominate over gravitational forces due to their relative strength.

MS-PS3-5 – Energy Transfer by Electric Currents

- Electric currents involve the movement of electrons, transferring energy through a conductor.

- The total amount of electric charge is conserved in any process; it can be transferred but not created or destroyed.

Nature of Science Connections

- Scientific understanding of electricity developed over time through experiments by figures such as William Gilbert, Benjamin Franklin, and Charles Coulomb.
- Historical investigations laid the groundwork for modern laws of electric forces and conservation of charge.
- Science advances through the testing of ideas, the refinement of models, and the building of knowledge over generations

MS-PS4-1 – Wave Properties

- Electromagnetic waves have specific wavelengths and frequencies that determine their energy and type (radio, microwave, infrared, visible light, ultraviolet, X-ray, gamma ray).
- The speed of electromagnetic waves in a vacuum is constant — the speed of light (about 300,000 km/s).
- The relationship between wavelength, frequency, and speed can be described mathematically: speed=wavelength×frequencyspeed=wavelength×frequency.

MS-PS4-2 – Wave Behavior

- Electromagnetic waves can be reflected, refracted, absorbed, or transmitted depending on the material they encounter.
- Different wavelengths interact with matter in different ways — for example, visible light is absorbed and reflected to create color, while infrared is detected as heat.
- The type of interaction affects how we use electromagnetic waves in technology, such as fiber optics, sunglasses, or radio antennas.

MS-PS4-3 – Information Technologies

- Electromagnetic waves can carry information without a physical medium, allowing wireless communication.
- Modulating the amplitude, frequency, or phase of waves allows encoding of signals for radio, television, and data transmission.
- Digital signals (1s and 0s) sent by electromagnetic waves are less susceptible to interference and can be stored and transmitted more reliably than analog signals.

Crosscutting Concepts

- **Patterns** – The electromagnetic spectrum is organized by patterns in wavelength and frequency.
- **Cause and Effect** – Changing the properties of a wave changes how it interacts with matter.

- **Scale, Proportion, and Quantity** – The energy of electromagnetic radiation depends on its wavelength and frequency.

Science and Engineering Practices

- Develop and use models to represent the spectrum of electromagnetic waves.
- Analyze and interpret data to describe the properties and behavior of electromagnetic waves.
- Use mathematical and computational thinking to calculate wave speed, frequency, and wavelength.

— Electric and Magnetic Forces

- **Performance Expectation**: *Ask questions about data to determine the factors that affect the strength of electric and magnetic forces.*
- **Clarification**: Students may explore how changing variables—such as the number of turns in a wire, strength of magnets, or current—affects electromagnet or motor behavior

2. ***MS-PS2-5 — Electric, Magnetic, and Gravitational Fields***

- **Performance Expectation**: *Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.*
- **Clarification**: This applies to fields produced by magnets or electrically charged objects (e.g., tape, pith balls); emphasis is on qualitative evidence of field presence

3. ***MS-PS3 (Energy) — Relationships to Electric Currents***

- **Performance Expectation (via sub-core ideas)**: While there isn't a single PE explicitly naming "electric current," the PS3 bundle includes understanding **energy transfer—such as via electric currents**. Students model or investigate how energy moves in systems, including through electric currents

Breakdown by Dimension (DCI, SEP, CCC)

Standard	Disciplinary Core Idea (DCI)	Science & Engineering Practice (SEP)	Crosscutting Concept (CCC)
MS-PS2-3	PS2.B: Types of Interactions (electric & magnetic)	Asking Questions & Defining Problems	Cause and Effect
MS-PS2-5	PS2.B: Types of Interactions (fields)	Planning and Carrying Out Investigations	Cause and Effect

Standard	Disciplinary Core Idea (DCI)	Science & Engineering Practice (SEP)	Crosscutting Concept (CCC)
PS3 Energy (electric current)	PS3.A: Definitions of Energy (energy transfer via current)	Developing/Using Models; Investigations (depending on PE)	Energy (as matter and energy flow)

1. MS-PS2-3 Matter and Its Interactions (MS-PS1)

- **Identify that atoms are the building blocks of matter** and that each element is made of a unique type of atom with a specific number of protons.
    - **PE:** MS-PS1-1 – Develop models to describe the atomic composition of simple molecules and extended structures.
    - **DCI:** PS1.A – Structure and Properties of Matter.
    - **SEP:** Developing and Using Models.
    - **CCC:** Structure and Function.
- **Explain that atoms contain protons, neutrons, and electrons**, with electrons orbiting the nucleus and playing the primary role in electricity.
    - **PE:** MS-PS1-1.
    - **DCI:** PS1.A – Subatomic structure.
    - **SEP:** Constructing Explanations.
    - **CCC:** Structure and Function.

Forces and Interactions (MS-PS2)

- **Describe how electric charge causes attraction and repulsion** between objects, as discovered historically by Gilbert, Franklin, and Coulomb.
    - **PE:** MS-PS2-3 – Ask questions about data to determine factors that affect the strength of electric and magnetic forces.
    - **DCI:** PS2.B – Types of Interactions.
    - **SEP:** Asking Questions and Defining Problems.
    - **CCC:** Cause and Effect.
- **Compare the electric force and gravitational force**, recognizing both follow inverse square laws but differ greatly in strength at the atomic scale.
    - **PE:** MS-PS2-4 – Construct and present arguments using evidence to support the claim that gravitational interactions depend on mass and distance.
    - **DCI:** PS2.B – Types of Interactions.
    - **SEP:** Engaging in Argument from Evidence.
    - **CCC:** Scale, Proportion, and Quantity.
- **Use Coulomb's law qualitatively** to explain that the electric force increases with greater charge and decreases rapidly with distance squared.
    - **PE:** MS-PS2-3.
    - **DCI:** PS2.B – Electric forces.
    - **SEP:** Using Mathematics and Computational Thinking.
    - **CCC:** Patterns.

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) ÷ (3/4) and use a visual fraction model to show the quotient; use the relationship between multiplication and*

division to explain that (2/3) ÷ (3/4) = 8/9 because 3/4 of 8/9 is 2/3. (In general, (a/b) ÷ (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 ≠ 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 $V = l\ w\ h$ and $V = b\ h$ 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., π^2). *For example, by truncating the decimal expansion of √2, show that √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

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[i] www.nextgenscience.org