



Hartland School

Grade 8 Curriculum at a Glance

Our curriculum is designed to **Educate for Excellence** as we *inspire* & *guide* students to:

- Be responsible and respectful community members
 - Demonstrate initiative, perseverance and flexibility
- Be curious and value risk taking as part of the learning process
- Access and analyze information, ask questions and formulate opinions
 - Communicate effectively and efficiently

| Reading Units of Study | | |
|---|--|---|
| Unit 1 Critical Literacy | Unit 2 Historical Fiction | Unit 3 Dystopian Book Clubs |
| This unit will focus on deepening comprehension, deepening reading identities, and students' writing about reading. Students will be encouraged to bring their own identities into each text as they read while also considering how each student's identity can shape their responses to their reading. The unit will then shift into the types of power that are present within their readings. | This unit helps students see how history is not a collection of old, dead facts to be memorized, but is full of compelling stories that help us understand our present and, perhaps, what we need to do to shape a better future. The reading of historical fiction will generate awareness of how much we have yet to learn from history. | In this unit, students are immersed in dystopian literature while learning about the author's craft and literary elements. Students practice deep thinking about texts in the literary traditions and story/character archetypes. |

| Writing Units of Study | | |
|--|---|--|
| Unit 1 Literary Essay | Unit 2 Investigative Journalism | Unit 3 Memoir |
| In this unit, students are taught how to read deeply across texts to find common threads and then analyze the text to write essays about literature. | In this unit, students are taught how to write narrative nonfiction, using the same techniques used by journalists. | In this unit, students will learn to analyze their life experiences to determine what it is they want to convey about themselves and their lives and make purposeful craft and structure choices to do so. |

Grammar

Grammar instruction supports students in noticing and applying the conventions of the English language. Applying this learning to their everyday speaking and writing skills will elevate the ability of the students to express themselves.

| Unit 1 | Unit 2 | Unit 3 |
|---|--|--|
| <p>Grammar Skills Students will learn the basics of infinitives, the subjunctive form of verbs, participles, and gerunds.</p> <p>Vocabulary Skills Students will learn Greek and Latin roots.</p> | <p>Grammar Skills Students will learn to use infinitives, participial phrases as closers, prepositional phrases to create a setting, and colons to introduce a list.</p> <p>Vocabulary Skills Students will learn Greek and Latin roots.</p> | <p>Grammar Skills Students will learn to use ellipsis to indicate a pause or break in their writing, as well as to show omission in a quote. Students will learn to use apostrophes correctly to show plurality as well as possession, and they will use conjunctive adjectives.</p> <p>Vocabulary Skills Students will learn Greek and Latin roots.</p> |

Mathematics

| Rigid Transformations | Dilations, Similarity and Introducing Slope | Linear Relationships | Linear Equations and Linear Systems | Functions and Volume | Associations in Data | Exponents and Scientific Notation | Pythagorean Theorem and Irrational Numbers |
|--|---|---|--|--|---|---|---|
| <p>In this unit students identify and describe translations, rotations, and reflections. They draw images of figures under rigid transformations on and off square grids and the coordinate plane. They use rigid transformations to generate shapes and to reason about measurements of figures. They learn to understand congruence of plane figures in terms of rigid transformations. They recognize when one plane figure is congruent or not congruent to another. Students use the definition of “congruent” and properties of congruent figures to justify claims of congruence or non-congruence.</p> | <p>In this unit, students learn that a dilation is determined by a point called the center and a number called the scale factor. They learn that under dilation, the image of a circle is a circle and the image of a line is a line parallel to the original. They draw images of figures under dilations on and off the coordinate plane. They describe correspondences between a figure and its dilated image, and recognize that angle measures are preserved, but lengths are multiplied by the scale factor. They use the definition of “similar” and properties of similar figures to justify claims of similarity or non-similarity. Students use the similarity of slope triangles on the same line to understand that any two distinct points on a line determine the same slope.</p> | <p>In this unit, students deepen their understanding of slope, and recognize connections among rate of change, slope, and constant of proportionality, and between linear and proportional relationships. They understand that lines with the same slope are translations of each other. They represent linear relationships with tables, equations, and graphs. They learn to use the term “solution of an equation” when working with one or two linear equations in two variables, and learn to understand the graph of a linear equation as the set of its solutions. Students use these terms and representations in reasoning about situations involving one or two constant rates.</p> | <p>In this unit, students write and solve linear equations in one variable including equations in which the variable occurs on both sides of the equal sign, and equations with no solutions, exactly one solution, and infinitely many solutions. Students write and solve systems of linear equations in two variables and interpret the solutions in the contexts from which the equations arose. They learn what is meant by a solution for a system of equations. Students use the understanding that each pair of values that make an equation true are coordinates of a point on the graph of the equation.</p> | <p>In this unit, students are introduced to the concept of a function. They learn to understand and use the terms “input,” “output,” and “function,” e.g., “temperature is a function of time.” They describe functions as increasing or decreasing between specific numerical inputs, and they consider the inputs of a function to be values of its independent variable and its outputs to be values of its dependent variable.</p> | <p>In this unit, students generate and work with bivariate data sets. Students describe scatter plots, using a term previously used to describe univariate data “cluster,” and the new term “outlier.” They fit lines to scatter plots and informally assess their goodness of fit by judging the closeness of the data points to the lines, and compare predicted and actual values. Students learn to understand and use the terms “two-way table,” “bar graph,” and “segmented bar graph,” using two-way tables to investigate categorical data.</p> | <p>In this unit, students extend the definition of exponents to include all integers, and in the process codify the properties of exponents. They apply these concepts to the base-ten system, and learn about orders of magnitude and scientific notation in order to represent and compute with very large and very small quantities.</p> | <p>In this unit, students work with geometric and symbolic representations of square and cube roots. They understand the terms “rational number” and “irrational number,” using long division to express fractions as decimals. They use their understanding of fractions to plot rational numbers on the number line and their understanding of approximation of irrationals by rationals to approximate the number-line location of a given irrational. They use the Pythagorean Theorem in two and three dimensions.</p> |

Science Units of Study

| Unit 1: Contact Forces | Unit 2: Sound Waves | Unit 3: Forces at a Distance | Unit 4: Earth in Space | Unit 5: Genetics | Unit 6: Natural Selection & Common Ancestry |
|--|---|--|---|---|--|
| <p>In the first part of the unit, students make general observations about what happens to objects during collisions and quickly move to analyzing data that show that objects deform when forces are applied. In the second part of the unit, students design solutions to protect an object of their choice in a collision. They gather design input from stakeholders to refine the criteria and constraints for their design solution, and the class works together to carry out a series of investigations to answer the questions they have about optimizing their design solutions.</p> | <p>In this unit, students make observations of sound sources to revisit the K–5 idea that objects vibrate when they make sounds. They figure out that patterns of differences in those vibrations are tied to differences in characteristics of the sounds being made. They gather data on how objects vibrate when making different sounds to characterize how a vibrating object’s motion is tied to the loudness and pitch of the sounds they make. Students also conduct experiments to support the idea that sound needs matter to travel through, and they will use models and simulations to explain how sound travels through matter at the particle level.</p> | <p>In this unit, students dissect speakers to explore the inner workings, and engineer homemade cup speakers to manipulate the parts of the speaker. They identify that most speakers have the same parts—a magnet, a coil of wire, and a membrane. Students investigate each of these parts to figure out how they work together in the speaker system. Along the way, students manipulate the components (e.g. changing the strength of the magnet, number of coils, direction of current) to see how this technology can be modified and applied to a variety of contexts, like MagLev trains, junkyard magnets, and electric motors.</p> | <p>In this unit, students develop models for the Earth-Sun and Earth-Sun-Moon systems that explain some of the patterns in the sky that they have identified, including seasons, eclipses, and lunar phases. Next students investigate a series of related phenomena motivated by their questions and ideas for investigations. In the final lesson set students explore the remaining questions on their Driving Question Board, related to planets and other objects farther out in space</p> | <p>In this unit, students use videos, photos, data sets, and readings to investigate what causes an animal to get extra-big muscles. Students figure out how muscles typically develop as a result of environmental factors such as exercise and diet. Then, students work with cattle pedigrees, including data about chromosomes and proteins, to figure out genetic factors that influence the heavily muscled phenotype and explore selective breeding in cattle. In the second lesson set, students use what they’ve learned from explaining cattle musculature to help them explain other trait variations they’ve seen. They investigate plant reproduction, including selective breeding and asexual reproduction (in plants and other organisms) and other examples of traits that are influenced by genetic and environmental factors. Students figure out that environmental and genetic factors together play a role in the differences we see among living things.</p> | <p>In this unit, students explore the variations in body structures and behaviors in modern penguins and ancient penguins, they also analyze data from ancient and modern species of horses, whales, and horseshoe crabs to see whether these organisms have similar patterns. Then, to figure out the cause of the changes they have observed in populations, students explore more recent cases of changing heritable trait distribution in populations and explain them by developing a model for natural selection. Finally, students use their model for natural selection to explain how some body structure variations in different species of modern penguins could result from natural selection and how they could descend from a common ancient ancestor penguin population. They analyze embryological data to their argument supporting how different species may be connected.</p> |

Social Studies Units of Study

| Unit 1 Our Colonial Heritage | Unit 2 Revolution in the Colonies | Unit 3 Forming a New Nation | Unit 4 Launching the New Republic | Unit 5 An Expanding Nation | Unit 6 Americans in the Mid 1800's | Unit 7 The Union Challenged | Unit 8 Migration & Industry | Unit 9 A Modern Nation Emerges |
|---|--|--|--|---|---|---|---|---|
| <p>In this unit, students analyze images of various events in U.S. history to hone in on the key themes of history. Students analyze images depicting European exploration and settlement to discover how European nations explored and established settlements in the Americas, analyze the similarities and differences among the English colonies in North America, and analyze primary and secondary source materials to explore eight aspects of life in the American colonies, including rights of colonists, religion, education, and life for enslaved African Americans.</p> | <p>In this unit, students learn about how and why the American Revolution happened. Students evaluate the events that divided American colonists and caused them to rebel against the British government. They learn about key events leading to the writing of the Declaration of Independence and, analyze key excerpts of the Declaration and the principles of government they express. Students examine the strengths and weaknesses of each side, important battles, and other key factors in the conflict—to determine how the British were defeated.</p> | <p>In this unit, students learn how America's early leaders created the documents that guide the government and protect the People. They examine the factors that led to the creation of a stronger central government under the U.S. Constitution by re-creating a key debate from the Constitutional Convention. They learn about the important rights and freedoms protected by the Bill of Rights by analyzing a series of scenarios to determine whether the Bill of Rights protects certain actions taken by individuals in the United States.</p> | <p>In this unit, students learn about the people, events, and ideas that shaped America in the late 18th and early 19th centuries. They will Federalist and Republican visions for the United States by debating the main issues that divided the two groups. Students evaluate the extent to which the country should have become involved in world affairs, and participate in activities to understand American culture in the early 1800s. They analyze and bring to life images of key events in the presidency of Andrew Jackson to evaluate how well he promoted democracy.</p> | <p>In this unit, students learn about the causes and effects of U.S. western expansion. Students compare primary source quotes about U.S. land acquisitions and manifest destiny and then evaluate whether the nation's actions were justifiable. They learn about eight groups of people who moved to the West to explore people's motives for moving, the hardships they faced, and the legacies they left behind for future generations. Students examine important Mexicano contributions and determine how they have influenced life in the United States.</p> | <p>In this unit, students examine the reform movements of the mid-1800s to evaluate to what extent they improved life for Americans. They will analyze and bring to life images from the mid-1800s to compare the different ways of life in the North and the South. Students will analyze quotations and examine images to discover how African Americans faced slavery and discrimination in the mid-1800s.</p> | <p>In this unit, students analyze and bring to life images depicting the growing conflict between the North and the South to understand why the nation could not prevent civil war, use primary sources to experience different aspects of the Civil War, and analyze primary source images to evaluate how close African Americans came to full citizenship during Reconstruction.</p> | <p>In this unit, students learn how western settlement impacted the Nez Perce. They then examine how settlers changed the West and impacted other American Indian groups. They study the role of workers on an assembly line to understand the costs and benefits of industrialization and demonstrate understanding of what life was like for immigrants in the early 1900s.</p> | <p>In this unit, students understand the roles of Progressive era leaders in a panel discussion to evaluate whether progressives improved life in the United States. They analyze political cartoons about U.S. actions in world affairs around the turn of the 20th century and evaluate the differing viewpoints of those actions and discover important events of the last century and learn how they affected society in the United States.</p> |