Typical Course of Study: Grade 8

LANGUAGE ARTS

Reading Literature and Informational Text and Literacy in History/Social Studies, Science, and Technical Subjects

- Cite evidence from text to support analysis of both explicit and implicit messages within the text
- Cite evidence to support analysis of primary and secondary sources
- Identify themes or central ideas in a text and analyze their development
- Summarize literary and informational or explanatory texts
- Analyze how incidents or specific dialogue moves a story along
- Analyze how a text makes connections between individuals, events, or ideas
- Identify key steps in a text’s description of a process related to history or social studies
- Describe how a text presents information
- Follow a multistep written procedure when performing science or technical tasks
- Determine meanings and effects of words, phrases, or symbols as used in a text
- Analyze the structure of a specific part of a text
- Compare and contrast the structure of two or more texts and how each structure contributes to meaning and style
- Analyze the effects of different points of view in a text
- Determine an author’s point of view and analyze how the author treats conflicting viewpoints
- Analyze the relationship between a primary and secondary source on the same topic
- Integrate quantitative or technical information presented in text form with information expressed visually
- Determine if a filmed or live production of a story is faithful to the text
- Evaluate the advantages and disadvantages of using different media to present an idea
- Trace and evaluate the argument and supporting reasons in a text
- Analyze whether an author supports a claim with sound reasoning and sufficient evidence
- Analyze two or more texts that provide conflicting information about the same topic
- By the end of the academic year, read and understand grade-level literary and informational texts (including history/social studies, science, and technical subjects) independently and with proficiency

Speaking and Listening

- Participate in collaborative discussions on a variety of grade-level topics
- Express ideas clearly and respectfully in group discussions
- Follow agreed-upon rules and preparation procedures for discussions
- Ask questions and respond to others, building on others’ ideas
- Analyze the purpose and motives of information presented in many media and formats
• Identify an argument, claims; evaluate the soundness of reasoning and evidence
• Present claims or information in logical sequence supported with relevant facts and details
• Use clear pronunciation and appropriate eye contact and volume when speaking
• Add multimedia and visual components to clarify ideas in presentations
• Show command of formal English language when speaking for a variety of tasks

Writing
• Write arguments supported with clear reasons and relevant evidence, including arguments in history, social studies, science, and technical topics
• Write informative or explanatory pieces developed with relevant details, including arguments in history, social studies, science, and technical topics
• Write narrations that include details, put events in order, and provide a conclusion
• Produce writing appropriate to the task, purpose, and audience
• Strengthen writing by getting feedback, revising, editing, and rewriting
• Add dialogue and descriptions to develop characters and events
• Use tools, including the Internet, to produce and publish writing
• Cite sources for information used in writing
• Contribute to collaborative group writing projects
• Conduct short research tasks on a topic through investigation
• Gather information from various sources to answer a question
• Assess the credibility and accuracy of sources
• Quote or paraphrase data and conclusions while avoiding plagiarism
• Include evidence from literary or informational texts
• Regularly produce clear writing for a variety of tasks, purposes, and audiences (including writing in history/social studies, science, and technical subjects)

English Language Skills
• Explain the functions of verbals in general and in specific sentences
• Form and use verbs in active and passive voice
• Form and use verbs in indicative, imperative, interrogative, conditional, and subjunctive moods
• Identify and correct inappropriate shifts in verb voice and mood
• Identify and use simple, compound, complex, and compound-complex sentences
• Use conventions of English correctly when writing (capitalization, punctuation, and spelling)
• Spell grade-level words correctly
• Choose verb voice and mood to achieve specific effects
• Vary sentence patterns for meaning, interest, and style when writing; avoid passive constructions
• Maintain consistency in style and tone when writing
• Know the difference between formal and informal English and when to use each
• Distinguish shades of meaning among related words
• Distinguish among connotations of words with similar denotations
• Learn and use grade-level general academic vocabulary

Vocabulary
• Use context clues to determine word and phrase meanings
• Use word structure clues to determine meanings of unknown words
• Use relationships between words to better understand each word’s meaning
• Use references (print and digital) to determine or verify a word’s meanings, find pronunciation or its part of speech
• Interpret and use figurative language in context
• Distinguish literal and nonliteral meanings of words in context
• Distinguish shades of meaning among related words
• Distinguish among connotations of words with similar denotations
• Learn and use grade-level general academic vocabulary

MATHEMATICS

The Number System
• Show the decimal expansion of a rational number
• Know that the decimal expansion of a rational number eventually repeats
• Know that there are numbers that are not rational
• Compare the size of irrational numbers with rational approximations
• Find approximate locations of irrational numbers on a number line
• Estimate the value of irrational number expressions
• Solve real world and mathematical problems with rational numbers using multiple operations

Algebra and Functions
• Work with radicals and integer exponents, including fractional exponents
• Read and write square root and cube root symbols to represent solutions to equations
• Interpret and write scientific notation to estimate very large or small quantities
• Perform operations with numbers expressed in scientific notation
• Analyze, solve, and graph linear equations in one variable with one solution, no solutions, or an infinite number of solutions
• Graph proportional relationships, interpreting the slope of a graph
• Analyze, graph, and solve pairs of simultaneous linear equations
• Write and solve real world problems leading to two linear equations
• Decide whether two quantities are in a proportional relationship from a graph
• Define slope as vertical change for each unit of horizontal change
• Graph a line, given its slope and a point on the line
• Find the slope of a line given its graph
• Define, evaluate, and compare functions
• Understand that a function assigns exactly one \( y \)-value (dependent variable) to each \( x \)-value (independent variable)
• Express functions algebraically, graphically, verbally, and numerically
• Know that the equation \( y = mx + b \) defines a linear function with a straight line graph
• Identify and give examples of functions that are not linear
• Use functions to model relationships between quantities
• Compare properties of two different functions

Geometry
• Understand congruence and similarity of lines, line segments, angles, and figures
• Show properties of rotations, reflections, and translations of lines, line segments, angles, and parallel lines
• Describe effects of dilation, translations, rotations, and reflections of two-dimensional figures using coordinate plane
• Find sums of angles created when parallel lines are cut by a transversal
• Understand and apply the Pythagorean Theorem
• Explain a proof of the Pythagorean Theorem and its converse
• Apply the Pythagorean Theorem to determine unknown side lengths
• Solve real world and mathematical problems involving the Pythagorean Theorem
• Use the Pythagorean Theorem to find distances between points on a coordinate graph
• Know and use the formulas for the volume and surface area of cylinders, cones, spheres, and pyramids
• Solve real world and mathematical problems involving volume and surface area of solid figures

Statistics and Probability
• Investigate patterns of association in bivariate data
• Construct and interpret scatter plots
• Examine and describe patterns of associations between quantities
• Use an equation of a linear model to solve bivariate measurement data problems
• Write and solve equations of linear relationships to make predictions involving bivariate measurement data
• Display frequencies and relative frequencies in a two-way table
• Represent probabilities of compound events with lists, tables, and diagrams
• Find probabilities of compound events using diagrams, tables, lists, or simulations
• Apply the multiplication counting principle to situations with a large number of outcomes

SCIENCE

Life Science
• Plant development and reproduction
• Animal development and reproduction
• Cell division and growth
• Structure and function of genes
• Changes (mutations) to genes
• Genetic diseases
• Genetic engineering
• Variations and adaptations in organisms
• Natural selection
• Existence, diversity, extinction, and change of life forms in Earth’s history
• Fossils and the fossil record
• Similarities and differences between organisms today and organisms in the fossil record
• Evolutionary history of life on Earth

Physical Science
• Types of forces and force interaction
• Force and motion
• Energy and motion
• Newton’s laws of motion
• Electric and electromagnetic forces
• Gravitational force
• Gravitational forces between objects in the solar system
• Waves (light, heat, sound), their properties, and transmission
• Electromagnetic radiation
• Magnetic fields; Earth’s magnetic fields
• Transmission of digital signals as wave pulses

Earth and Space Science
• The universe and its stars
• Observation of the universe
• Classification of celestial objects
• Milky Way and other galaxies
• The structure of Earth’s solar system
• Sun, Earth, and moon relationships
• Motions of bodies in the solar system
• Patterns of apparent motion of the sun, moon, and stars
• The tilt of Earth’s axis and its effects
• Moon phases
• Tides
• History of planet Earth
• Geologic time scale, interpreted from rock strata and the fossil record
• Renewable and nonrenewable energy sources
• Environmental concerns and conservation

HEALTH AND SAFETY
• Health choices and long-term consequences of choices
• Benefits of, practices for, and personal responsibility for health (including healthy eating, personal hygiene, exercise, stress-management, adequate sleep, social and emotional health, disease prevention, avoidance of accidents and dangers)
• Interrelationships of physical, mental, and social health
• Impacts of social pressures on physical, emotional, and social health
• Structure, functions, and interdependence of major body systems
• Causes and effects of poor body image
• Eating disorders and their prevention and treatment
• Changes in anatomy during puberty
• Role of hormones in growth, development, and personal health
• Possible physical, social, and emotional impacts of decisions regarding sexual behavior
• Strategies to resist pressures to become sexually active
• Characteristics of healthy relationships and dating behaviors
• Lifelong strategies for identifying and preventing depression and anxiety
• Importance of regular medical assessment
• Myths and facts related to disease transmission and prevention
• Ways the body defends itself against germs
• Communicable, noncommunicable, and hereditary diseases
• Evaluation of health products
• Basic safety rules for daily and recreational activities
• Understanding of first-aid procedures and emergency response
• Use, abuse, and effects of medications, tobacco, alcohol, and other substances
• Relationship between tobacco, alcohol, and drugs and unsafe situations
• Preventing the use of tobacco, alcohol, and illegal drugs
• Prevention of and response to deliberate and accidental injuries
• Reasons and ways to avoid violence, gangs, weapons, and drugs
• Skills to identify, avoid, report, and cope with potentially dangerous situations
• Positive and negative characteristics of social groups, gangs, clubs, cliques
• Development of self-confidence, self-esteem, and self-control
• Understand appropriate ways to express emotions
• Positive social interactions with peers, in home, and in the community
• Bullying, alternative behaviors to bullying, and appropriate responses to bullying
• Strategies for resolving conflicts with peers and others
• Getting personal support from family
• How and where to get help in making health decisions

SOCIAL SCIENCE

United States History through Reconstruction
• The First Americans
• Exploring the Americas
• European colonization of America
• Colonial life
• The Mayflower Compact
• Moves toward independence
• Founding documents
• The American Revolution
• Challenges of the new government
• Representative government
• Drafting of the Constitution
• Federalist Era
• Jeffersonian Era
• Louisiana Purchase
• War of 1812
• Conflicts between the North and South
• Slavery
• Missouri Compromise
• Monroe Doctrine
• Age of Jackson
• Westward expansion
• Conflicts with Native Americans
• Indian Removal Act
• Manifest Destiny
• U.S.-Mexican War
• Gold Rush
• Compromise of 1850
• Civil War
• Reconstruction
Note about middle school arts curriculum: Middle-level curriculum often includes and offers experiences and study in a variety of areas in the arts. Some examples are:

- Animation
- Architecture
- Casting
- Ceramics
- Choral music
- Computer graphics and applications
- Construction
- Dance or other creative movement
- Digital arts
- Drama (including mime, storytelling, and technical aspects of theater)
- Drawing
- Film
- Graphic design
- Improvisational music
- Instrumental music
- Mosaics
- Sculpture
- Metal Sculpture
- Textile and fiber art

In the study and practice of any of the performance or visual arts, students encounter such topics as:

- Skills of watching, listening, and responding to works of art
- Background and elements of particular art form
- Understanding of the processes and techniques of particular forms
- Principles of design
- Vocabulary of particular art forms
- Interpretation, analysis, and evaluation of works of art
- Reflecting on own experiences and creations or performances
- Art history
- Well-known artists and works of visual or performing art form
- Cultural contexts and expressions of art
- Style, materials, and techniques used in a work of art
- Generating questions about a work of art
- Considering messages and purposes of a particular work of art
- Responding orally, in writing, or some other way to works of art
- Contributions of artists to society
- Careers in art
- Discipline and mindset for improving and developing skills in art
- Fostering of creativity and self-expression
- Development of artistic awareness, imagination, perception, skill
- Experimenting with a variety of media, forms, and techniques
- Solving design problems
- Use of digital media and tools for producing, viewing, or responding to art
- Polishing and furthering personal skills in a chosen area of art
- Participation in collaborative discussions about works of art
- Participation in collaborative creation of works of art
- Proper safety procedures for activities in the specific arts

TECHNOLOGY

General goal for middle-level students: Use technology within all content areas to collaborate, communicate, generate innovative ideas, create original works, and investigate and solve problems.

- Demonstrating proficient keyboarding skills
- Use of a variety of common applications and productivity tools
- Creation of products combining text, images, sound, music, and video
- Use of spreadsheet and concept-mapping software
- Use of interactive tools to design polls or surveys to gather data
- Making contributions to blogs, wikis, and other collaborative forums
- Gathering weather information and predictions
- Use of online databases or simulation software to interpret and predict trends
- Use of digital collaboration tools
- Increasing knowledge about many cultures through digital content
- Use of online interactive tools to communicate with learners from other cultures
- Communicating with multiple audiences through a variety of formats and media
- Increasing understanding of a local or global issue
- Choosing appropriate digital resources to plan a project or solve a problem
- Choosing appropriate search engines or directories
- Selecting and using appropriate online applications for various purposes
- Selecting appropriate, relevant sources for a purpose or audience
- Analysis and synthesis of information to make decisions or develop solutions
- Assessing the credibility and validity of online sources
- Following fair use rules
- Use of bibliography tools to cite sources from digital sources
- Reporting and sharing of results or solutions
- Exploring ways to receive feedback from multiple, appropriate audiences
- Recognition and avoidance of potential online dangers
- Safe and legal use of online sites and information
- Understanding of privacy issues
- Understanding how data are kept and available publicly
- Demonstrating safe use of sharing personal information online
- Practicing ethical and respectful behavior
- Careful, responsible use and maintenance of digital equipment
- Demonstrating openness to learning new technologies and procedures