



Arizona
Academic Standards
For
Grades 9-12

**KINGMAN ACADEMY OF LEARNING
HIGH SCHOOL**



READING STANDARDS FOR LITERATURE

Key Ideas and Details (Grade 9-10)

- 1: Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
- 2: Determine a theme or central idea of a text and analyze in detail its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text.
- 3: Analyze how complex characters (e.g., those with multiple or conflicting motivations) develop over the course of a text, interact with other characters, and advance the plot or develop the theme.

Key Ideas and Details (Grade 11-12)

- 1: Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.
- 2: Determine two or more themes or central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to produce a complex account; provide an objective summary of the text.
- 3: Analyze the impact of the author's choices regarding how to develop and relate elements of a story or drama (e.g., where a story is set, how the action is ordered, how the characters are introduced and developed).

Craft and Structure (Grade 9-10)

- 4: Determine the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language evokes a sense of time and place; how it sets a formal or informal tone).
- 5: Analyze how an author's choices concerning how to structure a text, order events within it (e.g., parallel plots), and manipulate time (e.g., pacing, flashbacks) create such effects as mystery, tension, or surprise.
- 6: Analyze a particular point of view or cultural experience reflected in a work of literature from outside the United States, drawing on a wide reading of world literature.

Craft and Structure (Grade 11-12)

- 4: Determine the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyze the impact of specific word choices on meaning and tone, including words with multiple meanings or language that is particularly fresh, engaging, or beautiful. (Include Shakespeare as well as other authors.)
- 5: Analyze how an author's choices concerning how to structure specific parts of a text (e.g., the choice of where to begin or end a story, the choice to provide a comedic or tragic resolution) contribute to its overall structure and meaning as well as its aesthetic impact.
- 6: Analyze a case in which grasping point of view requires distinguishing what is directly stated in a text from what is really meant (e.g., satire, sarcasm, irony, or understatement).

Integration of Knowledge and Ideas (Grades 9-10)

7. Analyze the representation of a subject or a key scene in two different artistic mediums, including what is emphasized or absent in each treatment (e.g., Auden's "Musée des Beaux Arts" and Breughel's *Landscape with the Fall of Icarus*).
8. N/A
9. Analyze how an author draws on and transforms source material in a specific work (e.g., how Shakespeare treats a theme or topic from Ovid or the Bible or how a later author draws on a play by Shakespeare).

Integration of Knowledge and Ideas (Grades 11-12)

7. Analyze multiple interpretations of a story, drama, or poem (e.g., recorded or live production of a play or recorded novel or poetry); evaluating how each version interprets the source text. (Include at least one play by Shakespeare and one play by an American dramatist.)
8. N/A
9. Demonstrate knowledge of eighteenth-, nineteenth- and early-twentieth-century foundational works of American literature, including how two or more texts from the same period treat similar themes or topics.

Range of Reading and Level of Text Complexity (Grade 9-10)

10. By the end of grade 9, read and comprehend literature, including stories, dramas, and poems, in the grades 9–10 text complexity band proficiently, with scaffolding as needed at the high end of the range.
By the end of grade 10, read and comprehend literature, including stories, dramas, and poems, at the high end of the grades 9–10 text complexity band independently and proficiently.

Range of Reading and Level of Text Complexity (Grade 11-12)

10. By the end of grade 11, read and comprehend literature, including stories, dramas, and poems, in the grades 11–CCR text complexity band proficiently, with scaffolding as needed at the high end of the range.
By the end of grade 12, read and comprehend literature, including stories, dramas, and poems, at the high end of the grades 11–CCR text complexity band independently and proficiently.

READING STANDARDS FOR INFORMATIONAL TEXT**Key Ideas and Details (Grade 9-10)**

- 1: Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
- 2: Determine a central idea of a text and analyze its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text.
- 3: Analyze how the author unfolds an analysis or series of ideas or events, including the order in which the points are made, how they are introduced and developed, and the connections that are drawn between them.

Key Ideas and Details (Grade 11-12)

- 1: Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.
- 2: Determine two or more central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to provide a complex analysis; provide an objective summary of the text.
- 3: Analyze a complex set of ideas or sequence of events and explain how specific individuals, ideas, or events interact and develop over the course of the text.

Craft and Structure (Grade 9-10)

- 4: Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language of a court opinion differs from that of a newspaper).
- 5: Analyze in detail how an author's ideas or claims are developed and refined by particular sentences, paragraphs, or larger portions of a text (e.g., a section or chapter).
- 6: Determine an author's point of view or purpose in a text and analyze how an author uses rhetoric to advance that point of view or purpose.

Craft and Structure (Grades 11-12)

- 4: Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze how an author uses and refines the meaning of a key term or terms over the course of a text (e.g., how Madison defines *faction* in *Federalist No. 10*).

Craft and Structure (Grades 11-12) cont.

- 5: Analyze and evaluate the effectiveness of the structure an author uses in his or her exposition or argument, including whether the structure makes points clear, convincing, and engaging.
- 6: Determine an author's point of view or purpose in a text in which the rhetoric is particularly effective, analyzing how style and content contribute to the power, persuasiveness, or beauty of the text.

Integration of Knowledge and Ideas (Grade 9-10)

7. Analyze various accounts of a subject told in different mediums (e.g., a person's life story in both print and multimedia), determining which details are emphasized in each account.
8. Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identify false statements and fallacious reasoning.
9. Analyze seminal U.S. documents of historical and literary significance (e.g., Washington's Farewell Address, the Gettysburg Address, Roosevelt's Four Freedoms speech, King's "Letter from Birmingham Jail"), including how they address related themes and concepts.

Integration of Knowledge and Ideas (Grade 11-12)

7. Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.
8. Delineate and evaluate the reasoning in seminal U.S. texts, including the application of constitutional principles and use of legal reasoning (e.g., in U.S. Supreme Court majority opinions and dissents) and the premises, purposes, and arguments in works of public advocacy (e.g., *The Federalist*, presidential addresses).
9. Analyze seventeenth-, eighteenth-, and nineteenth-century foundational U.S. documents of historical and literary significance (including The Declaration of Independence, the Preamble to the Constitution, the Bill of Rights, and Lincoln's Second Inaugural Address) for their themes, purposes, and rhetorical features.

Range of Reading and Level of Complexity (Grade 9-10)

10. By the end of grade 9, read and comprehend literary nonfiction in the grades 9–10 text complexity band proficiently, with scaffolding as needed at the high end of the range.
 - a: By the end of grade 9, read and comprehend informational and functional text, including history/social studies, science, and technical texts, in the grades 9–10 text complexity band proficiently, with scaffolding as needed at the high end of the range.

By the end of grade 10, read and comprehend literary nonfiction at the high end of the grades 9–10 text complexity band independently and proficiently.

b: By the end of grade 10, read and comprehend informational and functional text, including history/social studies, science, and technical texts, at the high end of the grades 9–10 text complexity band independently and proficiently.

Range of Reading and Level of Complexity (Grade 11-12)

10. By the end of grade 11, read and comprehend literary nonfiction in the grades 11–CCR text complexity band proficiently, with scaffolding as needed at the high end of the range.
 - a: By the end of grade 11, read and comprehend informational and functional text, including history/social studies, science, and technical texts, in the grades 11– CCR text complexity band proficiently, with scaffolding as needed at the high end of the range.

By the end of grade 12, read and comprehend literary nonfiction at the high end of the grades 11–CCR text complexity band independently and proficiently.

b: By the end of grade 12, read and comprehend informational and functional text, including history/social studies, science, and technical texts, at the high end of the grades 11–CCR text complexity band independently and proficiently.

WRITING STANDARDS**Text Types and Purposes (Grades 9-10)**

- 1: Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
 - a: Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among claim(s), counterclaims, reasons, and evidence.
 - b: Develop claim(s) and counterclaims fairly, supplying evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level and concerns.
 - c: Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.
 - d: Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.
 - e: Provide a concluding statement or section that follows from and supports the argument presented.
2. Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.
 - a: Introduce a topic; organize complex ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.
 - b: Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.
 - c: Use appropriate and varied transitions to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.
 - d: Use precise language and domain-specific vocabulary to manage the complexity of the topic.
 - e: Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.
 - f: Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).
- 3: Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.
 - a: Engage and orient the reader by setting out a problem, situation, or observation, establishing one or multiple point(s) of view, and introducing a narrator and/or characters; create a smooth progression of experiences or events.
 - b: Use narrative techniques, such as dialogue, pacing, description, reflection, and multiple plot lines, to develop experiences, events, and/or characters.
 - c: Use a variety of techniques to sequence events so that they build on one another to create a coherent whole.
 - d: Use precise words and phrases, telling details, and sensory language to convey a vivid picture of the experiences, events, setting, and/or characters.
 - e: Provide a conclusion that follows from and reflects on what is experienced, observed, or resolved over the course of the narrative.

Text Types and purposes (Grades 11-12)

- 1: Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
 - a: Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences claim(s), counterclaims, reasons, and evidence.
 - b: Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level, concerns, values, and possible biases.
 - c: Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.
 - d: Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.
 - e: Provide a concluding statement or section that follows from and supports the argument presented.

WRITING STANDARDS**Text Types and purposes (Grades 11-12) cont.**

- 2: Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.
- a: Introduce a topic; organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.
 - b: Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.
 - c: Use appropriate and varied transitions and syntax to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.
 - d: Use precise language, domain-specific vocabulary, and techniques such as metaphor, simile, and analogy to manage the complexity of the topic.
 - e: Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.
 - f: Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).
- 3: Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.
- a: Engage and orient the reader by setting out a problem, situation, or observation and its significance, establishing one or multiple point(s) of view, and introducing a narrator and/or characters; create a smooth progression of experiences or events.
 - b: Use narrative techniques, such as dialogue, pacing, description, reflection, and multiple plot lines, to develop experiences, events, and/or characters.
 - c: Use a variety of techniques to sequence events so that they build on one another to create a coherent whole and build toward a particular tone and outcome (e.g., a sense of mystery, suspense, growth, or resolution).
 - d: Use precise words and phrases, telling details, and sensory language to convey a vivid picture of the experiences, events, setting, and/or characters.
 - e: Provide a conclusion that follows from and reflects on what is experienced, observed, or resolved over the course of the narrative.

Production and Distribution of Writing (Grades 9-10)

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.
- a: Produce clear and coherent functional writing (e.g., formal letters, experiments, notes/messages, labels, timelines, graphs/tables, procedures, invitations, envelopes, maps, captions, diagrams) in which the development and organization are appropriate to the task, purpose, and audience.
5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grades 9–10.)
6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.

Production and Distribution of Writing (Grades 11-12)

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.
- a: Produce clear and coherent functional writing (e.g., formal letters, experiments, notes/messages, labels, timelines, graphs/tables, procedures, invitations, envelopes, maps, captions, diagrams) in which the development and organization are appropriate to the task, purpose, and audience.
5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grades 11–12.)
6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.

WRITING STANDARDS**Research to Build and Present Knowledge (Grades 9-10)**

7. Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
8. Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.
9. Draw evidence from literary or informational texts to support analysis, reflection, and research.
 - a: Apply *grades 9–10 Reading standards* to literature (e.g., "Analyze how an author draws on and transforms source material in a specific work [e.g., how Shakespeare treats a theme or topic from Ovid or the Bible or how a later author draws on a play by Shakespeare]").
 - b: Apply *grades 9–10 Reading standards* to literary nonfiction (e.g., "Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identify false statements and fallacious reasoning").

Research to Build and Present Knowledge (Grades 11-12)

7. Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
8. Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
9. Draw evidence from literary or informational texts to support analysis, reflection, and research.
 - a: Apply *grades 11–12 Reading standards* to literature (e.g., "Demonstrate knowledge of eighteenth-, nineteenth- and early-twentieth-century foundational works of American literature, including how two or more texts from the same period treat similar themes or topics").
 - b: Apply *grades 11–12 Reading standards* to literary nonfiction (e.g., "Delineate and evaluate the reasoning in seminal U.S. texts, including the application of constitutional principles and use of legal reasoning [e.g., in U.S. Supreme Court Case majority opinions and dissents] and the premises, purposes, and arguments in works of public advocacy [e.g., *The Federalist*, presidential addresses]").

Range of Writing (Grades 9-10)

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 tasks, purposes, and audiences.

Range of Writing (Grades 11-12)

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 tasks, purposes, and audiences.

SPEAKING AND LISTENING STANDARDS

Comprehension and Collaboration (Grades 9-10)

1. Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grades 9–10 topics, texts, and issues*, building on others' ideas and expressing their own clearly and persuasively.
 - a: Come to discussions prepared having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.
 - b: Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, and presentation of alternate views), clear goals and deadlines, and individual roles as needed.
 - c: Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions.
 - d: Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented.
2. Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) evaluating the credibility and accuracy of each source.
3. Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, identifying any fallacious reasoning or exaggerated or distorted evidence.

Comprehension and Collaboration (Grades 11-12)

1. Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grades 11–12 topics, texts, and issues*, building on others' ideas and expressing their own clearly and persuasively.
 - a: Come to discussions prepared having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.
 - b: Work with peers to promote civil, democratic discussions and decision-making, set clear goals and deadlines, and establish individual roles as needed.
 - c: Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives.
 - d: Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.
2. Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.
3. Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, assessing the stance, premises, links among ideas, word choice, points of emphasis, and tone used.

Presentation of Knowledge and Ideas (Grades 9-10)

4. Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task.
5. Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.
6. Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See grades 9–10 Language standards 1 and 3 for specific expectations.)

SPEAKING AND LISTENING STANDARDS (cont.)**Presentation of Knowledge and Ideas (Grades 11-12)**

4. Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.
5. Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.
6. Adapt speech to a variety of contexts and tasks, demonstrating a command of formal English when indicated or appropriate.

LANGUAGE STANDARDS**Conventions of Standard English (Grades 9-10)**

1. Demonstrate command of the conventions of Standard English grammar and usage when writing or speaking.
 - a: Use parallel structure.
 - b: Use various types of phrases (noun, verb, adjectival, adverbial, participial, prepositional, and absolute) and clauses (independent, dependent; noun, relative, adverbial) to convey specific meanings and add variety and interest to writing or presentations.
2. Demonstrate command of the conventions of Standard English capitalization, punctuation, and spelling when writing.
 - a: Use a semicolon (and perhaps a conjunctive adverb) to link two or more closely related independent clauses.
 - b: Use a colon to introduce a list or quotation.
 - c: Spell correctly.

Conventions of Standard English (Grades 11-12)

1. Demonstrate command of the conventions of Standard English grammar and usage when writing or speaking.
 - a: Apply the understanding that usage is a matter of convention, can change over time, and is sometimes contested.
 - b: Resolve issues of complex or contested usage, consulting references (e.g., *Merriam-Webster's Dictionary of English Usage*, *Garner's Modern American Usage*) as needed.
2. Demonstrate command of the conventions of Standard English capitalization, punctuation, and spelling when writing.
 - a: Observe hyphenation conventions.
 - b: Spell correctly.

Knowledge of Language (Grades 9-10)

3. Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.
 - a: Write and edit work so that it conforms to the guidelines in a style manual (e.g., *MLA Handbook*, *Turabian's Manual for Writers*) appropriate for the discipline and writing type.

Knowledge of Language (Grades 11-12)

3. Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.
 - a: Vary syntax for effect, consulting references (e.g., *Tufte's Artful Sentences*) for guidance as needed; apply an understanding of syntax to the study of complex texts when reading.

LANGUAGE STANDARDS (cont.)**Vocabulary Acquisition and Use (Grades 9-10)**

4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *grades 9–10 reading and content*, choosing flexibly from a range of strategies.
 - a: Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word’s position or function in a sentence) as a clue to the meaning of a word or phrase.
 - b: Identify and correctly use patterns of word changes that indicate different meanings or parts of speech (e.g., *analyze, analysis, analytical; advocate, advocacy*).
 - c: 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, its part of speech, or its etymology.
 - d: 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).
5. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.
 - a: Interpret figures of speech (e.g., euphemism, oxymoron) in context and analyze their role in the text.
 - b: Analyze nuances in the meaning of words with similar denotations.
6. Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.

Vocabulary Acquisition and Use (Grades 11-12)

4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *grades 11–12 reading and content*, choosing flexibly from a range of strategies.
 - a: Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word’s position or function in a sentence) as a clue to the meaning of a word or phrase.
 - b: Identify and correctly use patterns of word changes that indicate different meanings or parts of speech (e.g., *conceive, conception, conceivable*).
 - c: 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, its part of speech, its etymology, or its standard usage.
 - d: 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).
5. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.
 - a: Interpret figures of speech (e.g., hyperbole, paradox) in context and analyze their role in the text.
 - b: Analyze nuances in the meaning of words with similar denotations.
6. Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.

READING STANDARDS FOR LITERACY IN HISTORY/SOCIAL STUDIES**Key Ideas and Details (Grades 9-10)**

1. Cite specific textual evidence to support analysis of primary and secondary sources, attending to such features as the date and origin of the information.
2. Determine the central ideas or information of a primary or secondary source; provide an accurate summary of how key events or ideas develop over the course of the text.
3. Analyze in detail a series of events described in a text; determine whether earlier events caused later ones or simply preceded them.

READING STANDARDS FOR LITERACY IN HISTORY/SOCIAL STUDIES (cont.)**Key Ideas and Details (Grades 11-12)**

1. Cite specific textual evidence to support analysis of primary and secondary sources, connecting insights gained from specific details to an understanding of the text as a whole.
2. Determine the central ideas or information of a primary or secondary source; provide an accurate summary that makes clear the relationships among the key details and ideas.
3. Evaluate various explanations for actions or events and determine which explanation best accords with textual evidence, acknowledging where the text leaves matters uncertain.

Craft and Structure (Grades 9-10)

3. Determine the meaning of words and phrases as they are used in a text, including vocabulary describing political, social, or economic aspects of history/social studies.
4. Analyze how a text uses structure to emphasize key points or advance an explanation or analysis.
5. Compare the point of view of two or more authors for how they treat the same or similar topics, including which details they include and emphasize in their respective accounts.

Craft and Structure (Grades 11-12)

3. Determine the meaning of words and phrases as they are used in a text, including analyzing how an author uses and refines the meaning of a key term over the course of a text (e.g., how Madison defines *faction* in *Federalist* No. 10).
4. Analyze in detail how a complex primary source is structured, including how key sentences, paragraphs, and larger portions of the text contribute to the whole.
5. Evaluate authors' differing points of view on the same historical event or issue by assessing the authors' claims, reasoning, and evidence.

Integration of Knowledge and Ideas (Grades 9-10)

7. Integrate quantitative or technical analysis (e.g., charts, research data) with qualitative analysis in print or digital text.
8. Assess the extent to which the reasoning and evidence in a text support the author's claims.
9. Compare and contrast treatments of the same topic in several primary and secondary sources.

Integration of Knowledge and Ideas (Grades 11-12)

7. Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, as well as in words) in order to address a question or solve a problem.
8. Evaluate an author's premises, claims, and evidence by corroborating or challenging them with other information.
9. Integrate information from diverse sources, both primary and secondary, into a coherent understanding of an idea or event, noting discrepancies among sources.

Range of Reading and Level of Text Complexity (Grades 9-10)

10. By the end of grade 10, read and comprehend history/social studies texts in the grades 9–10 text complexity band independently and proficiently.

Range of Reading and Level of Text Complexity (Grades 11-12)

10. By the end of grade 12, read and comprehend history/social studies texts in the grades 11–CCR text complexity band independently and proficiently.

READING STANDARDS FOR LITERACY IN SCIENCE AND TECHNICAL SUBJECTS**Key Ideas and Details (Grades 9-10)**

- 1: Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.
- 2: Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.
- 3: Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.

Key Ideas and Details (Grades 11-12)

- 1: Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.
- 2: Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
- 3: Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.

Craft and Structure (Grades 9-10)

4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 9–10 texts and topics*.
5. Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., *force, friction, reaction force, energy*).
6. Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, defining the question the author seeks to address.
7. Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.

Craft and Structure (Grades 11-12)

4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 11–12 texts and topics*.
5. Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.
6. Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.
7. Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.

Integration of Knowledge and Ideas (Grades 9-10)

8. Assess the extent to which the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem.
9. Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.

Integration of Knowledge and Ideas (Grades 11-12)

8. Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.
9. Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible

READING STANDARDS FOR LITERACY IN SCIENCE AND TECHNICAL SUBJECTS

Range of Reading and Level of Text Complexity (Grades 9-10)

10. By the end of grade 10, read and comprehend science/technical texts in the grades 9–10 text complexity band independently and proficiently.

Range of Reading and Level of Text Complexity (Grades 11-12)

10. By the end of grade 12, read and comprehend science/technical texts in the grades 11–CCR text complexity band independently and proficiently.

WRITING STANDARDS FOR LITERACY IN HISTORY/SOCIAL STUDIES, SCIENCE, AND TECHNICAL SUBJECTS

Text Types and Purposes (Grades 9-10)

1. Write arguments focused on *discipline-specific content*.
 - a. Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among the claim(s), counterclaims, reasons, and evidence.
 - b. Develop claim(s) and counterclaims fairly, supplying data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form and in a manner that anticipates the audience’s knowledge level and concerns.
 - c. Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.
 - d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.
 - e. Provide a concluding statement or section that follows from or supports the argument presented.
2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.
 - a. Introduce a topic and organize ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.
 - b. Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience’s knowledge of the topic.
 - c. Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among ideas and concepts.
 - d. Use precise language and domain-specific vocabulary to manage the complexity of the topic and convey a style appropriate to the discipline and context as well as to the expertise of likely readers.
 - e. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.
 - f. Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).
3. (Not applicable as a separate requirement)

Text Types and Purposes (Grades 11-12)

1. Write arguments focused on *discipline-specific content*.
 - a. Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences the claim(s), counterclaims, reasons, and evidence.
 - b. Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form that anticipates the audience’s knowledge level, concerns, values, and possible biases.
 - c. Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.

WRITING STANDARDS FOR LITERACY IN HISTORY/SOCIAL STUDIES, SCIENCE, AND TECHNICAL SUBJECTS**Text Types and Purposes (Grades 11-12) cont.**

- d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.
- e. Provide a concluding statement or section that follows from or supports the argument presented
2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.
 - a. Introduce a topic and organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.
 - b. Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.
 - c. Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.
 - d. Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers.
 - e. Provide a concluding statement or section that follows from and supports the information or explanation provided (e.g., articulating implications or the significance of the topic).
3. (Not applicable as a separate requirement)

Production and Distribution of Writing (Grades 9-10)

4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
 - a. Produce clear and coherent functional writing (e.g., formal letters, envelopes, procedures, labels, timelines, graphs/tables, experiments, maps, caption, charts, diagrams) in which the development, organization, and style are appropriate to task, purpose, and audience.
5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.
6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.

Production and Distribution of Writing (Grades 11-12)

4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
 - a. Produce clear and coherent functional writing (e.g., formal letters, envelopes, procedures, labels, timelines, graphs/tables, experiments, maps, caption, charts, diagrams) in which the development, organization, and style are appropriate to task, purpose, and audience.
5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.
6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.

WRITING STANDARDS FOR LITERACY IN HISTORY/SOCIAL STUDIES, SCIENCE, AND TECHNICAL SUBJECTS**Research to Build and Present Knowledge (Grades 9-10)**

7. Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
8. Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.
9. Draw evidence from informational texts to support analysis, reflection, and research.

Research to Build and Present Knowledge (Grades 11-12)

7. Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
8. Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
9. Draw evidence from informational texts to support analysis, reflection, and research.

Range of Writing (Grades 9-10)

10. Write routinely over extended time frames (time for 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.

Range of Writing (Grades 11-12)

10. Write routinely over extended time frames (time for 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.

MATHEMATICS**Number and Quantity: The Real Number System****Extend the properties of exponents to rational exponents**

- 1: Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents. *Ex: Define $5^{1/3}$ to be the cube root of 5 because we want $(5^{1/3})^3 = 5^{(1/3)3}$ to hold, so $(5^{1/3})^3$ must equal 5.*
- 2: Rewrite expressions involving radicals and rational exponents using the properties of exponents.

Use properties of rational and irrational numbers.

- 3: Explain why the sum or product of two rational numbers are rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational.

Number and Quantity: Quantities**Reason quantitatively and use units to solve problems.**

- 1: Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.
- 2: Define appropriate quantities for the purpose of descriptive modeling.
- 3: Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

Complex Number System**Perform arithmetic operations with complex numbers.**

- 1: Know there is a complex number i such that $i^2 = -1$, and every complex number has the form $a + bi$ with a and b real.
- 2: Use the relation $i^2 = -1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.
- 3: Find the conjugate of a complex number; use conjugates to find moduli and quotients of complex numbers.

Represent complex numbers and their operations on the complex plane.

- 4: Represent complex numbers on the complex plane in rectangular and polar form (including real and imaginary numbers), and explain why the rectangular and polar forms of a given complex number represent the same number.
- 5: Represent addition, subtraction, multiplication, and conjugation of complex numbers geometrically on the complex plane; use properties of this representation for computation.
Ex: $(-1 + \sqrt{3}i)^3 = 8$ because $(-1 + \sqrt{3}i)$ has modulus 2 and argument 120° .
- 6: Calculate the distance between numbers in the complex plane as the modulus of the difference, and the midpoint of a segment as the average of the numbers at its endpoints.

Use complex numbers in polynomial identities and equations.

- 7: Solve quadratic equations with real coefficients that have complex solutions.
- 8: Extend polynomial identities to the complex numbers. *For example, rewrite $x^2 + 4$ as $(x + 2i)(x - 2i)$.*
- 9: Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials.

Vector & Matrix Quantities**Represent and model with vector quantities.**

- 1: Recognize vector quantities as having both magnitude and direction. Represent vector quantities by directed line segments, and use appropriate symbols for vectors and their magnitudes (e.g., \mathbf{v} , $|\mathbf{v}|$, $\|\mathbf{v}\|$, v).
- 2: Find the components of a vector by subtracting the coordinates of an initial point from the coordinates of a terminal point.
- 3: Solve problems involving velocity and other quantities that can be represented by vectors.

Perform operations on vectors

- 4: Add and subtract vectors.
 - a: Add vectors end-to-end, component-wise, and by the parallelogram rule. Understand that the magnitude of a sum of two vectors is typically not the sum of the magnitudes.
 - b: Given two vectors in magnitude and direction form, determine the magnitude and direction of their sum.
 - c: Understand vector subtraction $\mathbf{v} - \mathbf{w}$ as $\mathbf{v} + (-\mathbf{w})$, where $-\mathbf{w}$ is the additive inverse of \mathbf{w} , with the same magnitude as \mathbf{w} and pointing in the opposite direction. Represent vector subtraction graphically by connecting the tips in the appropriate order, and perform vector subtraction component-wise.
- 5: Multiply a vector by a scalar.
 - a: Represent scalar multiplication graphically by scaling vectors and possibly reversing their direction; perform scalar multiplication component-wise, e.g., as $c(v_x, v_y) = (cv_x, cv_y)$.
 - b: Compute the magnitude of a scalar multiple $c\mathbf{v}$ using $\|c\mathbf{v}\| = |c|\mathbf{v}$. Compute the direction of $c\mathbf{v}$ knowing that when $|c|\mathbf{v} \neq 0$, the direction of $c\mathbf{v}$ is either along \mathbf{v} (for $c > 0$) or against \mathbf{v} (for $c < 0$).

Perform operations on matrices and use matrices in applications.

- 6: Use matrices to represent and manipulate data, e.g., to represent payoffs or incidence relationships in a network.
- 7: Multiply matrices by scalars to produce new matrices, e.g., as when all of the payoffs in a game are doubled.
- 8: Add, subtract, and multiply matrices of appropriate dimensions.
- 9: Understand that, unlike multiplication of numbers, matrix multiplication for square matrices is not a commutative operation, but still satisfies the associative and distributive properties.
- 10: Understand that the zero and identity matrices play a role in matrix addition and multiplication similar to the role of 0 and 1 in the real numbers. The determinant of a square matrix is nonzero if and only if the matrix has a multiplicative inverse.
- 11: Multiply a vector (regarded as a matrix with one column) by a matrix of suitable dimensions to produce another vector. Work with matrices as transformations of vectors.
- 12: Work with 2×2 matrices as a transformations of the plane, and interpret the absolute value of the determinant in terms of area.

ALGEBRA CONCEPTUAL CATEGORY**Seeing Structure in Expressions****Interpret the structure of expressions.**

- 1: Interpret expressions that represent a quantity in terms of its context.
 - a: Interpret parts of an expression, such as terms, factors, and coefficients.
 - b: Interpret complicated expressions by viewing one or more of their parts as a single entity.
For example, interpret $P(1+r)^n$ as the product of P and a factor not depending on P .
- 2: Use the structure of an expression to identify ways to rewrite it. *For example, see $x^4 - y^4$ as $(x^2)^2 - (y^2)^2$, thus recognizing it as a difference of squares that can be factored as $(x^2 - y^2)(x^2 + y^2)$.*

Seeing Structure in Expressions (cont.)

Write expressions in equivalent forms to solve problems

- 3: Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.
 - a: Factor a quadratic expression to reveal the zeros of the function it defines.
 - b: Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.
 - c: Use the properties of exponents to transform expressions for exponential functions. *For example the expression $1.15t$ can be rewritten as $(1.151/12)^{12t} \approx 1.012^{12t}$ to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.*
- 4: Derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems. *For example, calculate mortgage payments.*

Arithmetic with Polynomials & Rational Expressions

Perform arithmetic operations on polynomials.

- 1: Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.

Understand the relationship between zeros and factors of polynomials.

- 2: Know and apply the Remainder Theorem: For a polynomial $p(x)$ and a number a , the remainder on division by $x - a$ is $p(a)$, so $p(a) = 0$ if and only if $(x - a)$ is a factor of $p(x)$.
- 3: Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.

Use polynomial identities to solve problems.

- 4: Prove polynomial identities and use them to describe numerical relationships. For example, the polynomial identity $(x^2 + y^2)^2 = (x^2 - y^2)^2 + (2xy)^2$ can be used to generate Pythagorean triples.
- 5: Know and apply the Binomial Theorem for the expansion of $(x + y)^n$ in powers of x and y for a positive integer n , where x and y are any numbers, with coefficients determined for example by Pascal's Triangle.

Rewrite rational expressions.

- 6: Rewrite simple rational expressions in different forms; write $a(x)/b(x)$ in the form $q(x) + r(x)/b(x)$, where $a(x)$, $b(x)$, $q(x)$, and $r(x)$ are polynomials with the degree of $r(x)$ less than the degree of $b(x)$, using inspection, long division, or, for the more complicated examples, a computer algebra system.
- 7: Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions.

Creating Equations

Create equations that describe numbers or relationships.

- 1: Create equations and inequalities in one variable and use them to solve problems. *Include equations arising from linear and quadratic functions, and simple rational and exponential functions.*
- 2: Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
- 3: Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. *For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.*
- 4: Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. *For example, rearrange Ohm's law $V = IR$ to highlight resistance R .*

Reasoning with Equations & Inequalities**Understand solving equations as a process of reasoning and explain the reasoning.**

- 1: Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.
- 2: Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.

Solve equations and inequalities in one variable.

- 3: Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.
- 4: Solve quadratic equations in one variable.
 - a: Use the method of completing the square to transform any quadratic equation in x into an equation of the form $(x - p)^2 = q$ that has the same solutions. Derive the quadratic formula from this form.
 - b: Solve quadratic equations by inspection (e.g., for $x^2 = 49$), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as $a \pm bi$ for real numbers a and b .

Solve systems of equations.

- 5: Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.
- 6: Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.
- 7: Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically. For example, find the points of intersection between the line $y = -3x$ and the circle $x^2 + y^2 = 3$.
- 8: Represent a system of linear equations as a single matrix equation in a vector variable.
- 9: Find the inverse of a matrix if it exists and use it to solve systems of linear equations (using technology for matrices of dimension 3×3 or greater).

Represent and solve equations and inequalities graphically.

- 10: Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).
- 11: Explain why the x -coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.
- 12: Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.

FUNCTIONS CONCEPTUAL CATEGORY**Interpreting Functions****Understand the concept of a function and use function notation.**

- 1: Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then $f(x)$ denotes the output of f corresponding to the input x . The graph of f is the graph of the equation $y = f(x)$.
- 2: Use function notations, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.
- 3: Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. *For example, the Fibonacci sequence is defined recursively by $f(0) = f(1) = 1$, $f(n+1) = f(n) + f(n-1)$ for $n \geq 1$.*

Interpreting Functions (cont.)

Interpret functions that arise in applications in terms of the context.

- 4: For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. *Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.*
- 5: Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. *For example, if the function $h(n)$ gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function.*
- 6: Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.

Analyze functions using different representations.

- 7: Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.
- Graph linear and quadratic functions and show intercepts, maxima, and minima.
 - Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.
 - Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.
 - Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior.
 - Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.
- 8: Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.
- Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.
 - Use the properties of exponents to interpret expressions for exponential functions. For example, identify percent rate of change in functions such as $y = (1.02)^t$, $y = (0.97)^t$, $y = (1.01)^{12t}$, $y = (1.2)^{t/10}$, and classify them as representing exponential growth or decay.
- 9: Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum.*

Building Functions

Build a function that models a relationship between two quantities.

- 1: Write a function that describes a relationship between two quantities.
- Determine an explicit expression, a recursive process, or steps for calculation from a context.
 - Combine standard function types using arithmetic operations. *For example, build a function that models the temperature of a cooling body by adding a constant function to a decaying exponential, and relate these functions to the model.*
 - Compose functions. *For example, if $T(y)$ is the temperature in the atmosphere as a function of height, and $h(t)$ is the height of a weather balloon as a function of time, then $T(h(t))$ is the temperature at the location of the weather balloon as a function of time.*
- 2: Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.

Building Functions (cont.)**Build new functions from existing functions**

- 3: Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.
- 4: Find inverse functions.
 - a: Solve an equation of the form $f(x) = c$ for a simple function f that has an inverse and write an expression for the inverse. *For example, $f(x) = 2x^3$ or $f(x) = (x+1)/(x-1)$ for $x \neq 1$.*
 - b: Verify by composition that one function is the inverse of another.
 - c: Read values of an inverse function from a graph or a table, given that the function has an inverse.
 - d: Produce an invertible function from a non-invertible function by restricting the domain.
- 5: Understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents.

Linear, Quadratic, & Exponential Models**Construct and compare linear, quadratic, and exponential models and solve problems.**

- 1: Distinguish between situations that can be modeled with linear functions and with exponential functions.
 - a: Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.
 - b: Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.
 - c: Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.
- 2: Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).
- 3: Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.
- 4: For exponential models, express as a logarithm the solution to $abct = d$ where a , c , and d are numbers and the base b is 2, 10, or e ; evaluate the logarithm using technology.

Interpret expressions for functions in terms of the situation they model.

- 5: Interpret the parameters in a linear or exponential function in terms of a context.

Trigonometric Functions**Extend the domain of trigonometric functions using the unit circle**

- 1: Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle.
- 2: Explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle.
- 3: Use special triangles to determine geometrically the values of sine, cosine, tangent for $\pi/3$, $\pi/4$ and $\pi/6$, and use the unit circle to express the values of sine, cosines, and tangent for x , $\pi + x$, and $2\pi - x$ in terms of their values for x , where x is any real number.
- 4: Use the unit circle to explain symmetry (odd and even) and periodicity of trigonometric functions.

Model periodic phenomena with trigonometric functions

- 5: Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline.
- 6: Understand that restricting a trigonometric function to a domain on which it is always increasing or always decreasing allows its inverse to be constructed.
- 7: Use inverse functions to solve trigonometric equations that arise in modeling contexts; evaluate the solutions using technology, and interpret them in terms of the context.

Prove and apply trigonometric identities

- 8: Prove the Pythagorean identity $\sin^2(\theta) + \cos^2(\theta) = 1$ and use it to find $\sin(\theta)$, $\cos(\theta)$, or $\tan(\theta)$ given $\sin(\theta)$, $\cos(\theta)$, or $\tan(\theta)$ and the quadrant of the angle.
- 9: Prove the addition and subtraction formulas for sine, cosine, and tangent and use them to solve problems.

GEOMETRY CONCEPTUAL CATEGORY

Congruence

Experiment with transformations in the plane.

- 1: Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.
- 2: Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch).
- 3: Given a rectangle, parallelogram, trapezoid, or regular polygons, describe the rotations and reflections that carry it onto itself.
- 4: Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.
- 5: Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.

Understand congruence in terms of rigid motions.

- 6: Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.
- 7: Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.
- 8: Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.

Prove geometric theorems.

- 9: Prove theorems about lines and angles. *Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.*
- 10: Prove theorems about triangles. *Theorems include: measures of interior angles of a triangle sum to 180° ; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.*
- 11: Prove theorems about parallelograms. *Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.*

Make geometric constructions

- 12: Make formal geometric constructions with a variety of tools and methods (compass and straight-edge, string, reflective devices, paper folding, dynamic geometric software, etc.). *Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.*
- 13: Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.

Similarity, Right Triangles, & Trigonometry

Understand similarity in terms of similarity transformations.

- 1: Verify experimentally the properties of dilations given by a center and a scale factor:
 - a: Dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged.
 - b: The dilation of a line segment is longer or shorter in the ratio given by the scale factor.
- 2: Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.
- 3: Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.

Similarity, Right Triangles, & Trigonometry (cont.)**Prove theorems involving similarity.**

- 4: Prove theorems about triangles. *Theorems include: a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem proved using triangle similarity.*
- 5: Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.

Define trigonometric ratios and solve problems involving right triangles.

- 6: Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.
- 7: Explain and use the relationship between the sine and cosine of complementary angles.
- 8: Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.

Apply trigonometry to general triangles.

- 9: Derive the formula $A = \frac{1}{2} ab \sin(C)$ for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side.
- 10: Prove the Laws of Sines and Cosines and use them to solve problems.
- 11: Understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces).

Circles**Understand and apply theorems about circles.**

- 1: Prove that all circles are similar.
- 2: Identify and describe relationships among inscribed angles, radii, and chords. *Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.*
- 3: Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.
- 4: Construct a tangent line from a point outside a given circle to the circle.

Find arc lengths and areas of sectors of circles.

- 5: Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.

Expressing Geometric Properties with Equations**Translate between the geometric description and the equation for a conic section.**

- 1: Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.
- 2: Derive the equation of a parabola given a focus and directrix.
- 3: Derive the equations of ellipses and hyperbolas given the foci, using the fact that the sum or difference of distances from the foci is constant.

Use coordinates to prove simple geometric theorems algebraically.

- 4: Use coordinates to prove simple geometric theorems algebraically. *For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point $(1, \sqrt{3})$ lies on the circle centered at the origin and containing the point $(0, 2)$.*
- 5: Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).
- 6: Find the point on a directed line segment between two given points that partitions the segment in a given ratio.
- 7: Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.

Geometric Measurement & Dimension**Explain volume formulas and use them to solve problems.**

- 1: Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. *Use dissection arguments, Cavalieri's principle, and informal limit arguments.*
- 2: Give an informal argument using Cavalieri's principle for the formulas for the volume of a sphere and other solid figures.
- 3: Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.

Visualize relationships between two-dimensional and three-dimensional objects.

- 4: Identify the shape of two-dimensional cross-sections of three-dimensional objects, and identifies three-dimensional objects generated by rotations of two-dimensional objects.

Modeling with Geometry**Apply geometric concepts in modeling situations.**

- 1: Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).
- 2: Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).
- 3: Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).

STATISTICS & PROBABILITY CONCEPTUAL CATEGORY**Interpreting Categorical & Quantitative Data****Summarize, represent, and interpret data on a single count or measurement variable.**

- 1: Represent data with plots on the real number line (dot plots, histograms, and box plots).
- 2: Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.
- 3: Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).
- 4: Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.

Summarize, represent, and interpret data on two categorical and quantitative variables.

- 5: Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.
- 6: Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.
 - a: Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Uses given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models.
 - b: Informally assess the fit of a function by plotting and analyzing residuals.
 - c: Fit a linear function for a scatter plot that suggests a linear association.

Interpret linear models

- 7: Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.
- 8: Compute (using technology) and interpret the correlation coefficient of a linear fit.
- 9: Distinguish between correlation and causation.

Making Inferences & Justifying Conclusions**Understand and evaluate random processes underlying statistical experiments.**

- 1: Understand statistics as a process for making inferences about population parameters based on a random sample from that population.
- 2: Decide if a specified model is consistent with results from a given data-generating process, e.g., using simulation. *For example, a model says a spinning coin will fall heads up with probability 0.5. Would a result of 5 tails in a row cause you to question the model?*

Make inferences and justify conclusions from sample surveys, experiments, and observational studies.

- 3: Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.
- 4: Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling.
- 5: Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant.
- 6: Evaluate reports based on data.

Conditional Probability & the Rules of Probability**Understand independence and conditional probability and use them to interpret data.**

- 1: Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events (“or,” “and,” “not”).
- 2: Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent.
- 3: Understand the conditional probability of A given B as $P(A \text{ and } B)/P(B)$, and interpret independence of A and B as saying that the conditional probability of A given B is the same as the probability of A , and the conditional probability of B given A is the same as the probability of B .
- 4: Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities. *For example, collect data from a random sample of students in your school on their favorite subject among math, science, and English. Estimate the probability that a randomly selected student from your school will favor science given that the student is in tenth grade. Do the same for other subjects and compare the results.*
- 5: Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations. *For example, compare the chance of having lung cancer if you are a smoker with the chance of being a smoker if you have lung cancer.*

Use the rules of probability to compute probabilities of compound events in a uniform probability model.

- 6: Find the conditional probability of A given B as the fraction of B 's outcomes that also belong to A , and interpret the answer in terms of the model.
- 7: Apply the Addition Rule, $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$, and interpret the answer in terms of the model.
- 8: Apply the general Multiplication Rule in a uniform probability model, $P(A \text{ and } B) = P(A)P(B|A) = P(B)P(A|B)$, and interpret the answer in terms of the model.
- 9: Use permutations and combinations to compute probabilities of compound events and solve problems.

Using Probability to Make Decisions**Calculate expected values and use them to solve problems.**

- 1: Define a random variable for a quantity of interest by assigning a numerical value to each event in a sample space; graph the corresponding probability distribution using the same graphical displays as for data distributions.
- 2: Calculate the expected value of a random variable; interpret it as the mean of the probability distribution.
- 3: Develop a probability distribution for a random variable defined for a sample space in which theoretical probabilities can be calculated; find the expected value. *For example, find the theoretical probability distribution for the number of correct answers obtained by guessing on all five questions of a multiple-choice test where each question has four choices, and find the expected grade under various grading schemes.*

Using Probability to Make Decisions (cont.)**Calculate expected values and use them to solve problems.**

4: Develop a probability distribution for a random variable defined for a sample space in which probabilities are assigned empirically; find the expected value. *For example, find a current data distribution on the number of TV sets per household in the United States, and calculate the expected number of sets per household. How many TV sets would you expect to find in 100 randomly selected households?*

Use probability to evaluate outcomes of decisions.

5: Weigh the possible outcomes of a decision by assigning probabilities to payoff values and finding expected values.

a: Find the expected payoff for a game of chance. *For example, find the expected winnings from a state lottery ticket or a game at a fast-food restaurant.*

b: Evaluate and compare strategies on the basis of expected values. *For example, compare a high-deductible versus a low-deductible automobile insurance policy using various, but reasonable, chances of having a minor or a major accident.*

6: Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).

7: Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).

CONTEMPORARY MATHEMATICS**Discrete Mathematics****Understand and apply vertex-edge graph topics.**

1: Study the following topics related to vertex-edge graphs:

a: Euler circuits,

b: Hamilton circuits,

c: Traveling Salesperson Problem (TSP),

d: Minimum weight spanning trees,

e: Shortest paths,

f: Vertex coloring, and

g:Adjacency matrices.

2: Understand, analyze, and apply vertex-edge graphs to model and solve problems related to paths, circuits, networks, and relationships among a finite number of elements, in real-world and abstract settings.

3: Devise, analyzes, and applies algorithms for solving vertex-edge graph problems.

4: Extend work with adjacency matrices for graphs, such as interpreting row sums and using the n th power of the adjacency matrix to count paths of length n in a graph.

SCIENCE**INQUIRY PROCESS****Observations, Questions, and Hypotheses**

Evaluate scientific information for relevance to a given problem.

Develop questions from observations that transition into testable hypotheses.

Formulate a testable hypothesis.

Predict the outcome of an investigation based on prior evidence, probability, and/or modeling (not guessing or inferring).

Scientific Testing

Demonstrate safe and ethical procedures (e.g., use and care of technology, materials, organisms) and behavior in all science inquiry.

Identify the resources needed to conduct an investigation.

Design an appropriate protocol (written plan of action) for testing a hypothesis:

Identify dependent and independent variables in a controlled investigation.

Determine an appropriate method for data collection (e.g., using balances, thermometers, microscopes, spectrophotometer, using qualitative changes).

Determine an appropriate method for recording data (e.g., notes, sketches, photographs, videos, journals, logs, charts, computers/calculators).

Conduct a scientific investigation that is based on a research design.

Record observations, notes, sketches, questions, or ideas using tools such as journals/charts/graphs/computers.

Analysis, Conclusions, and Refinements

Interpret data that show a variety of possible relationships between variables, including: positive relationship, negative relationship, or no relationship.

Evaluate whether investigational data support or do not support the proposed hypothesis.

Critique reports of scientific studies (e.g., published papers, student reports).

Evaluate the design of an investigation to identify possible sources of procedural error, including: sample size, trials, controls, and analyses.

Design models (conceptual or physical) of the following to represent “real world” scenarios: carbon cycle, water cycle, phase change, or collisions.

Use descriptive statistics to analyze data, including: mean, frequency, and range.

Propose further investigations based on the findings of a conducted investigation.

Communication

For a specific investigation, choose an appropriate method for communicating the results.

Produce graphs that communicate data.

Communicate results clearly and logically.

Support conclusions with logical scientific arguments.

HISTORY AND NATURE OF SCIENCE**History of Science as Human Endeavor**

Describe how human curiosity and needs have influenced science, impacting the quality of life worldwide.

Describe how diverse people and/or cultures, past and present, have made important contributions to scientific innovations.

Analyze how specific changes in science have affected society.

Analyze how specific cultural and/or societal issues promote or hinder scientific advancement.

Nature of Scientific Knowledge

Specify the requirements of a valid, scientific explanation (theory), including that it be: logical, subject to peer review, public, and respectful of rules of evidence.

Explain the process by which accepted ideas are challenged or extended by scientific innovation.

Distinguish between pure and applied science.

Describe how scientists continue to investigate and critically analyze aspects of theories.

SCIENCE**SCIENCE IN PERSONAL AND SOCIAL PERSPECTIVES****Changes in Environments**

Evaluate how the processes of natural ecosystems affect, and are affected by, humans.

Describe the environmental effects of the following natural and/or human-caused hazards: flooding, drought, earthquakes, fires, pollution, and extreme weather.

Assess how human activities (e.g., clear cutting, water management, tree thinning) can affect the potential for hazards.

Evaluate the following factors that affect the quality of the environment: urban development, smoke, and volcanic dust.

Evaluate the effectiveness of conservation practices and preservation techniques on environmental quality and biodiversity.

Science and Technology in Society

Analyze the costs, benefits, and risks of various ways of dealing with the following needs or problems:

various forms of alternative energy	storage of nuclear waste
abandoned mines	greenhouse gases
hazardous wastes	

Recognize the importance of basing arguments on a thorough understanding of the core concepts and principles of science and technology.

Support a position on a science or technology issue.

Analyze the use of renewable and nonrenewable resources in Arizona: water, land, soil, minerals, and air.

Evaluate methods used to manage natural resources (e.g., reintroduction of wildlife, fire ecology).

Human Population Characteristics

Analyze social factors that limit the growth of a human population, including: affluence, education, access to health care, and cultural influences.

Describe biotic (living) and abiotic (nonliving) factors that affect human populations.

Predict the effect of a change in a specific factor on a human population.

LIFE SCIENCE**The Cell**

Describe the role of energy in cellular growth, development, and repair.

Compare the form and function of prokaryotic and eukaryotic cells and their cellular components.

Explain the importance of water to cells.

Analyze mechanisms of transport of materials (e.g., water, ions, macromolecules) into and out of cells: passive transport or active transport.

Describe the purposes and processes of cellular reproduction.

Molecular Basis of Heredity

Analyze the relationships among nucleic acids (DNA, RNA), genes, and chromosomes.

Describe the molecular basis of heredity, in viruses and living things, including DNA replication and protein synthesis.

Explain how genotypic variation occurs and results in phenotypic diversity.

Describe how meiosis and fertilization maintain genetic variation.

Interdependence of Organisms

Identify the relationships among organisms within populations, communities, ecosystems, and biomes.

Describe how organisms are influenced by a particular combination of biotic (living) and abiotic (nonliving) factors in an environment.

Assess how the size and the rate of growth of a population are determined by birth rate, death rate, immigration, emigration, and carrying capacity of the environment.

Biological Evolution

Identify the following components of natural selection, which can lead to speciation:

potential for a species to increase its numbers

genetic variability and inheritance of offspring due to mutation and recombination of genes

finite supply of resources required for life

selection by the environment of those offspring better able to survive and produce offspring

LIFE SCIENCE (cont.)**Biological Evolution (cont.)**

Explain how genotypic and phenotypic variation can result in adaptations that influence an organism's success in an environment.

Describe how the continuing operation of natural selection underlies a population's ability to adapt to changes in the environment and leads to biodiversity and the origin of new species.

Predict how a change in an environmental factor (e.g., rainfall, habitat loss, non-native species) can affect the number and diversity of species in an ecosystem.

Analyze how patterns in the fossil record, nuclear chemistry, geology, molecular biology, and geographical distribution give support to the theory of organic evolution through natural selection over billions of years and the resulting present day biodiversity.

Analyze, using a biological classification system (e.g., cladistics, phylogeny, morphology, DNA analysis), the degree of relatedness among various species.

Matter, Energy, and Organization in Living Systems

Compare the processes of photosynthesis and cellular respiration in terms of energy flow, reactants, and products.

Describe the role of organic and inorganic chemicals (e.g., carbohydrates, proteins, lipids, nucleic acids, water, ATP) important to living things.

Diagram the following biogeochemical cycles in an ecosystem: water, carbon, nitrogen.

Diagram the energy flow in an ecosystem through a food chain.

Describe the levels of organization of living things from cells, through tissues, organs, organ systems, organisms, populations, and communities to ecosystems.

PHYSICAL SCIENCE**Structure and Properties of Matter**

Describe substances based on their physical properties.

Describe substances based on their chemical properties.

Predict properties of elements and compounds using trends of the periodic table (e.g., metals, non-metals, bonding – ionic/covalent).

Separate mixtures of substances based on their physical properties.

Describe the following features and components of the atom: protons, neutrons, electrons, mass, number and type of particles, structure, and organization.

Describe the historical development of models of the atom.

Explain the details of atomic structure (e.g., electron configuration, energy levels, isotopes).

Motions and Forces

Determine the rate of change of a quantity (e.g., rate of erosion, rate of reaction, rate of growth, velocity).

Analyze the relationships among position, velocity, acceleration, and time: graphically, mathematically.

Explain how Newton's 1st Law applies to objects at rest or moving at constant velocity.

Using Newton's 2nd Law of Motion, analyze the relationships among the net force acting on a body, the mass of the body, and the resulting acceleration: graphically, mathematically.

Use Newton's 3rd Law to explain forces as interactions between bodies (e.g., a table pushing up on a vase that is pushing down on it; an athlete pushing on a basketball as the ball pushes back on her).

Analyze the two-dimensional motion of objects by using vectors and their components.

Give an example that shows the interdependence of the horizontal and vertical components of projectile motion.

Analyze the general relationships among force, acceleration, and motion for an object undergoing uniform circular motion.

Represent the force conditions required to maintain static equilibrium.

Describe the nature and magnitude of frictional forces.

Using the Law of Universal Gravitation, predict how the gravitational force will change when the distance between two masses changes or the mass of one of them changes.

Using Coulomb's Law, predict how the electrical force will change when the distance between two point charges changes or the charge of one of them changes.

Analyze the impulse required to produce a change in momentum.

Quantify interactions between objects to show that the total momentum is conserved in both collision and recoil situations.

PHYSICAL SCIENCE (cont.)**Conservation of Energy and Increase in Disorder**

Describe the following ways in which energy is stored in a system: mechanical, electrical, chemical, or nuclear. Describe various ways in which energy is transferred from one system to another (e.g., mechanical contact, thermal conduction, electromagnetic radiation).

Recognize that energy is conserved in a closed system.

Calculate quantitative relationships associated with the conservation of energy.

Analyze the relationship between energy transfer and disorder of the universe (2nd Law of Thermodynamics).

Distinguish between heat and temperature.

Explain how molecular motion is related to temperature and phase changes.

Chemical Reactions

Apply the law of conservation of matter to changes in a system.

Identify the indicators of chemical change, including formation of a precipitate, evolution of a gas, color change, absorption or release of heat energy.

Represent a chemical reaction by using a balanced equation.

Distinguish among the types of bonds (i.e. ionic, covalent, metallic, hydrogen bonding).

Describe the mole concept and its relationship to Avogadro's number.

Solve problems involving such quantities as moles, mass, molecules, volume of a gas, and molarity using the mole concept and Avogadro's number.

Predict the properties (e.g., melting point, boiling point, conductivity) of substances based upon bond type.

Quantify the relationships between reactants and products in chemical reactions (e.g., stoichiometry, equilibrium, energy transfers).

Predict the products of a chemical reaction using types of reactions (e.g., synthesis, decomposition, replacement, combustion).

Explain the energy transfers within chemical reactions using the law of conservation of energy.

Predict the effect of various factors (e.g., temperature, concentration, pressure, catalyst) on the equilibrium state and on the rates of chemical reaction.

Compare the nature, behavior, concentration, and strengths of acids and bases.

Determine the transfer of electrons in oxidation/reduction reactions.

Interactions of Energy and Matter

Describe various ways in which matter and energy interact (e.g., photosynthesis, phase change).

Describe the following characteristics of waves: wavelength, frequency, period, and amplitude.

Quantify the relationships among the frequency, wavelength, and the speed of light.

Describe the basic assumptions of kinetic molecular theory.

Apply kinetic molecular theory to the behavior of matter (e.g., gas laws).

Analyze calorimetric measurements in simple systems and the energy involved in changes of state.

Explain the relationship between the wavelength of light absorbed or released by an atom or molecule and the transfer of a discrete amount of energy.

Describe the relationship among electric potential, current, and resistance in an ohmic system.

Quantify the relationship among electric potential, current, and resistance in an ohmic system.

EARTH AND SPACE SCIENCE**Geochemical Cycles**

Identify ways materials are cycled within the earth system (i.e., carbon cycle, water cycle, rock cycle).

Demonstrate how dynamic processes such as weathering, erosion, sedimentation, metamorphism, and orogenesis relate to redistribution of materials within the earth system.

Explain how the rock cycle is related to plate tectonics.

Demonstrate how the hydrosphere links the biosphere, lithosphere, cryosphere, and atmosphere.

Describe factors that impact current and future water quantity and quality including surface, ground, and local water issues.

Analyze methods of reclamation and conservation of water.

Explain how the geochemical processes are responsible for the concentration of economically valuable minerals and ores in Arizona and worldwide.

EARTH AND SPACE SCIENCE (cont.)**Energy in the Earth System**

Describe the flow of energy to and from the Earth.

Explain the mechanisms of heat transfer (convection, conduction, radiation) among the atmosphere, land masses, and oceans.

Distinguish between weather and climate.

Internal energy:

Demonstrate the relationship between the earth's internal convective heat flow and plate tectonics.

Demonstrate the relationships among earthquakes, volcanoes, mountain ranges, mid-oceanic ridges, deep sea trenches, and tectonic plates.

Distinguish among seismic S.P. and surface waves.

Analyze the seismic evidence (S and P waves) used to determine the structure of the Earth.

Describe how radioactive decay maintains the Earth's internal temperature.

External energy:

Explain the effect of heat transfer on climate and weather.

Demonstrate the effect of the Earth's rotation (i.e. Coriolis effect) on the movement of water and air.

Describe the origin, life cycle, and behavior of weather systems (i.e., air mass, front, high and low systems, pressure gradients).

Describe the conditions that cause severe weather (e.g., hurricanes, tornadoes, thunderstorms).

Propose appropriate safety measures that can be taken in preparation for severe weather.

Analyze how weather is influenced by both natural and artificial earth features (e.g., mountain ranges, bodies of water, cities, air pollution).

List the factors that determine climate (e.g., altitude, latitude, water bodies, precipitation, prevailing winds, topography)

Explain the causes and/or effects of climate changes over long periods of time (e.g., glaciation, desertification, solar activity, greenhouse effect).

Investigate the effects of acid rain, smoke, volcanic dust, urban development, and greenhouse gases, on climate change over various periods of time.

Origin and Evolution of the Earth System**Earth Origin/System:**

Describe the scientific theory of the origin of the solar system (solar nebular hypothesis).

Describe the characteristics, location, and motions of the various kinds of objects in our solar system, including the Sun, planets, satellites, comets, meteors, and asteroids.

Explain the phases of the Moon, eclipses (lunar and solar), and the interaction of the Sun, Moon, and Earth (tidal effect).

Earth History/Evolution:

Interpret a geologic time scale.

Distinguish between relative and absolute geologic dating techniques.

Investigate scientific theories of how life originated on earth (high temperature, low oxygen, clay catalyst model).

Describe how life on earth has influenced the evolution of the Earth's systems.

Sequence major events in the Earth's evolution (e.g., mass extinctions, glacial episodes) using relative and absolute dating data.

Analyze patterns in the fossil record related to the theory of organic evolution.

Origin and Evolution of the Universe

Describe the Big Bang Theory as an explanation for the origin of the universe.

Describe the fusion process that takes place in stars.

Analyze the evolution of various types of stars using the Hertzsprung-Russell (HR) diagram.

Compare the evolution (life cycles) of stars of different masses (low and high mass).

Explain the formation of the light elements in stars and the heavier elements (what astronomers call "metals") in supernova explosions.

Explain the evolution and life cycles of galaxies.

SOCIAL STUDIES**AMERICAN HISTORY****Research Skills for History**

Interpret historical data displayed in maps, graphs, tables, charts, and geologic time scales.

Distinguish among dating methods that yield calendar ages (e.g., dendrochronology), numerical ages (e.g., radiocarbon), correlated ages (e.g., volcanic ash), and relative ages (e.g., geologic time).

Formulate questions that can be answered by historical study and research.

Evaluate primary and secondary sources for:

- author's main points
- facts vs. opinions
- purpose and perspective
- credibility and validity
- different points of view on the same historical event (e.g., Geography Concept 6 – geographical perspective can be different from economic perspective)

Apply the skills of historical analysis to current social, political, geographic, and economic issues facing the world.

Compare present events with past events: cause and effect, change over time, and different points of view.

Early Civilizations

Describe Prehistoric Cultures of the North American continent:

- Paleo-Indians, including Clovis, Folsom, and Plano
- Moundbuilders, including Adena, Hopewell, and Mississippian
- Southwestern, including Mogollon, Hohokam, and Ancestral Puebloans (Anasazi)

Exploration and Colonization

Review the reciprocal impact resulting from early European contact with indigenous peoples:

- religious (e.g., conversion attempts)
- social (e.g., spread of disease, partnerships)
- government (e.g., Iroquois Confederacy, matriarchal leadership, democratic influence)
- economic (e.g., land disputes, trade)
- food (e.g., corn)

Describe the reasons for colonization of America (e.g., religious freedom, desire for land, economic opportunity, and a new life).

Compare the characteristics of the New England, Middle, and Southern colonies:

- Colonial governments geographic influences, resources, and economic systems.
- Religious beliefs and social patterns.

Describe the impact of key colonial figures (e.g., John Smith, William Penn, Rogers Williams, Anne Hutchinson, John Winthrop).

Revolution and New Nation

Assess the economic, political, and social reasons for the American Revolution:

- British attempts to tax and regulate colonial trade as a result of the French and Indian War
- colonists' reaction to British policy ideas expressed in the Declaration of Independence

Analyze the effects of European involvement in the American Revolution on the outcome of the war.

Describe the significance of major events in the Revolutionary War:

- Lexington and Concord
- Saratoga
- Bunker Hill
- Yorktown
- Writing and ratification of the Declaration of Independence

Analyze how the new national government was created:

- Albany Plan of Union influenced by the Iroquois Confederation
- Articles of Confederation
- Constitutional Convention
- struggles over ratification of the Constitution
- creation of the Bill of Rights

Examine the significance of the following in the formation of a new nation:

- presidency of George Washington
- economic policies of Alexander Hamilton
- creation of political parties under Thomas Jefferson and Alexander Hamilton
- the establishment of the Supreme court as a co-equal third branch of government under John Marshall with cases such as Marbury v. Madison.

Examining the experiences and perspectives of the following groups in the new nation:

- property owners
- African Americans
- women
- Native Americans
- indentured servants

AMERICAN HISTORY (cont.)**Westward Expansion**

Trace the growth of the American nation during the period of western expansion:

Northwest Territory	Louisiana Territory
Florida	Texas
Oregon Country	Mexican Cession
Gadsden Purchase	Alaska

Analyze how the following events affected the political transformation of the developing nation:

Jefferson's Presidency	War of 1812
Jackson's Presidency	

Identify how economic incentives and geography influenced early American explorations:

explorers (e.g., Lewis and Clark, Pike, Fremont)	fur traders
miners	missionaries (e.g., Father Kino, Circuit Riders)

Describe the impact of European-American expansion on native peoples.

Describe the impact of the following aspects of the Industrial Revolution on the United States:

transportation improvements (e.g., railroads, canals, steamboats)
 factory system manufacturing
 urbanization
 inventions (e.g., telegraph, cotton gin, interchangeable parts)

Civil War and Reconstruction

Explain the economic, social, and political causes of the Civil War:

economic and social differences between the North, South, and West
 balance of power in the Senate (e.g., Missouri and 1850 Compromises)
 extension of slavery into the territories (e.g., Dred Scott Decision, the Kansas-Nebraska Act)
 role of abolitionists (e.g., Frederick Douglass and John Brown)
 debate over popular sovereignty/states rights
 Presidential election of 1860

Analyze aspects of the Civil War:

changes in technology	importance of resources
turning points	military and civilian leaders
effect of the Emancipation Proclamation	effect on the civilian populations

Analyze immediate and long term effects of Reconstruction in post Civil War America:

various plans for reconstruction of the South	Lincoln's assassination
Johnson's impeachment	Thirteenth, Fourteenth and Fifteenth Amendments
resistance to and end of Reconstruction (e.g., Jim Crow laws, KKK, Compromise of 1877)	

Emergence of the Modern United States

Analyze how the following aspects of industrialization transformed the American economy beginning in the late

19th century:

- mass production
- monopolies and trusts (e.g., Robber Barons, Taft-Hartley Act)
- economic philosophies (e.g., laissez faire, Social Darwinism, free silver)
- labor movement (e.g., Bisbee Deportation)
- trade

Assess how the following social developments influenced American society in the late nineteenth and early twentieth centuries:

Civil Rights issues (e.g., Women's Suffrage Movement, Dawes Act, Indian schools, lynching, Plessy v. Ferguson).
 changing patterns in Immigration (e.g., Ellis Island, Angel Island, Chinese Exclusion Act, Immigration Act of 1924)
 urbanization and social reform (e.g., health care, housing, food & nutrition, child labor laws)
 mass media (e.g., political cartoons, muckrakers, yellow journalism, radio)
 consumerism (e.g., advertising, standard of living, consumer credit)
 Roaring Twenties (e.g., Harlem Renaissance, leisure time, jazz, changed social mores)

Analyze events which caused a transformation of the United States during the late nineteenth and early twentieth centuries:

Indian Wars (e.g., Little Bighorn, Wounded Knee)
 Imperialism (e.g., Spanish American War, annexation of Hawaii, Philippine-American War)
 Progressive Movement (e.g., Sixteenth through Nineteenth Amendments, child labor)
 Teddy Roosevelt (e.g., conservationism, Panama Canal, national parks, trust busting)
 corruption (e.g., Tammany Hall, spoils system)
 World War I (e.g., League of Nations, Isolationism)
 Red Scare/Socialism Populism

Analyze the effect of direct democracy (initiative, referendum, recall) on Arizona statehood.

AMERICAN HISTORY (cont.)**Great Depression and World War II**

Describe causes and consequences of Great Depression:

- Economic causes of the Depression (e.g., economic policies of 1920s, investment patterns and stock market crash)
- Dust Bowl (e.g., environmental damage, internal migration)
- Effects on society (e.g., fragmentation of families, Hoovervilles, unemployment, business failure, breadlines)
- Changes in expectations of government (e.g., New Deal programs)

Describe the impact of American involvement in World War II:

- Movement away from isolationism
- Economic recovery from the Great Depression
- Homefront transformation in the roles of women and minorities
- Japanese, German, and Italian internments and POW camps
- War mobilization (e.g., Native American Code-Talkers, minority participation in military units, media portrayal)
- Turning points such as Pearl Harbor, D-Day, Hiroshima/Nagasaki

Postwar United States

Analyze aspects of America's post World War II foreign policy:

- International activism (e.g., Marshall Plan, United Nations, NATO)
- Cold War (e.g., domino theory, containment, Korea, Vietnam)
- Arms Race (e.g., Cuban Missile Crisis, SALT)
- United States as a superpower (e.g., political intervention and humanitarian efforts)

Describe aspects of American post-World War II domestic policy:

- McCarthyism
- Civil Rights (e.g., Birmingham, 1964 Civil Rights Act, Voting Rights Act, Constitutional Amendments)
- Supreme Court Decisions (e.g., the Warren and Burger Courts)
- Executive Power (e.g., War Powers Act, Watergate)
- Social reforms (e.g., Great Society and War on Poverty)
- Space Race and technological developments

Describe aspects of post World War II American society:

- Postwar prosperity (e.g., growth of suburbs, baby boom, GI Bill)
- Popular culture (e.g., conformity v. counter-culture, mass-media)
- Protest movements (e.g., anti-war, women's rights, civil rights, farm workers, Cesar Chavez)
- Assassinations (e.g., John F. Kennedy, Martin Luther King, Jr., Robert F. Kennedy, Malcolm X)
- Shift to increased immigration from Latin America and Asia

Contemporary United States

Describe current events using information from class discussions and various resources (e.g., newspapers, magazines, television, Internet, books, maps).

Identify the connection between current and historical events and issues using information from class discussions and various resources (e.g., newspapers, magazines, television, Internet, books, maps).

Describe how key political, social, environmental, and economic events of the late 20th century and early 21st century (e.g., Watergate, OPEC/oil crisis, Central American wars/Iran-Contra, End of Cold War, first gulf War, September 11) affected, and continue to affect, the United States.

WORLD HISTORY**Research Skills for History**

Interpret historical data displayed in maps, graphs, tables, charts, and geologic time scales.

Distinguish among dating methods that yield calendar ages (e.g., dendrochronology), numerical ages (e.g., radiocarbon), correlated ages (e.g., volcanic ash), and relative ages (e.g., geologic time).

Formulate questions that can be answered by historical study and research.

Evaluate primary and secondary sources for:

- author's main points
- purpose and perspective
- facts vs. opinions
- credibility and validity
- different points of view on the same historical event (e.g., Geography Concept 6 – geographical perspective can be different from economic perspective)

Apply the skills of historical analysis to current social, political, geographic, and economic issues facing the world.

Compare present events with past events:

- cause and effect
- change over time
- different points of view.

WORLD HISTORY (cont.)**Early Civilizations**

Describe the development of early prehistoric people, their agriculture, and settlements.

Analyze the development and historical significance of Hinduism, Judaism, Buddhism, Christianity, and Islam.

Analyze the enduring Greek and Roman contributions and their impact on later civilization:

- development of concepts of government and citizenship (e.g., democracy, republics, codification of law, and development of empire)

- scientific and cultural advancements (e.g., network of roads, aqueducts, art and architecture, literature and theater, mathematics, and philosophy).

Analyze the enduring Chinese contributions and their impact on other civilizations:

- development of concepts of government and citizenship (e.g., Confucianism, empire)

- scientific, mathematical, and technical advances (e.g., roads, aqueducts)

- cultural advancement in art, architecture, literature, theater, and philosophy

World in Transition

Contrast the fall of Rome with the development of the Byzantine and Arab Empires (e.g., religion, culture, language, governmental structure).

Compare feudalism in Europe and Japan and its connection with religious and cultural institutions.

Compare the development of empires (e.g., Roman, Han, Mali, Incan/Inkan, Ottoman) throughout the world.

Describe the interaction of European and Asian civilizations from the 12th to the 16th centuries:

- Crusades

- Commerce and the Silk road

- Impact on culture; and plague

Renaissance and Reformation

Analyze the results of Renaissance thoughts and theories:

- Rediscovery of Greek and Roman ideas

- Humanism and its emphasis on individual potential and achievements

- Scientific approach to the natural world

- Middle Eastern contributions (e.g., mathematics, science)

- Innovations in the arts and sciences

Explain how the ideas of the Protestant Reformation and Catholic Reformation (e.g., secular authority, individualism, migration, literacy and vernacular, the arts) affected society.

Encounters and Exchange

Describe the religious, economic, social, and political interactions among civilizations that resulted from early exploration:

- reasons for European exploration

- impact of expansion and colonization on Europe

- impact of expansion and colonization on Africa, the Americas, and Asia

- role of disease in conquest

- role of trade

- navigational technology

- impact and ramifications of slavery and international slave trade

- contrasting motivations and methods for colonization

Age of Revolution

Contrast the development of representative, limited government in England with the development and continuation of absolute monarchies in other European nations:

- absolute monarchies (e.g., Louis XIV, Peter the Great, Philip II)

- the Magna Carta, the English Bill of Rights, and parliamentary government

- the ideas of John Locke

Explain how new ideas (i.e., Heliocentrism, Scientific Method, Newton's Laws) changed the way people understood the world.

Explain how Enlightenment ideas influenced political thought and social change: Deism, role of women, political thought, social change.

Analyze the developments of the French Revolution and rule of Napoleon:

- Reign of Terror

- Rise of Napoleon

- Spread of nationalism in Europe

- Defeat of Napoleon and Congress of Vienna

Explain the revolutionary and independence movements in Latin America (e.g., Mexico, Haiti, South America).

Analyze the social, political, and economic development and impact of the Industrial Revolution:

- origins in England's textile and mining industries

- urban growth and the social impact of industrialization

- unequal spread of industrialization to other countries

- political and economic theories (nationalism, anarchism, capitalism, socialism)

WORLD HISTORY (cont.)**Age of Imperialism**

Explain the rationale (e.g., need for raw materials, domination of markets, advent of national competition, spread of European culture/religion) for imperialism.

Trace the development of the British empire around the world (e.g., America, Southeast Asia, South Pacific, India, Africa, the Suez).

Describe the division of the world into empires and spheres of influence during the 18th and 19th centuries (e.g., British, French, Dutch, Spanish, American, Belgian).

Analyze the effects of European and American colonialism on their colonies (e.g., artificially drawn boundaries, one-crop economies, creation of economic dependence, population relocation, cultural suppression).

Analyze the responses to imperialism (e.g., Boxer Rebellion, Sepoy Rebellion, Opium Wars, Zulu Wars) by people under colonial rule at the end of the 19th century.

Explain Japanese responses to European/American imperialism from a closed door policy to adoption of Euro-American ideas.

World at War

Examine the causes of World War I:

- rise of nationalism in Europe
- unification of Germany and Otto von Bismarck's leadership
- rise of ethnic and ideological conflicts – the Balkans, Austria-Hungary, the decline of the Ottoman Empire

Analyze the impact of the changing nature of warfare in World War I:

- trench warfare
- mechanization of war – machine gun, gasoline, submarine, tanks, chemical
- American involvement

Explain the end of World War I and its aftermath:

- Russian Revolution
- Treaty of Versailles
- end of empires (e.g., Austro-Hungarian, Ottoman, Russian)
- continuation of colonial systems (e.g., French Indochina, India, Philippines)

Examine the period between World War I and World War II:

- rise of fascism and dictatorships
- postwar economic problems
- new alliances
- growth of the Japanese empire
- challenges to the world order

Analyze aspects of World War II:

- political ideologies (e.g., Totalitarianism, Democracy)
- military strategies (e.g., air warfare, atomic bomb, Russian front, concentration camps)
- treatment of civilian populations
- Holocaust

Examine genocide as a manifestation of extreme nationalism in the 20th century (e.g., Armenia, Holocaust, Cambodia, Bosnia, Rwanda, Kosovo and Sudan).

Analyze the political, economic and cultural impact of the Cold War:

- superpowers – Soviet Union, United States, China
- division of Europe
- developing world
- Korean and Vietnam Wars

Compare independence movements of emerging nations (e.g., Africa, Asia, Middle East, Latin America).

Contemporary World

Explain the fall of the Soviet Union and its impact on the world.

Explain the roots of terrorism:

- background and motives
- religious conflict (e.g., Northern Ireland, Chechnya, Southwestern Philippines, southern Thailand, Kashmir)
- background of modern Middle East conflicts (e.g., Israeli-Palestinian conflict, Persian Gulf conflicts, Afghanistan)
- economic and political inequities and cultural insensitivities

Describe the development of political and economic interdependence during the second half of the twentieth century:

- economics, global wage inequalities
- technology
- multinational corporations
- growth of international governmental organizations (e.g., World Trade Organization)
- growth of non-governmental organizations (e.g., Red Cross, Red Crescent)

Examine environmental issues from a global perspective (e.g., pollution, population pressures, global warming, scarcity of resources).

Connect current events with historical events and issues using information from class discussions and various resources (e.g., newspapers, magazines, television, Internet, books, maps).

CIVICS/GOVERNMENT**Foundations of Government**

Examine the foundations of democratic representative government: Greek direct democracy, and Roman republic.

Trace the English roots of American democracy:

Magna Carta

English Bill of Rights

Representative government – Parliament, colonial assemblies, town meetings

Describe the philosophical roots of American Democracy:

moral and ethical ideals from Judeo-Christian tradition

John Locke and social contract

Charles de Montesquieu and separation of powers

Examine the fundamental principles (e.g., equality, natural rights of man, rule of law) in the Declaration of Independence.

Structure of Government

Analyze why the weak central government and limited powers of the Articles of Confederation demonstrated the need for the Constitution.

Analyze the creation of United States Constitution:

Representative government as developed by the Great Compromise and the Three-Fifths Compromise

Federalism

Separation of Powers/Checks and Balances

Judicial Review

Amendment Process

Examine the United States federal system of government:

powers of the national government

powers of the state governments

powers of the people

Describe the steps leading to the adoption of the Constitution:

Federalist and Anti-Federalist positions (e.g., The Federalist Papers)

Bill of Rights

Ratification

Analyze the structure, powers, and roles of the legislative branch of the United States government:

specific powers delegated in Article I of the Constitution

role of competing factions and development of political parties

lawmaking process

different roles of Senate and House

election process and types of representation

influence of staff, lobbyists, special interest groups and political action committees (PACs)

Analyze the structure, powers, and roles of the executive branch of the United States government:

specific powers delegated in Article II of the Constitution

roles and duties of the president

development and function of the executive branch, including the cabinet and federal bureaucracy

election of the president through the nomination process, national conventions, and electoral college

Analyze the structure, powers, and roles of the judicial branch of the United States government, including

landmark United States Supreme Court decisions:

specific powers delegated by the Constitution in Article III

judicial review developed in *Marbury v. Madison*, *McCulloch v. Maryland*, and *Gibbons v. Ogden*

dual court system of state and federal courts

Analyze the structure, power, and organization of Arizona's government as expressed in the Arizona Constitution:

direct democracy by initiative, referendum, and recall processes

election process such as redistricting, (e.g., gerrymandering, clean elections), voter registration, and

primaries

the structure and processes of Arizona's legislature

the roles of the Governor, Secretary of State, Treasurer, Attorney General, and superintendent of Public

Instruction

appointment and continuing election of judges

Analyze the forms, structure, powers and roles of local government:

county government, boards of supervisors, sheriffs, county attorneys, and others

mayor, council, city manager, and other city officials

issues of large urban area governments (e.g., transportation, zoning growth management and funding,

urban planning, water and sanitation, pollution, annexation)

special district, governance funding and purpose (e.g., school, sanitation, water, fire, library, community

college)

Examine the sovereignty of tribal governments and their relationship to state and federal governments (e.g., jurisdiction, land use, water and mineral rights, gaming pacts).

Identify other forms of government under U.S. federal auspices (e.g., protectorates, territories, federal districts).

CIVICS/GOVERNMENT (cont.)**Functions of Government**

Analyze the functions of government as defined in the Preamble to the Constitution.

Examine how the Constitution guarantees due process of law through Constitutional mandates and Amendments.
 Constitutional mandates (e.g., the right of habeas corpus, no bill of attainder, and the prohibition of ex post facto laws)

Fourth, Fifth, Sixth, Seventh, and Eighth Amendments

Protection provided by the Fourteenth Amendment

Examine various sources of government funding:

federal – income tax, duties, excise taxes, corporate tax

state – income tax, sales tax

local – property tax, sales tax

Describe the regulatory functions of government pertaining to consumer protection, environment, health, labor, transportation, and communication.

Describe the factors and processes that determine major domestic policies (e.g., Social Security, education, health care, parks, environmental protection).

Rights, Responsibilities, and Roles of Citizenship

Analyze basic individual rights and freedoms guaranteed by Amendments and laws:

freedom of religion, speech, press, assembly, and petition in the First Amendment

right to bear arms in the Second Amendment

Ninth Amendment and guarantee of people's unspecified rights

civil rights in the Thirteenth and Fourteenth Amendments

voting rights in the Fifteenth, Nineteenth, Twenty-third, Twenty-fourth, and Twenty-sixth Amendments;

Native American citizenship and voting rights (Arizona, 1948); voting rights Act of 1965.

conflicts which occur between rights (e.g., the tensions between the right to a fair trial and freedom of the press, and between majority rule and individual rights)

right to work laws

Define citizenship according to the fourteenth Amendment.

Examine the basic political and social responsibilities of citizenship:

connections between self-interest, the common good, and the essential element of civic virtue (e.g.,

George Washington's Farewell Speech), volunteerism

obligations of upholding the Constitution

obeying the law, serving on juries, paying taxes, voting, and military service

analyzing public issues, policy making, and evaluating candidates

Demonstrate the skills and knowledge (e.g., group problem solving, public speaking, petitioning and protesting) needed to accomplish public purposes.

Describe the role and influence of political parties, interest groups, and mass media:

political perspectives (e.g., liberalism, conservatism, progressivism, libertarianism)

influence of interest groups, lobbyists, and PAC's on elections, the political process and policy making

Government Systems of the World

Compare the United States system of politics and government to other systems of the world (e.g., monarchies, dictatorship, theocracy, oligarchy, parliamentary, unitary, proportional elections).

Describe factors (e.g., trade, political tensions, sanctions, terrorism) that influence United States foreign policy.

Describe world governmental and non-governmental organizations (e.g., the United Nations and its agencies, NATO, the European Union, the International Red Cross).

GEOGRAPHY**The World in Spatial Terms**

Construct maps using appropriate elements (i.e., date, orientation, grid, scale, title, author, index, legend, situation).

Interpret maps and images (e.g., political, physical, relief, thematic, Geographic Information Systems (GIS), Landsat).

Use appropriate maps and other graphic representations to analyze geographic problems and changes over time.

Use an atlas to access information.

Places and Regions

Identify the characteristics that define a region:

physical processes such as climate, terrain, and resources

human processes such as religion, political organization, economy, and demographics

GEOGRAPHY (cont.)**Places and Regions (cont.)**

Describe the factors (e.g., demographics, political systems, economic systems, resources, culture) that contribute to the variations between developing and developed regions.

Examine geographic issues (e.g., drought in Sahel, migration patterns, desertification of Aral Sea, spread of religions such as Islam, conflicts in Northern Ireland/Ireland, Jerusalem, Tibet) in places and world regions.

Analyze the differing political, religious, economic, demographic, and historical ways of viewing places and regions.

Examine how the geographic characteristics of a place affect the economics and culture (e.g., changing regional economy of the sunbelt, location with respect of natural hazards, location of Panama Canal, Air Force Bases in Arizona).

Analyze how a region changes over time (e.g., U.S./Mexico border, Europe from World War I to the development of European union, change from pre-to post-colonialism in Africa, Hong Kong).

Analyze sides of scientific debates over how human actions (e.g., global warming, ozone decline) modify a region.

Physical Systems

Analyze how weather and climate (e.g., the effect of heat transfer, Earth's rotation, and severe weather systems) influence the natural character of a place.

Analyze different points of view on the use of renewable and non-renewable resources in Arizona.

Analyze how earth's internal changes (e.g., earthquakes, volcanic activity, folding, faulting) and external changes (e.g., geochemical, water and carbon cycles, erosion, deposition) influence the character of places.

Analyze how hydrology (e.g., quality, reclamation, conservation) influences the natural character of a place.

Human Systems

Interpret population growth and demographics (e.g., birth and death rates, population growth rates, doubling time and life expectancy, carrying capacity).

Analyze push/pull factors that contribute to human migration.

Analyze the effects of migration on places of origin and destination, including border areas.

Analyze issues of globalization (e.g., widespread use of English, the role of the global media, resistance to "cultural imperialism" trade, outsourcing).

Analyze the development, growth, and changing nature of cities (e.g., urban sprawl, suburbs, city revitalization).

Analyze factors (e.g., social, biotic, abiotic) that affect human populations.

Predict the effect of a change in a specific factor (e.g., social, biotic, abiotic) on a human population.

Explain how ideas, customs, and innovations (e.g., religion, language, political philosophy, technological advances, higher education, economic principles) are spread through cultural diffusion.

Environment and Society

Analyze how the Earth's natural systems (e.g., Gulf Stream permitting habitation of northern Europe, earthquakes, tsunamis, periodic droughts, river civilizations) affect humans.

Analyze how natural hazards impact humans (e.g., differences in disaster preparation between developed and developing nations, why people continue to build in disaster-prone places).

Analyze how changes in the natural environment can increase or diminish its capacity to support human activity (e.g., major droughts, warm and cold periods, volcanic eruptions, El Nino events, pollution).

Analyze the environmental effects of human use of technology (e.g., irrigation, deforestation, overgrazing, global warming, atmospheric and climate changes, energy production costs and benefits, water management) on the environment.

Geographic Applications

Analyze how geographic knowledge, skills, and perspectives (e.g., use of Geographic Information systems in urban planning, reapportionment of political units, locating businesses) are used to solve contemporary problems.

Analyze how changing perceptions of places and environments (e.g., where individuals choose to live and work, Israeli settlements, role of military bases, Viking colonization and naming of Iceland) affect the choices of people and institutions.

Analyze how geography influences historical events and movements (e.g., Trail of Tears, Cuban Missile Crisis, location of terrorist camps, pursuit of Pancho Villa, Mao's long march, Hannibal crossing the Alps, Silk Road).

ECONOMICS**Foundations of Economics**

Analyze the implications of scarcity:

- limited resources and unlimited human wants influence choice at individual, national, and international levels.
- factors of production (e.g., natural, human, and capital resources, entrepreneurship, technology)
- marginal analysis by producers, consumers, savers, and investors

Analyze production possibilities curves to describe opportunity costs and trade-offs.

Describe the characteristics of the mixed-market economy of the United States:

- property rights
- consumer sovereignty
- role of the government
- invisible hand
- profit motive
- competition
- rational self-interest

Evaluate the economic implications of current events from a variety of sources (e.g., magazine articles, newspaper articles, radio, television reports, editorials, Internet sites).

Interpret economic information using charts, tables, graphs, equations, and diagrams.

Microeconomics

Describe how the interdependence of both households and firms is affected by trade, exchange, money, and banking:

- why voluntary exchange occurs only when all participating parties expect to gain from the exchange
- role and interdependence of households, firms, and government in the circular flow model of economic activity
- role of entrepreneurs in a market economy and how profit is an incentive that leads entrepreneurs to accept risks of business failure
- financial institutions and securities markets
- importance of rule of law in a market economy for enforcement of contracts

Describe how markets function:

- laws of supply and demand
- how a market price is determined
- graphs that demonstrate changes in supply and demand
- how price ceilings and floors cause shortages or surpluses
- comparison of monopolistic and competitive behaviors
- theory of production and the role of cost

Describe how government policies influence the economy:

- need to compare costs and benefits of government policies before taking action
- use of federal, state, and local government spending to provide national defense; address environmental concerns; define and enforce property, consumer and worker rights; regulate markets; and provide goods and services
- effects of progressive, proportional, and regressive taxes on different income groups
- role of self-interest in decisions of voters, elected officials, and public employees

Macroeconomics

Determine how inflation, unemployment, and gross domestic product statistics are used in policy decisions.

Explain the effects of inflation and deflation on different groups (e.g., borrowers v. lenders, fixed income/cost of living adjustments).

Describe the economic and non-economic consequences of unemployment.

Analyze fiscal policy and its effects on inflation, unemployment, and economic growth.

Describe the functions of the Federal Reserve system (e.g., banking regulation and supervision, financial services, monetary policy) and their influences on the economy.

Explain the effects of monetary policy on unemployment, inflation, and economic growth.

Determine how investment in factories, machinery, new technology, and the health, education, and training of people can raise future standards of living.

Global Economics

Analyze the similarities and differences among economic systems:

- characteristics of market, command, and mixed economic systems, including roles of production, distribution, and consumption of goods and services
- benefits and costs of market and command economies
- characteristics of the mixed-market economy of the United States, including such concepts as private ownership, profit motive, consumer sovereignty, competition, and government regulation
- role of private property in conserving scarce resources and providing incentives in a market economy

ECONOMICS**Global Economics (cont.)**

Describe the effects of international trade on the United States and other nations:

- how people and nations gain through trade
- how the law of comparative advantage leads to specialization and trade
- effects of protectionism, including tariffs and quotas on international trade and on a nation's standard of living
- how exchange rates work and how they affect international trade
- how the concepts of balance of trade and balance of payments are used to measure international trade factors that influence the major world patterns of economic activity including the differing costs of production between developed and developing countries
- economic connections among different regions, including changing alignments in world trade partners
- identify the effects of trade agreements (e.g., North American Free Trade Agreement).

Personal Finance

Explain how education, career choices, and family obligations affect future income.

Analyze how advertising influences consumer choices.

Determine short- and long-term financial goals and plans, including income, spending, saving, and investing.

Compare the advantages of using various forms of credit and the determinants of credit history.

Compare the advantages and disadvantages of using various forms of credit and the determinants of credit history.

Explain the risk, return, and liquidity of short- and long-term saving and investment vehicles.

Identify investment options (e.g., stocks, bonds, mutual funds) available to individuals and households.

Details of the AZ State Standards for the following areas may be acquired at the District Office. If you have any questions on these areas of curriculum, please feel free to contact Mrs. Chan.

COMPREHENSIVE HEALTH EDUCATION**PHYSICAL ACTIVITY****FOREIGN LANGUAGE****WORKPLACE SKILLS**

COMPREHENSIVE HEALTH EDUCATION – Standard 1

Students comprehend concepts related to health promotion and disease prevention.

Explain how behavior impacts health maintenance and disease prevention (e.g., ability to prevent homicide, suicide, accident and illness).

1. Identify the positive and negative choices for a balanced, healthy lifestyle (e.g., poor eating habits vs. good eating habits).
2. Identify personal stress management techniques.
3. Formulate methods of prevention for each of the identified causes of death among teens.
4. Identify teen death statistics.

Explain the interrelationships among the mental, emotional, psychological and physical realities that occur throughout the life cycle.

1. Identify the different stages of the human life cycle (conception, prenatal, infant, toddler, preschool, school).
2. Identify the characteristics and developmental needs related to each stage of the life cycle.
3. Relate the principles of healthy living to each stage of the life cycle.

Explain the impact of personal health behaviors on the functioning of body systems and describe how to delay onset and reduce risks of potential health problems.

1. Identify personal health behaviors that promote and/or detract from the functioning of body systems.
2. Predict the impact of personal health behaviors that promote and or detract from the functioning of body systems (to include sleep, nutrition, exercise, sexual and substance abuse).
3. Construct a personalized continuum of health behaviors that range from more healthy to less healthy and defend rationale.
4. Determine strategies to reduce health risk for more healthy behavior.

Explain how the family, peers and community influence the health of individuals.

1. Describe how problem solving skills relate to the influence that family, peers and the community have on a person's health.
2. Develop a plan of how the family, peers and the community influence a person's attitudes, beliefs and feelings about health.
3. Rank order from most to least influential group (family, peers, community), that impacts a person's health.

Explain how environmental health influences the community and the functions of local, state and federal resources in addressing health issues.

1. Summarize major environmental health concerns.
2. List the roles and functions of agencies that address areas of environmental concern.

Identify the physiological effects of drug usage.

1. Describe major physiological effects of different classes on drugs such as the following: depressants, stimulants, hallucinogens, and inhalants.
2. Cite effects of drug usage on the unborn child at various stages of development.
3. List specific communicable diseases which may be transmitted by substance abuse behaviors.

Describe the relationship among an individual's abuse of substances and the impact on self, the family system, the economy and society as a whole.

1. Identify the effect of substance abuse on the individual.
2. Describe the relationship between family members in a substance-abusing household.
3. Describe the economic impact of substance abuse on worker productivity and national health care cost.
4. Explain the relationship between substance abuse and its impact on society related to violence, to include rape and domestic violence, crime and vehicular accidents.

Comprehensive Health Education – Standard 1 (cont.)**Identify the location and function of the reproductive organs, the fertility cycle, and the process of conception, and emphasize factors that contribute to the birth of a healthy child.**

1. Describe male and female reproductive organs and understand the location and basic function of each (to include menstrual cycle).
2. Describe the association of conception to the fertility cycle.
3. Describe the economic impact of substance abuse on worker productivity and national health care cost.
4. Describe the major factors in family planning (e.g., personal goal setting, number of children desired, importance of timing of pregnancy, identification of available resources and family education).

Describe proper food selection, preparation, and handling for self and others, taking into consideration that nutrient needs vary according to age, development, activity level and body type.

1. Illustrate the process of human digestion.
 - a) Describe how nutrients are released, absorbed, utilized and excreted by the body.
 - b) Classify dietary nutrients as to their function in producing energy, in growth or in the maintenance/repair of body tissue.
2. Predict how excesses or deficiencies of nutrients impact on health and disease.
 - a) Correlate the relationship between food consumption patterns and dietary-related health problems (e.g., diabetes, obesity, some cancers, osteoporosis, anemia, dental caries, cardiovascular disease).
 - b) Identify the proper food/nutrient adjustments required due to physical exertion, sports/fitness training, etc.
3. Identify the most common errors made which result in food borne infections (person to food, equipment to food, and food to food).
4. Identify those behaviors which are characteristically associated with anorexia and bulimia.
 - a) Identify the psychosocial factors that lead to eating disorders.
 - b) Identify the harmful effects of eating disorders.
 - c) Critique the differences between a fad diet and a well-balanced diet.
5. Describe the influence of advertising, peer pressure and food fads on proper diet, food selection and eating habits.

Explain the association of personal risk factors of chronic and communicable diseases, risk reduction and disease prevention components .

1. Define and provide examples of acute, chronic, communicable, noncommunicable, degenerative, metabolic, hereditary and congenital diseases.
2. Describe how race, culture and hereditary factors impact disease susceptibility.
 - a) List environmental influences that affect disease susceptibility.
 - b) Describe the impact of fitness, diet, rest and other lifestyle issues related to disease.
3. Evaluate disease prevention and control practices (e.g., immunization, pollution control and smoking cessation).
 - a) Identify methods of early recognition of health problems.
 - b) Identify their responsibility as active participants in treatment and rehabilitation.

DISTINCTION (Honors)

Form hypotheses regarding the influence of physical, mental, social and environmental health on the growth and development of members of select populations.

Describe the effectiveness of current prevention programs related to members of select populations (e.g. tobacco-use cessation, abstinence-only curriculum).

Describe the nutritional status and needs of the members of a population by examining the age, gender, physical activity, eating patterns, diet, pregnancy, substance use and disease associated with that population.

Create a food plan for a specific population taking into consideration age, gender, physical activity, eating patterns, health condition (pregnancy, substance use, disease).

Comprehensive Health Education – Standard 1 (cont.)**Describe the impact of personal histories, health care choices and the aging process on the health and wellness of individuals.**

Critique the personal histories of individuals, from adolescence through late life, in relation to the health choices they made and the impact on their health status.

Explain conclusions drawn from current worldwide health issues.

Form a hypothesis related to current worldwide issues which is grounded in a search on the topic (e.g., HIV, poverty, substance abuse).

Identify the problems of malnutrition in relation to population distribution, economics, food consumption and politics.

Design a program to address reduction in malnutrition among a target population, keeping in mind the population distribution, economics, food consumption and politics.

Explain ways in which American families accommodate and care for their elderly.

Identify effective and ineffective ways that American families accommodate and care for their elderly.

Explain how public health policies, safety-related legislation, and government regulations influence health promotion and disease prevention.

Describe agreements related to the relationship between publications, safety-related legislation and government regulations concerning their influence on health promotion and disease prevention.

Explain how the prevention and control of health problems are influenced by research and medical advances.

Review NIH (National Institute of Health), CDC (Centers for Disease Control) or WHO (World Health Organization) research on a specific health issue and explain how the publication of the research changed public policy (e.g., HIV/AIDS, Breast Cancer, TB, Hepatitis B).

COMPREHENSIVE HEALTH EDUCATION – Standard 2**Students demonstrate the ability to access accurate health information.****Explain the effectiveness of health information from home, school and community.**

1. Compile documents that are sources of health given in the home, at the school and from community health agencies.
2. Evaluate each document for its age appropriateness, content and its ability to influence health behavior.

Evaluate factors (e.g., peer pressure, media) that influence personal selection of health products and services).

Rank personal and social factors (e.g., peer pressure, family, media, culture, economics) that influence selection of health products and services for their level of influence.

Describe situations requiring professional health services and the cost and accessibility of health care services.

1. Select a health situation requiring professional health services.
2. Compare the cost and accessibility of those services through multiple service providers (no private insurance, private insurance, indigent care and those that don't qualify for indigent care [KidCARE]) e.g., broken arm, pregnancy, leukemia, pneumonia, hernia, wound needing stitches.

Demonstrate how to access appropriate organizations (e.g., paramedics, law enforcement and physicians) useful in reducing threatening situations.**Identify the licensing and certification standards for health professions.**

Review local, state and federal regulations, and create a chart that reflects the licensing and certification standards for specific health professionals (e.g., physical therapist, nurse, nurse assistant, physician, dietitian, dentist, dental hygienist, X-ray technician, phlebotomist).

Comprehensive Health Education – Standard 2 (cont.)**Explain the role of local, state, federal and international agencies in providing health services and protecting and informing consumers.**

Describe local, state, federal and international agency involvement in providing health services and protecting and informing consumers (use a specific service or health issue).

DISTINCTION (Honors)**Describe the effectiveness, accessibility and inclusiveness of a health program in supporting individual and public health.**

Critique a public health program in relation to its accessibility, effectiveness, and inclusiveness for individuals as well as the public (e.g., STD's, campaigns to address risk behavior, violence intervention).

Describe health promotion and disease prevention efforts in developing measures to reduce risks and protect against the spread of disease.

1. Compare multi-state programs on their effectiveness in reducing and preventing the spread of disease (e.g., immunizations).
2. Evaluate the contributing factors that account for the differences in effectiveness of public health programs.

Identify the changing trends in the health care delivery system and individual rights and responsibilities within the health care system.

Track the health care delivery system over the past 20 years and the changing trends related to individual rights and responsibilities for a specific health issue (e.g., formation of managed care systems vs. private health insurance vs. indigent health care system).

COMPREHENSIVE HEALTH EDUCATION – Standard 3**Students demonstrate the ability to practice health-enhancing behaviors and reduce health risks.****Describe the role of individual responsibility for health-enhancement and wellness .**

Describe the role of individual responsibility for the individual's physical, social, spiritual and psychological growth and development (e.g., adequate nutrition, recreation and fitness, eating disorders, sexual involvement, and alcohol, tobacco and other drug use).

Conduct a personal health assessment to determine strategies for health enhancement, risk reduction and stress management.

1. Conduct a personal health assessment.
2. Establish personal goals related to personal health assessment (include strengths and weaknesses identified in the areas of health enhancement, risk-taking and stress).

Explain the short-term and long-term consequences of responsible and risky/harmful behaviors (e.g., responsible: exercise, sleep, nutrition; risky: the use of tobacco, alcohol and other drugs).

1. Identify the decision-making process.
2. Identify the short-term and long-term consequences of responsible and risky/harmful behaviors.
3. Design a flow chart that distinguishes on a continuum most responsible vs. most risky/harmful behaviors (e.g., exercise, sleep, nutrition, use of tobacco, alcohol, and other drugs, sexual involvement).

Develop injury prevention and management strategies to improve and maintain personal, family and community health.

1. Describe responsible and safe behavior (personal, family and community) such as driving, sports, recreation, interpersonal relationships.
2. Construct self-protection techniques to use in various personal, family, social/community environments.

Perform advanced first aid procedures.

1. Demonstrate basic first aid procedures for unconsciousness, shock, fractures, burns, cuts, choking, poisoning, etc.
2. Demonstrate correct CPR procedures.

Comprehensive Health Education – Standard 3 (cont.)**Explain how to survive in adverse environmental situations.**

Develop a plan for surviving in adverse environmental situations (e.g., extreme weather conditions).

DISTINCTION (Honors)

Conduct a personal health assessment to determine strategies for health- enhancement, risk reduction and stress management.

1. Design a personal health assessment tool.
2. Develop strategies for personal health enhancement, risk reduction and stress management.

Describe consequences of responsible and risky/harmful behaviors throughout the life cycle.

Identify the short-term and long-term consequences of responsible and risky/harmful behaviors during pregnancy, infancy, childhood, adolescence, adulthood and for the elderly.

Apply injury prevention and management strategies to improve and maintain personal, family and community health.

Create a presentation to teach injury prevention and management strategies to improve or maintain either personal, family and/or community health.

COMPREHENSIVE HEALTH EDUCATION – Standard 4**Students analyze the influence of culture, media, technology and other factors on health.****Explain how cultural diversity enriches and challenges health behaviors.**

Identify the benefits and challenges that different cultures provide in relation to health behaviors through development of a written project (e.g., table, graph, artistic interpretation).

Describe the impact of media and technology on personal, family and community health.

Produce a presentation that compares media and technology modalities (e.g., television, movies, advertisements, Internet, music, MTV) in terms of their influence on personal, family and community health.

DISTINCTION (Honors)

Use primary and secondary source information and government regulations to assess the impact of the production, promotion and distribution of products and services on consumer health.

1. Contact government agencies to obtain information.
2. Compile documents from health agencies to create an assessment of an agency's impact on production, promotion and distribution of products and services on consumer health (e.g., exercise equipment, fitness centers, safety features on automobiles).

COMPREHENSIVE HEALTH EDUCATION – Standard 5**Students demonstrate the ability to use interpersonal skills to enhance health.****Select ways to communicate care, consideration and respect of self and others to enhance health.**

1. Demonstrate the ability to:
 - a. send clear and direct messages, verbally and nonverbally.
 - b. listen to others, receiving and understanding their communication.
 - c. ask for clarification when needed.
 - d. respond verbally and nonverbally.
2. Demonstrate effective techniques, including refusal skills, for handling conflict and solving problems.
3. Demonstrate effective techniques for resisting negative peer pressure, while maintaining positive interpersonal relationships.

Comprehensive Health Education – Standard 5 (cont.)**Identify the causes of conflict among youth and adults in school and community, and demonstrate refusal, negotiation and collaboration skills to manage the conflict.**

1. Explain conflict and its root causes.
2. Explain effective conflict resolution techniques.
3. Participate in role plays that demonstrate refusal, negotiation, mediation and collaboration skills to resolve conflict.

DISTINCTION (Honors)

Describe the social, economic and physical characteristics that influence family structures and interpersonal relations.

1. Explain the factors that influence family structures and interpersonal relations.
2. Conduct a study of an actual (or fictitious from literature or media) family to assess the social, economic and physical characteristics that have influenced this family structure and its interpersonal relations.

Identify the causes of conflict in schools, families and communities; model strategies for solving interpersonal conflicts through refusal, negotiation and collaboration skills to avoid potentially harmful situations.

1. Construct a presentation that models effective refusal, negotiation, mediation and collaboration skills to resolve conflict.
2. Present role plays, demonstrations or other means of effective conflict resolution.

COMPREHENSIVE HEALTH EDUCATION – Standard 6**Students demonstrate the ability to use goal setting and decision-making skills to enhance health.****Demonstrate the ability to utilize various strategies when making decisions related to health needs and risks of young adults.**

Demonstrate at least one effective strategy for reducing the probability of involvement in a risk behavior.

Describe health issues that require collaborative decision-making.

Prepare a discussion analyzing health issues that require a collaborative decision (e.g., communicable disease, violence, environmental issues, sexual involvement).

Explain immediate and long-term impact of health decisions on the individual.

Demonstrate the impact (immediate and long-term) of health decisions on the individual (e.g., use of tobacco, alcohol and other drugs, sexual behavior, nutrition, exercise, sleep).

Develop an effective plan for achieving and maintaining personal health goals for lifelong health-enhancement and wellness which recognizes the importance of goal setting/time management skills.

1. Construct a health and wellness personal activities log for at least one week.
2. Construct a long-term plan for improving personal health and wellness that will include the goal setting procedures used and time management skills needed to accomplish this plan.

DISTINCTION (Honors)

Describe immediate and long-term impact of health decisions on the individual, family and community.

Interview an individual who has made healthy vs. unhealthy life choices and describe how their choices have impacted them individually, within their family and in the community (e.g., use tobacco or not, violence and incarceration or not, obesity or not, Type A vs. Type B personalities).

Formulate an effective plan for lifelong health enhancement and wellness.

Develop a plan of personal, lifelong health and wellness.

COMPREHENSIVE HEALTH EDUCATION – Standard 7

Students demonstrate the ability to advocate for personal, family and community health.

Describe the effectiveness of communication methods for accurately expressing health information and ideas .

Select a variety of communication modalities/methods (e.g., visual, verbal, written) for those most effective at presenting health information and ideas.

Research and present information about health issues.

Present information about health issues (e.g., nutrition, eating disorders, exercise, athletic needs, the environment, disease control, human sexuality, substance abuse, mental health, stress management).

Utilize strategies to overcome barriers when communicating information about health issues.

Develop a presentation to a select group involved in unhealthy behavior that would encourage the choice of health-enhancing behavior (e.g., cessation information to smokers, conflict resolution).

Demonstrate the ability to influence and support others in making positive health choices.

1. Participate in a peer mediation, peer education, peer leadership, or peer counseling program, or create one on your campus.
2. Participate in a school or community services learning activity.

Demonstrate the ability to work cooperatively when advocating for healthy communities.

Participate as a volunteer for a school/community health promotion program.

DISTINCTION (Honors)

Demonstrate the ability to adapt health messages and communication techniques to the characteristics of a particular audience.

Create age-appropriate presentations that promote healthy behavior (e.g., tobacco use prevention presentations to sixth grade classes; dating violence prevention to ninth graders; diabetes management for senior citizens).

PHYSICAL ACTIVITY – Standard 1

Students demonstrate proficiency and the achievement of higher order cognitive skills necessary to enhance motor skills.

Demonstrate competency in at least three different types of movement forms (e.g., aquatics, team sports, individual and dual sports, outdoor pursuits, self-defense, gymnastics, dance.)

Demonstrate competency (basic skills, strategies and rules) in an increasing number of more complex versions of at least three different movement forms.

Use specialized knowledge to develop movement competence and proficiency.

Demonstrate improved skills by applying the critical elements to competent performance.

Identify and apply critical elements to enable the development of movement competence/proficiency.

1. Identify the critical elements of a skill.
2. Demonstrate and apply the biomechanical concepts and principles to the skills.

Identify and apply characteristics of highly skilled performance to enable the development of movement competence/proficiency.

1. Identify strengths and weaknesses of highly skilled performances.
2. Identify skills needed to improve performance.

Physical Activity – Standard 1 (continued)**Apply discipline-specific information to individual performance.**

DISTINCTION (Honors)

Demonstrate proficiency in at least three movement forms (e.g., aquatics, team sports, individual and dual sports, outdoor pursuits, self-defense, gymnastics, dance).

Demonstrate proficiency (basic skills, strategies and rules) in at least three different movement forms.

Explain pertinent scientifically-based information regarding movement performance.

1. Demonstrate improved skills by applying the critical elements to proficient performance.
2. Research highly skilled performers or performances and critique the research.

Apply advanced movement-specific information in the development of movement proficiency.

Use coaching information (self, peer, teacher, video) to improve performance.

Use discipline-specific knowledge to enable the independent learning of movement skills.

Design a plan for self-improvement of a specific movement skill.

PHYSICAL ACTIVITY – Standard 2**Students comprehend basic physical activity principles and concepts that enable them to make decisions, solve problems and to become self-directed lifelong learners who are informed physical activity consumers.****Explain the difference between facts and myths (e.g., the validity of marketing claims promoting fitness products and services) related to physical activity.**

1. Identify various products and their marketing claims.
2. Explain value of consumer items.

Identify consumer issues related to selection, purchase, care and maintenance of personal fitness equipment .

1. Identify personal needs.
2. Identify similarities and differences among products.
3. Identify use.
4. Explain cost quality.

Identify appropriate individual requirements for physical activity prescription concerning the mode, intensity, duration, frequency and progression.

1. Explain principles of training.
2. Apply principles of training.

Demonstrate ability to self-assess each area of health-related physical fitness and interpret test scores.

1. Match fitness components and tests.
2. Administer self-tests.
3. Explain results.
4. Prescribe needs and identify strengths.

Identify different sports and activities and their contributions to specific health-related physical fitness components.

Explain the value of various sports/activities on fitness components.

Demonstrate a knowledge of physiological changes that result from physical activity participation.

Identify positive physical changes that affect the heart, circulatory, respiratory and other systems as a result of active participation in sports.

Physical Activity – Standard 2 (cont.)

Identify safety principles associated with physical fitness development.

Design a personal fitness program that 1) will lead to, or maintain, an acceptable level of health-related fitness and 2) is based on an understanding of training principles, individual skill levels and availability of resources.

1. Write program goals.
2. Design a program.
3. Follow the program.
4. Monitor and adjust.
5. Complete the program.
6. Design a personal fitness program.
7. Participate regularly in a personal fitness program.
8. Complete a personal fitness program.

DISTINCTION (Honors)

Explain how each part of health-related physical fitness contributes to lifelong health and wellness.

Design a personal fitness program that will 1) lead to, or maintain, an acceptable level of health-related fitness and 2) is based on an understanding of training principles, individual skill levels and availability of resources.

1. Write program goals.
2. Design a program.
3. Follow the program.
4. Monitor and adjust.
5. Complete the program.
6. Design a personal fitness program.
7. Participate regularly in a personal fitness program.
8. Complete a personal fitness program.

Identify sound nutritional practices and stress management skills associated with physical activity and fitness.

PHYSICAL ACTIVITY – Standard 3

Students exhibit a physically active lifestyle.

Participate regularly in health-enhancing and personally rewarding physical activity.

1. Complete a program in cardio-respiratory fitness.
2. Complete a developmental program in muscular strength and muscular endurance.
3. Complete a flexibility program.

Select physical activities from a variety of movement forms based on personal interest, meaning and fulfillment.

1. Complete a program in cardio-respiratory fitness.
2. Complete a developmental program in muscular strength and muscular endurance.
3. Complete a flexibility program.

Develop a personal physical activity program meeting individual needs.

1. Design a program.
2. Follow the program.
3. Monitor and adjust the program.

Physical Activity – Standard 3 (cont.)**DISTINCTION (Honors)****Participate regularly in health-enhancing and personally challenging physical activity.**

Complete a semester or season in a chosen extracurricular sport or activity.

Participate in aquatics, self-defense, gymnastics, games, sports, dance, outdoor pursuits and other physical activities that contribute to the attainment of personal goals and the maintenance of wellness.

Explain how activity participation patterns will change throughout life and have some strategies to deal with those changes.

Develop a plan for lifelong activity.

PHYSICAL ACTIVITY – Standard 4

Students achieve and maintain a health-enhancing level of physical fitness.

Accomplish the health-related physical fitness standards as designed by Fitnessgram.

Identify a personal level of fitness on:

- (a) cardio-respiratory performance
- (b) muscular strength
- (c) muscular endurance
- (d) flexibility
- (e) body composition

Use principles of training for the purpose of modifying levels of health fitness.

1. Identify the results of the Fitnessgram.
2. Apply the information to develop personal fitness goals/plans.

Design a personal health-related fitness program based on an accurately assessed fitness profile.

Design and participate in a personal fitness program incorporating the FITT principle.

Identify safe and risky exercises and demonstrate safe exercise alternatives.

1. Describe unsafe practices and the appropriate safe alternative.
2. Devise a plan to reduce risk and possible injury.

DISTINCTION (Honors)

Accomplish the health-related fitness standards as designed by Fitnessgram.

1. Explain the results of the Fitnessgram.
2. Apply the information to develop personal fitness goals/plans.
3. Monitor Fitnessgram results and adjust the personal fitness plan as necessary for continuous improvement.

Demonstrate the skill, knowledge and desire to monitor and adjust levels of fitness to meet personal goals.

Design a personal health-related fitness program based on an accurately assessed fitness profile.

1. Design a personal fitness program.
2. Participate regularly in a personal fitness program.

PHYSICAL ACTIVITY – Standard 5

Students develop self-initiated behaviors that promote effective personal and social interactions in physical activity settings.

Apply safe practices, rules, procedures and etiquette in all physical activity settings.

1. Follow safety rules.
2. Behave appropriately.
3. Show respect and consideration for oneself and others.

Act independently of peer pressure.

Resolve conflict in appropriate ways.

1. Identify and discuss conflict in physical education and sports.
2. Construct a conflict resolution plan.
3. Demonstrate conflict resolution skills.

DISTINCTION (Honors)

Initiate independent and responsible personal behavior in physical activity settings.

Demonstrate exemplary standards of behavior.

Take a leadership role and follow through, as appropriate, in order to accomplish group goals.

1. Demonstrate leadership skills.
2. Apply leadership skills.

Explain a safe environment for self and others in physical activity settings.

Identify and recognize unsafe conditions and behaviors.

Identify potentially dangerous outcomes and consequences of participation in physical activities.

Discuss the level of risk in various sports and activities.

PHYSICAL ACTIVITY – Standard 6

Students demonstrate understanding and respect for differences among people in physical activity settings.

Explain the value of sport and physical activity in understanding multiculturalism.

Identify sports and activities that appeal to people of different genders, race, ethnic and religious backgrounds.

Invite others with differences to join in personally enjoyable physical activity.

1. Team up with people of diverse backgrounds.
2. Complete an activity with a diverse team.

DISTINCTION (Honors)

Explain the role of physical activity in a diverse society.

Explain how sports and physical activities can remove boundaries and improve understanding between people.

Develop strategies for including persons from diverse backgrounds and abilities in physical activities.

1. Design a sports or fitness activity for a specific individual or group from a different ethnic, racial or ability background.
2. Instruct a sport or activity to a diverse group or person.

PHYSICAL ACTIVITY – Standard 7

Students develop behavioral skills (self-management skills) essential to maintaining a physically active lifestyle.

Demonstrate knowledge of goal setting and the ability to apply this knowledge to personal physical fitness and activity goals.

1. List goal setting steps.
2. Apply goal setting strategies to a personal fitness plan.

Identify attitudes associated with regular participation in physical activity and/or fitness development activities.

1. List the rewards of regular participation.
2. Identify obstacles to regular participation.
3. Explain the importance of motivation, prioritizing, dedication and self-discipline in fitness development.

Organize time management skills associated with regular physical activity participation.

Complete and document regular physical activity outside of class at least 3 times per week.

DISTINCTION (Honors)

Describe common barriers to regular activity participation and methods of overcoming these barriers.

1. Create a diary recording one's own workouts and their feelings about them.
2. Evaluate the diary.

Explain how an understanding of self-efficacy and self-esteem is related to physical activity and the ability to use self-management skills necessary for developing both.

1. Describe the mental benefits of participation in lifelong fitness and sports.
2. Describe one's own feelings having accomplished personal fitness goals or failed to reach such goals.
3. Organize a fitness program into a busy lifestyle (time management).
4. Create rewards for achieving personal goals.

FOREIGN LANGUAGE – Standard 1

Communication: Students understand and interpret written and spoken communication on a variety of topics in the target language.

Comprehend the main ideas and significant details in both oral presentations and written text.

Comprehend authentic newspapers and magazine articles.

Identify characteristics of a variety of literary genres including poetry.

Identify and comprehend cultural nuances, including humor, in written and spoken language.

Analyze and determine the significance of the principal themes and characteristics of a major literary text.

Analyze the styles of two or more authors within one genre.

DISTINCTION (Honors)

(Note: This level description applies to each of the three standards for the Communication Strand.)

Discuss ideas, events or texts successfully with native speakers in conversation or as a presentation to a group.

Debate, argue and negotiate on a variety of issues.

Write analyses of literary works, noting stylistic conventions and cultural nuances.

Conduct a comparative analysis of two or more authentic written or recorded works in the target language.

FOREIGN LANGUAGE – Standard 2

Communication: Students engage in oral and written exchanges which include providing and obtaining information, expressing feelings and preferences, and exchanging ideas and opinions in the target language.

Express and support opinions on a variety of topics, concepts and ideas.

Use complex sentences with connective expressions and idioms in oral and written communication.

Compare and contrast ideas, people, places and things.

Narrate anecdotes and original stories.

FOREIGN LANGUAGE – Standard 3

Communication: Students present information and ideas in the target language on a variety of topics to listeners and readers.

Present persuasive arguments effectively on a range of topics.

Present a research project orally or publish it in writing or in a video.

Present a humorous story, anecdote or joke.

FOREIGN LANGUAGE - Standard 4

Culture: Students know "what to do when" and "what to say while doing it" in the culture and use this knowledge to interact appropriately. They also understand the relationships between cultural perspectives, products and practices within cultures.

Explain how the target language and its culture add to the richness of our cultural diversity.

Use formal and informal language appropriately in a variety of settings.

Identify, analyze and discuss various patterns of behavior or interactions typical of the culture studied.

Investigate and explain the function of products of the culture (e.g., institutions, crafts, laws, music) and their relationship to cultural perspectives.

Identify the target language's literary masterpieces and their authors.

DISTINCTION (Honors)

Identify, discuss and analyze products of the culture (e.g., social, economic and political institutions) and the relationships between these institutions and the perspectives of the culture.

Experience, discuss and analyze expressive products of the culture including selections from various literary genres and the visual arts.

Recognize the similarities and differences in literary style among well-known authors within the target language from one or more historical periods.

FOREIGN LANGUAGE – Standard 5

Connections: Students use the target language and authentic sources to reinforce and/or learn other content from the other subject areas.

Discuss topics from other school subjects or the workplace in the target language including political and historical concepts, world-wide health issues and environmental concerns.

Acquire information from a variety of sources written in the target language about a topic being studied in other subjects .

Use a variety of authentic sources in the target language to prepare reports for other content subject areas.

DISTINCTION (Honors)

Study successfully one or more content areas in the target language.

FOREIGN LANGUAGE – Standard 6

Comparisons: Students develop insights into their own language and their own culture through the study of the target language.

Compare and contrast various elements of the target language, such as time or tense, with parallel linguistic elements in English.

Use idiomatic expressions in appropriate contexts.

Compare and contrast the treatment of current issues in both the target culture and the student's culture by drawing on authentic texts.

DISTINCTION (Honors)

Provide an in-depth analysis of another culture's perception of the United States within the world arena.

Compare and contrast the use of English and the target language and culture to carry out specific communicative purposes (e.g., motivating others, telling a story, conducting business).

FOREIGN LANGUAGE – Standard 7**Communities: Students use the target language within and beyond the school setting.**

Research topics of personal, global or community interest, using resources produced for native speakers.
Interview speakers of the target language on historical or current topics of cultural or professional interest.
Produce written or oral materials that present American cultural topics; share them with students in other countries via technology or mail.

Serve as a guide or informal interpreter for visitors from other countries.

Perform a short play in the target language for parents, visitors or a community group.

DISTINCTION (Honors)

Translate written materials for a local business, bank, school, etc.

Publish an original article or story.

Serve as interpreter to assist native speakers who require help, such as the elderly or disabled.

Tutor students from other countries who need help with school subjects in their native language while they are learning English.

Co-host a cultural festival in conjunction with the community.

WORKPLACE SKILLS – Standard 1**Exhibit interviewing skills (e.g., responding effectively to questions; using language that conveys maturity, sensitivity and respect; dressing appropriately, and using appropriate body language.**

Respond effectively to interview questions.
Employ suitable interview language.
Describe appropriate dress/dress appropriately.
Exhibit appropriate body language.

Respond to verbal and nonverbal messages in ways that demonstrate understanding.

Respond appropriately to verbal messages.
Respond appropriately to nonverbal messages.

Communicate a clear message and respond to listener feedback.

Formulate a clear message using acceptable format.
Respond appropriately to listener feedback.

Participate in conversation, discussion and/or group presentations using verbal and nonverbal communication with appropriate style and tone for audience and occasions.

Apply group interaction skills (verbal and nonverbal).
Adapt style and tone to audience and occasion (verbal and nonverbal).

Maintain records and information completely and accurately.

Identify basic record keeping skills.
Select method of recordkeeping.
Maintain a complete and accurate system.

Create documents (e.g., letters, memos, manuals, graphs, flowcharts, directions, reports and proposals) that are clear, appropriate to the audience, subject matter and purpose, and exhibit the writer's use of correct grammar, spelling and punctuation.

Select style and format.
Establish clear purpose for a specific audience.
Use correct grammar, spelling and punctuation.
Create an acceptable document.

Respond to informal and formal speeches using illustrations, statistics, comparisons and analogies to critique the effectiveness of presentations.

Evaluate the effectiveness of presentation.
Formulate a response.
Select style and medium.
Utilize appropriate tools (e.g. flow charts and illustrations).

Summarize information from reading material, clearly and succinctly articulating its major points and proposals.

Identify major points from written materials.
Summarize major points clearly and concisely.

Infer and locate the meaning of unknown or technical vocabulary.

Using available resources, determine the meaning of unknown or technical vocabulary.

Research and synthesize information and develop a written document to convey that information which is appropriate to the audience.

Judge the accuracy, appropriateness, style and plausibility of reports, proposals, and/or theories.
Determine audience needs and interests.

Workplace Skills – Standard 1 (cont.)

Develop accurate and appropriate documents that synthesize the information using accurate grammar, mechanics, and vocabulary.

DISTINCTION (Honors)

Deliver a polished or impromptu speech that is organized and well suited to the audience, using effective body language and voice inflection to clarify and defend positions.

Conduct a thoughtful interview, taking appropriate notes and summarizing the information learned.

Use clear, concise and cogent language when presenting analytical responses to workplace literature, conveying technical information, and explaining complex concepts and procedures.

Plan and produce an effective visual technical report or display.

Draw conclusions and make predictions from technical information and data.

Identify a problem, conduct research, and summarize the findings and solutions, using sources such as technical journals and government publications to support the original thesis.

Express and defend their points of view by formulating sound, rational arguments and applying the art of persuasion and debate.

WORKPLACE SKILLS – Standard 2**Select and use appropriate computation techniques (i.e. mental, paper and pencil, and technology) to solve problems and determine the accuracy of results.**

Select appropriate computation techniques, such as averaging, estimation, statistical techniques, and appropriate electronic calculations.

Apply selected technique to solve problems.

Evaluate accuracy of results.

Construct projections and trends from raw data, charts, tables and graphs that summarize data from real-world situations.

Evaluate data from real-world situations.

Construct projections and trends.

DISTINCTION (Honors)

Analyze inferences from charts, tables and graphs that summarize data.

Use appropriate technology to display and analyze workplace data.

Evaluate data for interpretation and prediction.

Test possible solutions using appropriate statistics.

WORKPLACE SKILLS – Standard 3**Develop a plan to solve complex problems by gathering, selecting and analyzing data; include determining the history and politics of the situation.**

Identify the problem.

Select needed data.

Analyze data.

Develop a plan within the context of the workplace to solve problem.

Identify and allocate available resources (e.g., time, money, materials, facilities and human)

Identify available resources.

Allocate resources.

Workplace Skills – Standard 3 (cont.)**Design and justify solutions by tracking and evaluating the results.**

Design justifiable solution.

Monitor results.

Evaluate results.

Demonstrate the ability to adapt new information to changing situations and requirements.

Demonstrate the ability to apply new information to changing situations and requirements.

Combine ideas or information in new ways, make connections between seemingly unrelated ideas and reshape goals in ways that reveal new possibilities to solve problems.

Integrate existing ideas and information in new ways to solve a problem.

Develop an inventory record keeping system to maintain data and information in a systematic fashion.

Determine record keeping needs based on the nature of the data.

Develop an appropriate record keeping system.

DISTINCTION (Honors)

Apply a continuous improvement process to an existing business.

Conduct a comprehensive workplace needs assessment, communicate findings to the employer, and develop and defend a set of proposed solutions to address the needs.

WORKPLACE SKILLS – Standard 4**Demonstrate ability to work with others from diverse backgrounds, including identifying individual interests, aptitudes and skills; teach others new skills.****Understand group dynamics.**

Identify personal qualities.

Demonstrate an understanding of group dynamics.

Work well with others.

Teach others new skills.

Work toward consensus by exchanging resources and resolving divergent interests.

Demonstrate the ability to reach consensus by resolving divergent interests.

Monitor individual performance and team effectiveness.

Conduct periodic checks of individual team member's contributions and the team's progress in obtaining goals.

Provide constructive feedback.

Define feedback criteria.

Give constructive feedback to team participants that strengthens individual and group performance.

Assume leadership roles in team settings to accomplish tasks.

Communicate thoughts and ideas to clarify roles and responsibilities.

Delegate tasks and responsibilities effectively.

Motivate team to accomplish tasks.

Evaluate team effectiveness.

Demonstrate punctuality, trustworthiness, civility and initiative on school projects.

Complete school projects on time, with integrity, while displaying conduct befitting a citizen of the class.

Negotiate solutions to identified conflicts by separating people from the problem; focusing on interests, not positions; inventing options for mutual gain; and insisting on the use of objective criteria.

Apply negotiation skills to solve conflicts.

Workplace Skills – Standard 4 (cont.)**Work and communicate with diverse clients, customers and community to satisfy their expectations.**

Identify/define expectations of clients, customers and community.

Develop a plan to meet those expectations.

Implement plan.

Evaluate plan.

DISTINCTION (Honors)

Demonstrate teamwork and negotiation skills in innovative and effective ways to accomplish tasks.

Pursue difficult and challenging leadership roles.

WORKPLACE SKILLS – Standard 5**Write, evaluate and revise a career plan consistent with occupational interests, aptitudes and abilities.**

Assess career interests, aptitudes and abilities.

Develop a career pathway plan.

Evaluate and revise plan, as needed.

Demonstrate job acquisition skills by completing a resume and job applications and by demonstrating interviewing techniques.**Exhibit work ethics and behaviors essential for success in all areas of life.**

Define ethics and effective workplace behaviors.

Use appropriate behaviors (time management, communications, interpersonal skills, life balance) that display success in life.

Demonstrate marketable occupations skills for an entry-level job based on career interests.**DISTINCTION (Honors)**

Evaluate goals and career options and adjust career plans accordingly.

Increase academic and occupational skills to become more marketable.

Evaluate career plans on a continuous basis to determine appropriate educational strategies.

WORKPLACE SKILLS – Standard 6**Draft and interpret an organizational chart.**

Design an organizational chart.

Interpret an organizational structure.

Evaluate the quality and performance of workplace systems, distinguish trends, and recommend improvements and modifications to an existing system to improve products or services.

Describe alternate workplace systems.

Evaluate the quality and performance of workplace systems

Distinguish trends in workplace systems.

Generate recommendations for improvements/modifications to existing workplace systems.

Understand how changing a component of a system (e.g., changing how employees are assigned to work shifts, using the Internet) impacts the whole system.

Analyze the cause and effect relationships within a real world setting.

DISTINCTION (Honors)

Predict the impact of actions on system operations, diagnose deviations in the function of systems/organizations, and take necessary action to correct performance.

Anticipate and project potential modification of systems to meet the needs of a changing society.

WORKPLACE SKILLS – Standard 7**Select and use appropriate technology to organize, send and receive information.**

Identify available technological tools.

Employ appropriate tools to organize, send, and receive information.

Analyze the impact of technological changes on tasks, people and society.

Define technology as it relates to tasks, people, society, and careers.

Analyze the impact.

DISTINCTION (Honors)

Demonstrate computer operation skills such as computer-aided drafting and computer-integrated manufacturing with other technologies in a variety of applications within a workplace setting.

Design technologies which go beyond any existing technology.

Adapt technology use to expand academic and personal growth.

Identify or solve problems with computers and other technologies.

WORKPLACE SKILLS – Standard 8**Set and prioritize their goals, estimate the time required to complete each assigned task, and prepare and follow the timeline/schedule.**

Develop a written personal/professional plan.

Prepare a short- and long-term personal budget; make expenditure, revenue and savings forecasts; maintain proper records.

Implement a written personal financial plan.

Evaluate the impact of health choices (e.g., smoking, substance abuse, exercise) on personal and professional well-being.

Describe the effects of health choices on a person's well being and his/her ability to complete work tasks.

Analyze and evaluate the impacts of health choices.

Identify strategies for balancing self, family, work, leisure and citizenship; ways to reduce the impact of stress; and how both relate to personal and career satisfaction.

Develop written strategies for personal and career satisfaction.

DISTINCTION (Honors)

Design a Request for Proposal process.

Maintain a personal management system by setting goals, managing resources, and balancing life choices to accomplish career and life satisfaction.

Select relevant goals, prioritize them, allocate time to each, and prepare and follow schedules when solving workplace or school projects.

Organize and efficiently allocate material, facilities, supplies, parts and equipment to optimize their use in personal and professional goal attainment.

Prepare budgets and make cost and revenue forecasts in a business, reconciling differences between inventory and financial records, and projecting resource needs over time.

Design a task analysis flow chart.

Assess knowledge and skills, delegate work accordingly, evaluate performance and provide feedback on human resources when working on a team project.

Design a computer-generated workplace document with narrative and graphics, using desktop publishing software.

Demonstrate an understanding of First-In First-Out (FIFO), Last-In First-Out (LIFO) and Just-in-Time inventory systems.

Develop a workplace staffing plan and write job descriptions.

Develop a bill processing system.