

Standards by Grade Level

Eighth Grade



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Purpose

The *Standards by Grade Level for Eighth Grade* is a compilation of all learning standards for eighth grade. This document does not take the place of Ohio's Learning Standards and Model Curricula. The Department of Education designed this tool to view the standards by grade level instead of content area. Every student should receive instruction aligned to the learning standards.

Guiding Principle

Prioritizing student learning

Continue to value and use **Ohio's Learning Standards** as the basis for guiding instruction and student acquisition of knowledge and skills. Ensure opportunities for students to master **core subject areas** and pursue **well-rounded learning** (such as fine arts, technology, computer science and world languages and cultures).

Standards

COMPUTER SCIENCE	
Instructional Supports: Ohio's Learning Standards for Computer Science Computer Science Model Curriculum	
Code	Standard
Computing Systems	
Topic 1: Devices	
CS.D.8.a	Evaluate the advantages and limitations of existing computing devices to recommend design improvements based on analysis of how users interact with the device.
Topic 2: Hardware and software	
CS.HS.8.a	Design projects that combine hardware and software components that could complete a task.
Topic 3: Troubleshooting	
CS.T.8.a	Use a systematic process to identify and evaluate the source of a routine computing problem. Select the best solution to solve the computing problem and communicate the solution to others.
Networks and the Internet	
Topic 1: Networking	
NI.N.8.a	Model the role of hardware components to diagram the infrastructure of networks and the internet (including cloud servers).
NI.N.8.b	Model protocols (i.e., rules) and explain why they are used to transmit data across networks and the internet.

COMPUTER SCIENCE

NI.N.8.c	Explain how a system responds when information is lost to understand the effect it has on the transferred information.
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Topic 2: Cybersecurity

NI.C.8.a	Explain how physical and digital security measures are used to protect electronic information.
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NI.C.8.b	Compare and contrast the effects of different types of malware to determine strategies for how to protect devices.
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Data and Analysis

Topic 1: Data collection and storage

DA.DCS.8.a	Interpret digital data collection tools to manage information effectively.
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DA.DCS.8.b	Identify data storage systems to define how data is stored and accessed.
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DA.DCS.8.c	Create a logical file structure to organize data in different storage systems to support individual and collaborative work.
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Topic 2: Visualization and communication

DA.VC.8.a	Evaluate data to construct a model or representation.
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DA.VC.8.b	Create a spreadsheet utilizing formulas, functions and graphs to represent and analyze data.
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Topic 3: Inference and modeling

DA.IM.8.a	Create and analyze models and simulations to accurately hypothesize a real-world situation.
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Algorithmic Thinking and Programming

Topic 1: Algorithms

ATP.A.8.a	Create multiple pseudocode to solve a multi-step process and justify the most efficient solution.
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Topic 2: Variables and data representation

ATP.VDR.8.a	Analyze test cases and determine the range of valid solutions.
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ATP.VDR.8.b	Use a data structure to represent a collection.
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COMPUTER SCIENCE

Topic 3: Control structures

ATP.CS.8.a	Use and apply decisions and loops in a program to solve a problem.
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Topic 4: Modularity

ATP.M.8.a	Decompose problems and subproblems into parts to facilitate the design, implementation and review of complex programs.
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Topic 5: Program development

ATP.PD.8.a	Write code that utilizes algorithms, variables and control structures to solve problems or as a creative expression.
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ATP.PD.8.b	Systematically test and refine programs using a range of test cases.
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ATP.PD.8.c	Use procedures that utilize parameters to pass values.
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Impacts of Computing

Topic 1: Culture

IC.Cu.8.a	Compare current technologies and how they affect the current economy.
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IC.Cu.8.b	Propose potential guidelines/standards/criteria to positively impact bias and accessibility in the design of future technologies.
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IC.Cu.8.c	Identify and explore careers related to the field of computer science.
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IC.Cu.8.d	Explain how computing impacts innovation in other fields.
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Topic 2: Social interactions

IC.SI.8.a	Evaluate the impacts of electronic communication on personal relationships to be able to evaluate differences between face-to-face and electronic communication.
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Topic 3: Safety, law and ethics

IC.SLE.8.a	Explain user privacy concerns related to the collection and generation of data that may not be evident through automated processes.
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IC.SLE.8.b	Describe the social and economic implications of privacy in the context of safety, law or ethics to be global digital citizens.
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IC.SLE.8.c	Identify ethical and legal security measures used to protect electronic information.
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IC.SLE.8.d	Provide appropriate credit when using resources or artifacts that are not our own.
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ENGLISH LANGUAGE ARTS

Instructional Supports:

[Ohio's Learning Standards for English Language Arts](#)
[English Language Arts Model Curriculum with Instructional Supports](#)

Code	Standard
Reading Standards for Literature	
Key ideas and details	
RL.8.1	Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.
RL.8.2	Analyze literary text development. <ol style="list-style-type: none"> a. Determine a theme of a text and analyze its development over the course of the text, including its relationship to the characters, setting, and plot. b. Incorporate a theme and its relationship to other story elements into an objective summary of the text.
RI.8.3	Analyze how particular lines of dialogue or incidents in a story or drama propel the action, reveal aspects of a character, or provoke a decision.
Craft and structure	
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, mood, and tone, including analogies or allusions to other texts.
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.
RL.8.6	Analyze how differences in the points of view and perspectives of the characters and the audience or reader (e.g., created through the use of dramatic irony) create effects such as suspense or humor.
Integration of knowledge and ideas	
RL.8.7	Analyze the extent to which a filmed or live production of a story or drama stays faithful to or departs from the text or script, evaluating the choices made by the director or actors.
RL.8.8	(Not applicable to literature)
RL.8.9	Analyze how a modern work of fiction alludes to themes, patterns of events, or character types from myths, traditional stories, and religious literary texts, such as (but not limited to) the Bible and The Epic of Gilgamesh, including describing how the material is rendered new.

ENGLISH LANGUAGE ARTS

Range of reading and level of text complexity

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. Build background knowledge and activate prior knowledge in order to make text-to-self, text-to-text, and text-to-world connections that deepen understanding of the text.
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Reading Standards for Information Text

Key ideas and details

RI.8.1	Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.
RI.8.2	Analyze informational text development. <ol style="list-style-type: none"> Determine a central idea of a text and analyze its development over the course of the text, including its relationship to supporting ideas. Incorporate central ideas and their relationships into an objective summary of the text.
RI.8.3	Analyze how a text makes connections among and distinctions between individuals, ideas, or events (e.g., through comparisons, analogies, or categories).

Craft and structure

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.
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.
RI.8.6	Determine an author's perspective or purpose in a text and analyze how the author acknowledges and responds to conflicting evidence or viewpoints.

Integration of knowledge and ideas

RI.8.7	Evaluate the advantages and disadvantages of using different mediums (e.g., print or digital text, video, multimedia) to present a particular topic or idea.
RI.8.8	Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient; recognize when irrelevant evidence is introduced.

ENGLISH LANGUAGE ARTS

RI.8.9

Analyze a case in which two or more texts provide conflicting information on the same topic and identify where the texts disagree on matters of fact or interpretation.

Range of reading and text complexity

RI.8.10

By the end of the year, read and comprehend literary nonfiction at the high end of the grades 6–8 text complexity band independently and proficiently.

Reading Standards for Foundational Skills

Not Applicable for Grade 8.

Writing Standards

Text types and purposes

W.8.1

Write arguments to support claims with clear reasons and relevant evidence.

- a. Establish a clear thesis statement to present an argument.
- b. Introduce claim(s), acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically.
- c. Support claim(s) with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic or text.
- d. Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence.
- e. Establish and maintain a formal style.
- f. Provide a concluding statement or section that follows from and supports the argument presented.

W.8.2

Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.

- a. Establish a clear thesis statement to present information.
- b. Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information into broader categories; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia to aid comprehension, if needed.
- c. Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples.
- d. Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts.
- e. Use precise language and domain-specific vocabulary to inform about or explain the topic.
- f. Establish and maintain a formal style.
- g. Provide a concluding statement or section that follows from and supports the information or explanation presented.

ENGLISH LANGUAGE ARTS

W.8.3	<p>Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.</p> <ol style="list-style-type: none"> a. Engage and orient the reader by establishing a context and point of view and introducing a narrator and/or characters; organize an event sequence that unfolds naturally and logically. b. Use narrative techniques, such as dialogue, pacing, description, and reflection, to develop experiences, events, and/or characters. c. Use a variety of transition words, phrases, and clauses to convey sequence, signal shifts from one time frame or setting to another, and show the relationships among experiences and events. d. Use precise words and phrases, relevant descriptive details, and sensory language to capture the action and convey experiences and events. e. Provide a conclusion that follows from and reflects on the narrated experiences or events.
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Production and distribution of writing

W.8.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)
W.8.5	With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grade 8.)
W.8.6	Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas efficiently, as well as to interact and collaborate with others.

Research to build and present knowledge

W.8.7	Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.
W.8.8	Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others, while avoiding plagiarism and following a standard format for citation.
W.8.9	<p>Draw evidence from literary or informational texts to support analysis, reflection, and research.</p> <ol style="list-style-type: none"> a. Apply grade 8 Reading standards to literature (e.g., “Analyze how a modern work of fiction alludes to themes, patterns of events, or character types from myths, traditional stories, and religious literary texts, such as (but not limited to) the Bible and The Epic of Gilgamesh, including describing how the material is rendered new”). b. Apply grade 8 Reading standards to literary nonfiction (e.g., “Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient; recognize when irrelevant evidence is introduced”).

ENGLISH LANGUAGE ARTS

Range of writing

W.8.10

Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

Speaking and Listening Standards

Comprehension and collaboration

SL.8.1

Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly.

- a. Come to discussions prepared, having read or researched material under study; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.
- b. Follow rules for collegial discussions and decision-making, track progress toward specific goals and deadlines, and define individual roles as needed.
- c. Pose questions that connect the ideas of several speakers and respond to others' questions and comments with relevant evidence, observations, and ideas.
- d. Acknowledge new information expressed by others, and, when warranted, qualify or justify their own views in light of the evidence presented.

SL.8.2

Analyze the purpose of information presented in diverse media and formats (e.g., visually, quantitatively, orally) and evaluate the motives (e.g., social, commercial, political) behind its presentation.

SL.8.3

Delineate a speaker's argument and specific claims, evaluating the soundness of the reasoning and relevance and sufficiency of the evidence and identifying when irrelevant evidence is introduced.

Presentation of knowledge and ideas

SL.8.4

Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.

SL.8.5

Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest.

SL.8.6

Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See grade 8 Language standards 1 and 3 for specific expectations.)

ENGLISH LANGUAGE ARTS

Language Standards

Conventions of standard English

L.8.1	<p>Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <ol style="list-style-type: none"> Explain the function of verbals (gerunds, participles, infinitives) in general and their function in particular sentences. Form and use verbs in the active and passive voice. Form and use verbs in the indicative, imperative, interrogative, conditional, and subjunctive mood. Recognize and correct inappropriate shifts in verb voice and mood.
L.8.2	<p>Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.</p> <ol style="list-style-type: none"> Use punctuation (comma, ellipsis, dash) to indicate a pause or break. Use an ellipsis to indicate an omission. Spell correctly.

Knowledge of language

L.8.3	<p>Use knowledge of language and its conventions when writing, speaking, reading, or listening.</p> <ol style="list-style-type: none"> Use verbs in the active and passive voice (e.g., emphasizing the actor or the action). Use verbs in the conditional and subjunctive moods to achieve particular effects (e.g., expressing uncertainty or describing a state contrary to fact).
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Vocabulary acquisition and use

L.8.4	<p>Determine or clarify the meaning of unknown and multiple-meaning words or phrases based on grade 8 reading and content, choosing flexibly from a range of strategies.</p> <ol style="list-style-type: none"> Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase. Use common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., precede, recede, secede). Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or part of speech. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).
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ENGLISH LANGUAGE ARTS

L.8.5	Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. a. Interpret figures of speech (e.g. verbal irony, puns) in context. b. Use the relationship between particular words to better understand each of the words. c. Distinguish among the connotations (associations) of words with similar denotations (definitions) (e.g., bullheaded, willful, firm, persistent, resolute).
L.8.6	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.

FINANCIAL LITERACY

Instructional Supports:

[Ohio's Learning Standards for Financial Literacy in Middle Grades](#)
[Financial Literacy Model Curriculum](#)

Code	Standard
Financial responsibility and decision making	
1	Financial responsibility entails being accountable for managing money to satisfy one's current and future economic choices.
2	Financial responsibility involves life-long decision-making strategies which include consideration of alternatives and consequences.
3	Competencies (knowledge and skills), commitment (motivation and enthusiasm), competition (globalization and automation), training, work ethic, abilities and attitude are all factors impacting one's earning potential and employability.
4	Income sources include job earnings and benefits, entrepreneurship, saving and investment earnings, government payments, grants, inheritances, etc. Workers can experience dramatic income dips and spikes from month to month.
5	Taxes, retirement, insurance, employment benefits, and both voluntary and involuntary deductions impact take-home pay.
Planning and money management	
6	Financial responsibility includes the development of a spending and savings plan (personal budget).
7	Financial institutions offer a variety of products and services to address financial responsibility.
8	Financial experts provide guidance and advice on a wide variety of financial issues.
9	Planning for and paying local, state and federal taxes is a financial responsibility.
Informed consumer	
10	An informed consumer makes decisions on purchases that may include a decision-making strategy to determine if purchases are within their budget.
11	Consumer advocates, organizations and regulations provide important information and help protect against potential consumer fraud.
12	Compare bank terms before opening an account.
13	Consumer protections laws help safeguard individuals from fraud and potential loss.
14	Planned purchasing decisions factor in direct (price) and indirect costs (e.g. sales/use tax, excise tax, shipping, handling, and delivery charges, etc.).

FINANCIAL LITERACY

Investing

15	Using key investing principles one can achieve the goal of increasing net worth.
16	Investment strategies must take several factors into consideration such as compounding interest, costs, fees, tax implications and the time value of money.
17	Government agencies are charged with regulating providers of financial services to help protect investors.

Credit and debt

18	Credit is a contractual agreement in which a borrower receives something of value now and agrees to repay to lender at some later date.
19	Debt is an obligation owed by one party to a second party.
20	Effectively balancing credit and debt helps one achieve some short and long-term goals.
21	Financial documents and contractual obligations inform the consumer and define the terms and conditions of establishing credit and incurring debt.
22	Many options exist for paying for post-secondary education opportunities.

Risk management and insurance

23	Safeguards exist that help protect one's identity, money and property.
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FINE ARTS: DANCE

Instructional Supports:

[Ohio's 2012 Learning Standards for Dance](#)
[Grade 6-8 Dance Model Curriculum](#)
[Fine Arts Instructional Strategies](#)

Code	Standard
Perceiving / Knowing (PE)	
1PE	Attend to, consider and articulate the aesthetic qualities in dances observed.
2PE	Explore and interpret the expressive body's movement possibilities in relation to other choreography tools and dance techniques with increased skill.
3PE	View and describe choreographic works and improvisations by various influential choreographers.
4PE	Explore the body's range of movement possibilities.
5PE	Observe dances with attention to rhythmic structure, with or without musical accompaniment.
6PE	Observe how gender influences dance across cultures.
7PE	Investigate and explain how cultural and ethnic groups contribute to the development of a particular dance.
Producing / Performing (PR)	
1PR	Perform dances from various global cultures, theatrical styles and historical periods.
2PR	Use theatrical features (e.g., sound scores, music, lighting, costumes props and text) in dance performance to enhance artistic expression.
3PR	Refine the use of available technology and the media arts to create, record, and share dance in creative ways.
4PR	Perform movement phrases with increased focus, alignment, strength, flexibility, coordination and skill.
5PR	Demonstrate self-direction, independence and risk-taking when creating and performing dances.

FINE ARTS: DANCE
Responding (RE)

1RE	Describe, interpret and assess their dance works and challenge the opinions of others.
2RE	Compare the creative process in dance to the creative process in other arts disciplines (e.g., generating ideas, problem-solving and communicating).
3RE	Differentiate among statements of description, interpretation and evaluation within a variety of published dance literature selections.
4RE	Differentiate among statements of description, interpretation and evaluation and use them in a discussion about dance performance.
5RE	Examine and discuss the way that different events (e.g., cultural, political, social and technological) impact dance and dance development.
6RE	Recognize, advocate and discuss how participation in dance develops skills that are valuable and applicable to their lives and adult careers.

FINE ARTS: DRAMA
Instructional Supports:
[Ohio's 2012 Learning Standards for Drama](#)
[Grade 6-8 Drama Model Curriculum](#)
[Fine Arts Instructional Strategies](#)

Code	Standard
Creating (CE)	
1CE	Analyze and discuss the conflicts and emotions of the characters in a selected dramatic work.
2CE	Investigate the elements, principles and creative process of dramatic and theatrical works from specific time periods and tell how these aspects work together.
3CE	Compare and contrast styles of performance in terms of which one is most appropriate to a selected story (e. g. satire, comedy, pantomime, tragedy).
4CE	Use highly descriptive dramatic and theatrical vocabulary, including elements and principles, when discussing and creating dramatic works.
5CE	Recognize the responsibilities and collaborative nature among actors, director, stage manager, production staff, audience, playwright and marketing staff.
6CE	Research and summarize the dramatic and theatrical knowledge, skills and motivation needed to pursue a career in the theatre arts.

FINE ARTS: DRAMA

Producing / Performing (PR)

1PR	Develop various characters using appropriate voice, posture, movement and language to reveal a conflict and develop a resolution.
2PR	Incorporate new media and elements of theatre (e.g., setting, lighting, sound, properties, costume design and makeup) to create an appropriate environment for a scene.
3PR	Construct an alternate ending for a scripted or improvised dramatic piece that engages audiences.
4PR	Integrate dance, visual art or music into a dramatic or theatrical piece to convey an idea, concept or story.
5PR	Adapt the production styles of a dramatic or theatrical work from one cultural perspective to another.

Responding (RE)

1RE	Compare and contrast personal opinions about a dramatic or theatrical work with those of a professional critic.
2RE	Compare and contrast how a playwright and screenwriter's work conveys the same or similar ideas and concepts.
3RE	Justify how a playwright's choice of form, style and historical period affects the expression of a theme or topic.
4RE	Explain how scenery, costumes and lighting effects work together to affect an audience.
5RE	Critique a personal rehearsal or performance on the basis of technique, voice quality, facial expression and gestures.
6RE	Recognize and discuss the function of drama and theatre in society and the roles and responsibilities of different theatre professionals.

FINE ARTS: MUSIC
Instructional Supports:
[Ohio's 2012 Learning Standards for Music](#)
[Grade 6-8 Music Model Curriculum](#)
[Fine Arts Instructional Strategies](#)

Code	Standard
Creating (CE)	
1CE	Examine contemporary music styles and describe the distinctive characteristics in a repertoire of exemplary works.
2CE	Discuss how current developments in music reflect society in reference to the local community and larger world.
3CE	Identify intervals and concert pitches in major and natural minor scales.
4CE	Identify components of larger music works (e.g., symphony, mass, concerto).
5CE	Identify and describe non-performing careers in music.
6CE	Describe ways that technology and the media arts are used to create perform and listen to music.
Producing / Performing (PR)	
1PR	Perform a varied repertoire of music, independently or collaboratively representing diverse genres and cultures and showing expression and technical accuracy at a level that includes more advanced ranges and changes of tempo, key and meter.
2PR	Perform, independently or collaboratively, with good posture producing an appropriate tone quality.
3PR	Improvise, compose and arrange music.
4PR	Demonstrate the common beat patterns used by conductors.
5PR	Read, write and perform rhythmic (including dotted rhythms) and melodic patterns in a variety of meters.
6PR	Perform concert pitch major scales (e.g., Band: C, F, Bb, Eb, Ab Strings: A, D, G, C, F).
7PR	Demonstrate and use technology and media arts to create, perform and research music.

FINE ARTS: MUSIC
Responding (RE)

1RE	Apply multiple criteria to evaluate quality and effectiveness of personal and selected music performances and compositions and identify areas for improvement.
2RE	Compare and contrast a varied repertoire of music on the basis of how elements of music are used to create meaning and expression.
3RE	Compare and contrast selected composers and their works.
4RE	Express how music performance and settings affect audience response.
5RE	Apply criteria based on elements of music to support personal preferences for specific musical works.
6RE	Compare common terms and contrasting definitions used for various artistic elements used in music and other art forms.
7RE	Describe how roles of composers, performers and others involved in music are similar to or different from those in other art forms.

FINE ARTS: VISUAL ARTS
Instructional Supports:

[Ohio's 2012 Learning Standards for Visual Art](#)
[Grade 6-8 Visual Art Model Curriculum](#)
[Fine Arts Instructional Strategies](#)

Code	Standard
Perceiving / Knowing (PE)	
1PE	Identify how an artist's choice of media relates to the ideas and images in the work.
2PE	Develop awareness and articulate various functions of art.
3PE	Connect science and technology with the development of art in various cultures.
4PE	Understand how social, cultural and political factors affect what contemporary artists and designers create.
5PE	Discover how culture, age, gender and background influence audience perception of art.
6PE	Identify professions that use artistic and problem-solving skills.

FINE ARTS: VISUAL ARTS

Producing / Performing (PR)

1PR	Select, organize and manipulate skills, elements and techniques appropriate to the art form when making art.
2PR	Demonstrate increased technical skill and craftsmanship by using more complex processes and materials to design and create two- and three-dimensional artworks.
3PR	Use critical thinking and visual literacy to communicate a specific idea.
4PR	Present personal artworks that show competence in the use of art elements to create meanings and effects.
5PR	Collaborate to create a thematic work that combines visual art with other arts disciplines.

Responding (RE)

1RE	Examine various qualities in artworks to understand how an artist's choice of media relates to the images and ideas in the work.
2RE	Explain and defend their artistic decisions using visual art vocabulary.
3RE	Identify examples of visual culture and discuss how visual art is used to shape individual and social behavior.
4RE	Recognize how public discussion can affect beliefs about the nature and value of art.
5RE	Identify professions that use art and design, and explore the relationship between art, technology and industry.
6RE	Develop and apply criteria to assess personal works for content and craftsmanship.

MATHEMATICS

Instructional Supports:

[Ohio's Learning Standards for Grade 8 Mathematics](#)
[Ohio's Kindergarten – Grade 8 Learning Progressions](#)
[Grade 8 Mathematics Model Curriculum](#)

Code	Standard
Standards for Mathematical Practice	
MP.1	Make sense of problems and persevere in solving them.
<p>In grade 8, students solve real-world problems through the application of algebraic and geometric concepts. Students seek the meaning of a problem and look for efficient ways to represent and solve it. They may check their thinking by asking themselves, “What is the most efficient way to solve the problem?”, “Does this make sense?”, and “Can I solve the problem in a different way?”</p>	
MP.2	Reason abstractly and quantitatively.
<p>In grade 8, students represent a wide variety of real-world contexts through the use of real numbers and variables in mathematical expressions, equations, and inequalities. They examine patterns in data and assess the degree of linearity of functions. Students contextualize to understand the meaning of the number(s) or variable(s) as related to the problem and decontextualize to manipulate symbolic representations by applying properties of operations.</p>	
MP.3	Construct viable arguments and critique the reasoning of others.
<p>In grade 8, students construct arguments using verbal or written explanations accompanied by expressions, equations, inequalities, models, and graphs, tables, and other data displays (i.e. box plots, dot plots, histograms, etc.). They further refine their mathematical communication skills through mathematical discussions in which they critically evaluate their own thinking and the thinking of other students. They pose questions like “How did you get that?”, “Why is that true?” “Does that always work?” They explain their thinking to others and respond to others’ thinking.</p>	
MP.4	Model with mathematics.
<p>In grade 8, students model problem situations symbolically, graphically, in tables, and contextually. Working with the new concept of a function, students learn that relationships between variable quantities in the real-world often satisfy a dependent relationship, in that one quantity determines the value of another. Students form expressions, equations, or inequalities from real-world contexts and connect symbolic and graphical representations. Students use scatterplots to represent data and describe associations between variables. Students need many opportunities to connect and explain the connections between the different representations. They should be able to use all of these representations as appropriate to a problem context. Students should be encouraged to answer questions such as “What are some ways to represent the quantities?” or “How might it help to create a table, chart, graph, or ___?”</p>	

MATHEMATICS

MP.5	Use appropriate tools strategically.
Students consider available tools (including estimation and technology) when solving a mathematical problem and decide when certain tools might be helpful. For instance, students in grade 8 may translate a set of data given in tabular form to a graphical representation to compare it to another data set. Students might draw pictures, use applets, or write equations to show the between the angles created by a transversal that intersects parallel lines. Teachers might ask, “What approach are you considering?” or “Why was it helpful to use ___?”	
MP.6	Attend to precision.
In grade 8, students continue to refine their mathematical communication skills by using clear and precise language in their discussions with others and in their own reasoning. Students use appropriate terminology when referring to the number system, functions, geometric figures, and data displays. Teachers might ask, “What mathematical language, definitions, or properties can you use to explain ___?”	
MP.7	Look for and make use of structure.
Students routinely seek patterns or structures to model and solve problems. In grade 8, students apply properties to generate equivalent expressions and solve equations. Students examine patterns in tables and graphs to generate equations and describe relationships. Additionally, students experimentally verify the effects of transformations and describe them in terms of congruence and similarity.	
MP.8	Look for and express regularity in repeated reasoning.
In grade eight, students use repeated reasoning to understand the slope formula and to make sense of rational and irrational numbers. Through multiple opportunities to model linear relationships, they notice that the slope of the graph of the linear relationship and the rate of change of the associated function are the same. For example, as students repeatedly check whether points are on the line with a slope of 3 that goes through the point (1, 2), they might abstract the equation of the line in the form $\frac{y-2}{x-1} = 3$. Students should be encouraged to answer questions such as “How would we prove that ___?” or “How is this situation like and different from other situations using these operations?”	

The Number System

Know that there are numbers that are not rational, and approximate them by rational numbers.	
8.NS.1	Know that real numbers are either rational or irrational. Understand informally that every number has a decimal expansion which is repeating, terminating, or is non-repeating and non-terminating.
8.NS.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 . <i>For example, by truncating the decimal expansion of $\sqrt{2}$, show that $\sqrt{2}$ is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.</i>

MATHEMATICS

Expressions and Equations

Work with radicals and integer exponents.

8.EE.1	Understand, explain, and apply the properties of integer exponents to generate equivalent numerical expressions. <i>For example, $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$.</i>
8.EE.2	Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.
8.EE.3	Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities and to express how many times as much one is than the other. <i>For example, estimate the population of the United States as 3×10^8; and the population of the world as 7×10^9; and determine that the world population is more than 20 times larger.</i>
8.EE.4	Perform operations with numbers expressed in scientific notation, including problems where both decimal notation and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities, e.g., use millimeters per year for seafloor spreading. Interpret scientific notation that has been generated by technology.

Understand the connections between proportional relationships, lines, and linear equations.

8.EE.5	Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. <i>For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.</i>
8.EE.6	Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b .

Analyze and solve linear equations and pairs of simultaneous linear equations.

8.EE.7	<p>Solve linear equations in one variable.</p> <p>a. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers).</p> <p>b. Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.</p>
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MATHEMATICS

8.EE.8	<p>Analyze and solve pairs of simultaneous linear equations graphically.</p> <p>a. Understand that the solution to a pair of linear equations in two variables corresponds to the point(s) of intersection of their graphs, because the point(s) of intersection satisfy both equations simultaneously.</p> <p>b. Use graphs to find or estimate the solution to a pair of two simultaneous linear equations in two variables. Equations should include all three solution types: one solution, no solution, and infinitely many solutions. Solve simple cases by inspection. <i>For example, $3x + 2y = 5$ and $3x + 2y = 6$ have no solution because $3x + 2y$ cannot simultaneously be 5 and 6.</i></p> <p>c. Solve real-world and mathematical problems leading to pairs of linear equations in two variables. <i>For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair. (Limit solutions to those that can be addressed by graphing.)</i></p>
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Functions

Define, evaluate, and compare functions.

8.F.1	Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output. Function notation is not required in Grade 8.
8.F.2	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). <i>For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.</i>
8.F.3	Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. <i>For example, the function $A = s^2$ giving the area of a square as a function of its side length is not linear because its graph contains the points $(1, 1)$, $(2, 4)$ and $(3, 9)$, which are not on a straight line.</i>

Use functions to model relationships between quantities.

8.F.4	Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.
8.F.5	Describe qualitatively the functional relationship between two quantities by analyzing a graph, e.g., where the function is increasing or decreasing, linear or nonlinear. Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

MATHEMATICS

Geometry

Understand congruence and similarity using physical models, transparencies, or geometry software.

8.G.1	Verify experimentally the properties of rotations, reflections, and translations (include examples both with and without coordinates). a. Lines are taken to lines, and line segments are taken to line segments of the same length. b. Angles are taken to angles of the same measure. c. Parallel lines are taken to parallel lines.
8.G.2	Understand that a two-dimensional figure is congruent ^G 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. (Include examples both with and without coordinates.)
8.G.3	Describe the effect of dilations ^G , translations, rotations, and reflections on two-dimensional figures using coordinates.
8.G.4	Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them. (Include examples both with and without coordinates.)
8.G.5	Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. <i>For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so.</i>

Understand and apply the Pythagorean Theorem.

8.G.6	Analyze and justify an informal proof of the Pythagorean Theorem and its converse.
8.G.7	Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.
8.G.8	Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.

Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.

8.G.9	Solve real-world and mathematical problems involving volumes of cones, cylinders, and spheres.
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MATHEMATICS

Statistics and Probability

Investigate patterns of association in bivariate data.

8.SP.1	Construct and interpret scatter plots for bivariate ^G measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering; outliers; positive, negative, or no association; and linear association and nonlinear association. (GAISE Model, steps 3 and 4)
8.SP.2	Understand that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line. (GAISE Model, steps 3 and 4)
8.SP.3	Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. <i>For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.</i> (GAISE Model, steps 3 and 4)
8.SP.4	Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. <i>For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?</i>

PHYSICAL EDUCATION

Instructional Supports:
[Ohio's Learning Standards for Physical Education](#)

Code	Standard
Standard 1	Demonstrates competency in a variety of motor skills and movement patterns.
Benchmark A: Demonstrate movement skills and patterns in a variety of individual performance activities and lifetime physical activities.	
Specialized skills and movement patterns	
1	Demonstrate a routine that combines movement patterns (e.g., traveling, rolling, balance, weight transfer) into a smooth, flowing sequence coordinated with the music rhythm.
2	Demonstrate the critical elements of specialized locomotor and non-locomotor skills in a variety of individual performance activities (e.g., fitness, track and field, martial arts).
3	Perform a variety of simple dance sequences to the music or rhythm as an individual, with a partner or in a small group.
Benchmark B: Demonstrate critical elements of specialized manipulative skills in a variety of settings.	
Application of specialized manipulative skills	
1	Send, receive, dribble and shoot in practice and apply these skills to invasion games to achieve successful game-related outcomes.
2	Strike an object with hand or implement in controlled practice and apply these skills to net or wall games to achieve successful game-related outcomes.
3	Strike and field an object with foot, hand or implement in controlled practice and apply these skills to striking or fielding games to achieve successful game-related outcomes.
4	Send an object to a target in controlled practice and apply these skills to target games to achieve successful game-related outcomes.

PHYSICAL EDUCATION

Standard 2 Applies knowledge of concepts, principles, strategies and tactics related to movement and performance.

Benchmark A: Apply tactical concepts and performance principles in game-like settings.

Tactics and principles

- 1 Move to open space to receive passes or create space for others.
- 2 Move to mark or guard opponents, deny space and prevent opponents from attacking or scoring.
- 3 Consistently choose the best option (e.g., attack, pass, maintain possession, reposition) in game play.

Benchmark B: Demonstrate knowledge of critical elements and biomechanical principles for specialized skills.

Principles and critical elements

- 1 Analyze specific sport and movement skills using biomechanical principles and critical elements.
- 2 Develop a plan to improve movement performance using movement principles, critical elements, drills and biomechanical principles.

Standard 3 Demonstrates the knowledge and skills to achieve and maintain a health-enhancing level of physical activity and fitness.

Benchmark A: Develops a plan to meet the recommendation for daily physical activity.

Physical activity knowledge

- 1 Plan a variety of moderate to vigorous school, home and community physical activity opportunities to meet physical activity guidelines and personal preferences.
- 2 Identify active alternatives to screen time.

Evaluate level of physical activity

- 3 Analyze physical activity assessment data and create a plan to improve or maintain physical activity levels.

Benchmark B: Utilizes principles and practices to design a personalized health-related fitness plan.

Health-related fitness knowledge

- 1 Describe and use various forms of technology to monitor fitness (e.g., heart monitor, pedometer, phone and iPod apps).

PHYSICAL EDUCATION

Cardio	
2	Apply target heart rate and rates of perceived exertion (using RPE scale) to improve or maintain cardiorespiratory endurance.
Muscular strength and endurance	
3	Apply the principle intensity and duration to determine appropriate repetitions, sets and weight for muscular strength and endurance activities.
Flexibility	
4	Develop a series of activities to improve flexibility and to warm-up and cool-down for each activity.
Planning (FITT and other principles)	
5	Design and implement a fitness plan based on the results of health-related fitness assessment.
Healthy habits in relation to fitness	
6	Apply nutritional concepts and strategies to balance healthy foods, snacks and beverages with fitness levels.
Standard 4	Exhibits responsible personal and social behavior that respects self and others
Benchmark A: Develop and apply rules, safe practices and procedures in physical activity settings.	
Safety	
1	Work cooperatively with peers of differing skill to promote a safe school environment.
2	Recognize causes and demonstrate possible solutions to issues related to a safe school environment and physical activity setting.
Self-direction	
3	Make choices to demonstrate self-direction and effort in individual, small and large group activities without prompts or constant supervision from the teacher.

PHYSICAL EDUCATION

Benchmark B: Communicate effectively with others to promote respect and conflict resolution in physical activity settings.

Cooperation

1	Provide support or positive suggestions to facilitate group progress or success.
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Respect

2	Demonstrate and encourage respect for individual similarities and differences through positive interaction.
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Resolving conflict

3	Resolve conflict with sensitivity to the rights and feelings of others.
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4	Accept and respect decisions made by the designated official.
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Standard 5 Recognizes the value of physical activity for health, enjoyment, challenge, self-expression and/or social interaction.

Benchmark A: Makes a connection between participation in physical activity and physical, emotional and intellectual health.

Health reasons to be physically active

1	Link the health benefits that result from participation in specific physical activities.
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2	Make a connection between physical activities and emotional health.
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3	Make a connection between physical activity and intellectual health.
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Benchmark B: Discusses the positive impact physical activity has on his or her life.

Values physical activity through various means

1	Discuss the reasons for participating in a selected physical activity.
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2	Discuss the challenging aspects of participating in a selected physical activity.
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3	Discuss the social benefits of participating in a selected physical activity.
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SCIENCE

Instructional Supports:

[Ohio's Learning Standards and Model Curriculum for Science](#)
[Science Resources](#)

Code	Standard
Earth science	
8.ESS.1	The composition and properties of Earth's interior are identified by the behavior of seismic waves.
8.ESS.2	Earth's lithosphere consists of major and minor tectonic plates that move relative to each other.
8.ESS.3	A combination of constructive and destructive geologic processes formed Earth's surface.
8.ESS.4	Evidence of the dynamic changes of Earth's surface through time is found in the geologic record.
Physical science	
8.PS.1	Objects can experience a force due to an external field such as magnetic, electrostatic or gravitational fields.
8.PS.2	Forces can act to change the motion of objects.
Life science	
8.LS.1	Diversity of species, a result of variation of traits, occurs through the process of evolution and extinction over many generations. The fossil records provide evidence that changes have occurred in number and types of species.
8.LS.2	Every organism alive today comes from a long line of ancestors who reproduced successfully every generation.
8.LS.3	The characteristics of an organism are a result of inherited traits received from parent(s).

SOCIAL STUDIES

Instructional Supports:

[Ohio's Learning Standards for Social Studies](#)
[Grade 8 Social Studies Model Curriculum](#)

Code	Standard
History Strand	
Historical thinking and skills	
1	Primary and secondary sources are used to examine events from multiple perspectives and to present and defend a position.
Colonization to independence	
2	North America, originally inhabited by American Indians, was explored and colonized by Europeans for economic and religious reasons.
3	Competition for control of territory and resources in North America led to conflicts among colonizing powers.
4	The practice of race-based slavery led to the forced migration of Africans to the American colonies and contributed to colonial economic development. Their knowledge, skills and traditions were essential to the development of the colonies.
5	The ideas of the Enlightenment and dissatisfaction with colonial rule led English colonists to write the Declaration of Independence and launch the American Revolution.
6	Key events and significant figures in American history influenced the course and outcome of the American Revolution.
A new nation	
7	The outcome of the American Revolution was national independence and new political, social and economic relationships for the American people.
8	Problems arising under the Articles of Confederation led to debate over the adoption of the U.S. Constitution.
9	Actions of early presidential administrations established a strong federal government, provided peaceful transitions of power and repelled a foreign invasion.
Expansion	
10	The United States added to its territory through treaties and purchases.
11	Westward expansion contributed to economic and industrial development, debates over sectional issues, war with Mexico and the displacement of American Indians.

SOCIAL STUDIES

Civil War and reconstruction

12	Disputes over the nature of federalism, complicated by economic developments in the United States, resulted in sectional issues, including slavery, which led to the American Civil War.
13	Key events and significant figures in American history influenced the course and outcome of the Civil War.
14	The Reconstruction period resulted in changes to the U.S. Constitution, an affirmation of federal authority and lingering social and political differences.

Geography Strand

Spatial thinking and skills

15	Modern and historical maps and other geographic tools are used to analyze how historic events are shaped by geography.
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Human systems

16	The availability of natural resources contributed to the geographic and economic expansion of the United States, sometimes resulting in unintended environmental consequences.
17	The movement of people, products and ideas resulted in new patterns of settlement and land use that influenced the political and economic development of the United States.
18	Cultural biases, stereotypes and prejudices had social, political and economic consequences for minority groups and the population as a whole.
19	Americans began to develop a unique national identity among diverse regional and cultural populations based on democratic ideals.

Government Strand

Civic participation and skills

20	Active participation in social and civic groups can lead to the attainment of individual and public goals.
21	Informed citizens understand how media and communication technology influence public opinion.

Roles and systems of government

22	The U.S. Constitution established a federal republic, providing a framework for a national government with elected representatives, separation of powers, and checks and balances.
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SOCIAL STUDIES

23	The U.S. Constitution protects citizens' rights by limiting the powers of government.
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Economics Strand

Economic decision making and skills

24	Choices made by individuals, businesses and governments have both present and future consequences.
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Production and consumption

25	The Industrial Revolution fundamentally changed the means of production as a result of improvements in technology, use of new power resources, the advent of interchangeable parts and the shift from craftwork to factory work.
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Markets

26	Governments can impact markets by means of spending, regulations, taxes and trade barriers.
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TECHNOLOGY

Instructional Supports:

[Ohio's Learning Standards for Technology](#)
[Technology resources](#)

Code	Standard
Information and Communications Technology	
Topic 1: Identify and use appropriate digital learning tools and resources to accomplish a defined task.	
6-8.ICT.1.a.	Develop criteria for selecting digital learning tools and resources to accomplish a defined task.
6-8.ICT.1.b.	Select and use digital learning tools or resources to support planning, implementing and reflecting upon a defined task.
6-8.ICT.1.c.	Evaluate the use of digital learning tools and resources to support learning and productivity.
Topic 2: Use digital learning tools and resources to locate, evaluate and use information.	
6-8.ICT.2.a.	Use advanced search techniques to locate needed information using digital learning tools and resources.
6-8.ICT.2.b.	Use multiple criteria to evaluate the validity of information found with digital learning tools and resources.
6-8.ICT.2.c.	Apply principles of copyright, use digital citation tools and use strategies to avoid plagiarism.
Topic 3: Use digital learning tools and resources to construct knowledge.	
6-8.ICT.3.a.	Analyze and integrate textual, visual and quantitative information (e.g., images, diagrams, maps, graphs, infographics, videos, animations, interactives) from multiple digital learning tools and resources.
6-8.ICT.3.b.	Analyze data collected or retrieved from a variety of digital learning tools and resources to determine if patterns or trends are present.
6-8.ICT.3.c.	Create artifacts using digital learning tools and resources to demonstrate knowledge.
Topic 4: Use digital learning tools and resources to communicate and disseminate information to multiple audiences.	
6-8.ICT.4.a.	Use digital learning tools and resources to identify communication needs considering goals, audience and content.
6-8.ICT.4.b.	Select and use a variety of media formats to communicate information to a target audience.
6-8.ICT.4.c.	Discuss and identify ways to communicate and disseminate information so that users with varied needs can access information.
6-8.ICT.4.d.	Evaluate the effectiveness of a digital tool to communicate information with multiple audiences.

TECHNOLOGY

Society and Technology

Topic 1: Demonstrate an understanding of technology’s impact on the advancement of humanity – economically, environmentally and ethically.

6-8.ST.1.a.	Advocate and exhibit ethical, legal and responsible practices when utilizing technology.
6-8.ST.1.b.	Explore the advantages and disadvantages of widespread use, accessibility and reliance on technology in one’s world.
6-8.ST.1.c.	Review and demonstrate ethical considerations and legal requirements involved in the creation and use of digital technologies.
6-8.ST.1.d.	Analyze an environmental concern and investigate technology solutions to that problem.

Topic 2: Analyze the impact of communication and collaboration in both digital and physical environments.

6-8.ST.2.a.	Critique specific instances of how technology has impacted access to information, communications and collaboration.
6-8.ST.2.b.	Explain the positive and negative impact the use of technology can have on personal, professional and community relationships.
6-8.ST.2.c.	Investigate how social media impacts society and the digital identities of individuals and organizations.
6-8.DT.2.d.	Apply appropriate interactions and digital etiquette in varying contexts, reflecting upon potential impacts in both digital and physical environments.

Topic 3: Explain how technology, society and the individual impact one another.

6-8.ST.3.a.	Discuss and define how issues (e.g., economic, political, scientific and cultural) are influenced by the development and use of technology.
6-8.ST.3.b.	Explain how new technology development is driven by factors such as commercialization, creative/inventive thinking and cultural/historical influence.
6-8.ST.3.c.	Analyze how technological innovations and inventions can have multiple applications, both intended and unintended.
6-8.ST.3.d.	Describe the impact of an individual’s wants, values and interests on the development of new technologies.
6-8.ST.3.e.	Manage components of one’s digital identity and one’s digital footprint.
6-8.ST.3.f.	Evaluate current and past revisions to laws, rules and policies as society responds to technological advancements.

TECHNOLOGY

Design and Technology

Topic 1: Define and describe technology, including its core concepts of systems, resources, requirements, processes, controls, optimization and trade-offs.

6-8.DT.1.a.	Explore and document how technology can impact efficiency.
6-8.DT.1.b.	Analyze how tools, materials and processes are used to alter the natural and human-designed worlds.
6-8.DT.1.c.	Define and categorize the requirements of a design as either criteria or constraints.
6-8.DT.1.d.	Explain how optimization is the process of making a product as fully functional and effective as possible.
6-8.DT.1.e.	Describe how trade-offs involve a choice of one quality over another.
6-8.DT.1.f.	Give examples of how trade-offs must occur when optimizing a design in order to maintain design requirements.

Topic 2: Identify a problem and use an engineering design process to solve the problem.

6-8.DT.2.a.	Apply a complete design process to solve an identified individual or community problem: research, develop, test, evaluate and present several possible solutions, and redesign to improve the solution.
6-8.DT.2.b.	Describe how invention is a process of turning ideas and imagination into devices and systems.
6-8.DT.2.c.	Explain how innovation is the process of modifying an existing system or system element(s) to improve it.
6-8.DT.2.d.	Consider multiple factors, including criteria and constraints, (e.g., research, cost, time, materials, feedback, safety) to justify decisions when developing products and systems to solve problems.
6-8.DT.2.e.	Identify and explain why effective designs develop from non-linear, flexible application of a design process.

Topic 3: Demonstrate that solutions to complex problems require collaboration, interdisciplinary understanding and systems thinking.

6-8.DT.3.a.	Collaborate to solve a problem as an interdisciplinary team modeling different roles and functions.
6-8.DT.3.b.	Explain ways that invention and innovation within one field can transfer into other fields of technology.
6-8.DT.3.c.	Evaluate the effectiveness of the group's collaboration during the engineering design process and the contribution of the varying roles.
6-8.DT.3.d.	Give examples of how changes in one part of a system can impact other parts of that system.
6-8.DT.3.e.	Deconstruct a system into its component parts and describe how they interrelate.

TECHNOLOGY**Topic 4: Evaluate designs using functional, aesthetic and creative elements.**

6-8.DT.4.a.	Examine the progression of a product to identify how the functional, aesthetic and creative elements were applied.
6-8.DT.4.b.	Analyze environments or products that are examples of the application of the principles of universal or inclusive design.
6-8.DT.4.c.	Apply the design principle “form follows function” to develop a product.

WORLD LANGUAGES AND CULTURES
Instructional Supports:

[Ohio's Learning Standards for World Languages and Cultures](#)
[World Languages Resource Center](#)

Students will engage with and progress through language and culture courses at differing stages of their K-12 education. The novice proficiency levels are displayed below. Choose the column that fits the proficiency level of your student(s). Additional levels can be found in the world languages and cultures standards.

Functions	Novice Low	Novice Mid	Novice High
Interpretive intercultural communication (E.INT-C)			
Investigate Intercultural Products, Practices and Perspectives	Recognize a few typical products and practices related to familiar, everyday life in native and other cultures.	Identify typical cultural products and practices related to familiar, everyday life in native and other cultures to help understand perspectives.	Identify and compare typical products and practices related to familiar, everyday life in native and other cultures to help understand perspectives.
Compare Intercultural Behaviors	Recognize a few very simple behaviors in other cultures.	Identify familiar or everyday behaviors in other cultures.	Identify and compare familiar or everyday behaviors in native and other cultures.
Comprehend Authentic Texts that are Spoken, Written or Signed	Understand a few familiar words or phrases in: a. Simple, authentic informational texts; b. Simple, authentic fictional texts; c. Simple, overheard or observed conversations.	Understand very basic information in: a. Simple, authentic informational texts; b. Simple, authentic fictional texts; c. Simple, overheard or observed conversations.	Understand the topic and some isolated facts in: a. Simple, authentic informational texts; b. Simple, authentic fictional texts; c. Simple, overheard or observed conversations.
Interpretive literacy (E.INT-LIT)			
Infer Meaning of Texts	Recognize traditional and nontraditional letters, accents, characters or tone marks, as well as cognates and familiar or practiced words.	Recognize non-traditional letters, accents, characters or tone marks, as well as cognates and words from context.	Recognize cognates and infer meaning of unfamiliar words or phrases using context clues and background knowledge.

WORLD LANGUAGES AND CULTURES

Recognize and Use Organizational Features of Texts	Recognize visual, aural and organizational features to identify the purpose of very simple texts, such as lists, labels, titles or headlines.	Recognize visual, aural and organizational features to identify the purpose of simple texts, such as schedules, song refrains, simple poems or infographics.	Use visual, aural and organizational features to identify the purpose of simple texts, such as announcements, instructions, fables or graphics.
Apply Self-Questioning Skills	Use literal or factual self-questioning before, during and after engaging with texts, such as “Who, where, when, what or how many?”	Use literal or factual self-questioning before, during and after engaging with texts, such as “What time, who is, why or how?”	Use a mixture of literal and inferential self-questioning before, during and after engaging with texts, such as “What happened or what might happen next?”
Make Text Connections	Make personal connections to a text using background knowledge or experiences.	Make personal connections to a text using background knowledge or experiences.	Make simple text-to-text connections using information from previous texts.
Use Resources Appropriately	Use digital and cultural resources appropriately.	Use digital and cultural resources appropriately.	Use digital and cultural resources appropriately.
Interpersonal intercultural communication (E.INP-C)			
Investigate Intercultural Products, Practices and Perspectives	Identify a few typical products and practices related to familiar, everyday life in native and other cultures.	Identify typical products and practices related to familiar, everyday life in native and other cultures.	Identify products and practices related to everyday life to help understand perspectives of native and other cultures.
Interact with Culturally Appropriate Language and Behavior	Interact in very familiar intercultural situations using practiced language and behaviors.	Interact in very familiar intercultural situations using practiced language and behaviors and show cultural awareness by recognizing a few culturally inappropriate behaviors.	Interact in familiar, everyday intercultural situations using practiced language and behaviors, and show cultural awareness by recognizing culturally inappropriate behaviors.
Exchange Information	Provide basic information on very familiar topics.	Request and share simple information on familiar or everyday topics.	Request and share information on familiar and everyday topics.
Meet Personal Needs	Express a few basic personal needs in very familiar situations.	Express basic needs in familiar or everyday situations.	Interact with others to meet basic needs in familiar and everyday situations.

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Express and React to Preferences and Opinions	Express a few basic preferences or feelings.	Express basic preferences or feelings and react to those of others.	Express, ask about, and react to simple preferences, feelings or opinions on familiar topics.
Interpersonal literacy (E.INP-LIT)			
Communicate, React and Show Interest	Use familiar, relevant vocabulary or structures and rehearsed or imitated cultural behaviors to communicate, react and show interest.	Use familiar, relevant vocabulary and structures and rehearsed or imitated cultural behaviors to communicate, react and show interest.	Use culturally appropriate and relevant language and rehearsed or learned behaviors to communicate, react and show interest.
Continue and Extend Conversations	Use a few very simple verbal or nonverbal rejoinders or interjections.	Use very simple verbal and nonverbal interrogatives, rejoinders, interjections or requests for clarification.	Use simple interrogatives, rejoinders interjections, requests for clarification or transition words.
Increase Comprehensibility and Clarity of Expression	Increase comprehensibility using gestures, hand shapes, facial expressions or repetition.	Increase comprehensibility using gestures, hand shapes, facial expressions, repetition or word substitution.	Increase comprehensibility and clarify information using word substitution, rephrasing, circumlocution or attention to pronunciation, tone or pitch.
Infer Meaning of Unfamiliar Language	Infer meaning of unfamiliar language from gestures, facial and body expressions or context clues during simple interactions.	Infer meaning of unfamiliar language from gestures, facial and body expressions or context clues during simple interactions.	Infer meaning of unfamiliar language from gestures, facial and body expressions, context clues or topic of conversation.
Use Resources Appropriately	Use digital and cultural resources appropriately.	Use digital and cultural resources appropriately.	Use digital and cultural resources appropriately.
Presentational intercultural communication (E.P-C)			
Investigate Intercultural Products, Practices and Perspectives	Identify a few typical products and practices related to familiar, everyday life in native and other cultures.	Identify typical products and practices related to familiar, everyday life in native and other cultures.	Identify similarities and differences between typical products and practices related to everyday life to help understand perspectives of native and other cultures.

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Communicate in Culturally Appropriate Ways	Present in very familiar intercultural situations using memorized or practiced language and behaviors.	Present in very familiar intercultural situations using practiced or learned language and behaviors.	Present in very familiar situations using practiced or learned language and behaviors.
Inform and Describe	Name very familiar people, places and objects.	Give simple information about very familiar topics.	Give simple descriptions of familiar and everyday topics.
Narrate About Life and Activities	Provide very basic details about self.	Provide simple details about self, interests and activities.	Provide details about personal life, interests and activities.
Express Preferences	Express likes and dislikes about very familiar topics from native and other cultures.	Express likes and dislikes about familiar topics from native and other cultures.	Express preferences on familiar and everyday topics or topics of interest from native and other cultures.
Presentational literacy (E.P-LIT)			
Choose Relevant, Authentic Content	Use familiar vocabulary and structures that are relevant to the topic and very simple authentic resources as needed.	Use familiar vocabulary and structures that are relevant to the topic and very simple authentic resources as needed.	Use familiar content, structures and syntax that are relevant to the topic and authentic resources as needed.
Organize Information	Organize very simple information in a logical sequence and support with gestures or visuals	Organize simple information in a logical sequence and support with gestures or visuals.	Organize information in a logical sequence, with topic sentence, simple details and conclusion, and support with gestures, visuals or additional language as needed.
Increase Comprehensibility	Communicate with emerging awareness of pronunciation, spelling, punctuation, hand shapes or signing parameters.	Communicate with awareness of pronunciation, spelling, punctuation, hand shapes or signing parameters.	Communicate with attention to pronunciation, spelling, punctuation, hand shapes or signing parameters.
Maintain Audience Interest	Maintain audience interest via gestures, creativity, emotion, technology or visuals.	Maintain audience interest via gestures, creativity, emotion, humor, technology or visuals.	Maintain audience interest via content, creativity, emotion, humor, technology or visuals.
Use Resources Appropriately	Use digital and cultural resources appropriately.	Use digital and cultural resources appropriately.	Use digital and cultural resources appropriately.