English/Language Arts: Grade 9

Strand:

E1 Reading

Reading is a process that includes demonstrating comprehension and showing evidence of a warranted and responsible interpretation of the text. “Comprehension” means getting the gist of a text. It is most frequently illustrated by demonstrating an understanding of the text as a whole; identifying complexities presented in the structure of the text and extracting salient information from the text. In providing evidence of a responsible interpretation, students may make connections between parts of a text, among several texts, and between texts and other experiences; make extensions and applications of a text; and examine texts critically and evaluatively.

Standard:

E1a: The student reads at least twenty-five books or book equivalents each year. The quality and complexity of materials to be read is based on the lexile level of grade nine (1000L-1200L). The materials should include traditional and contemporary literature (both fiction and non-fiction) as well as magazines, newspapers, textbooks, and on-line materials. Such reading should represent a diverse collection of material from at least three different literary forms and from at least five different writers.

Examples:

Examples of activities through which students might produce evidence of reading twenty-five books include:

- *Maintain an annotated list of works read.*
- *Generate a reading log or journal.*
- *Participate in formal and informal book talks.*

Standard:

E1b: The student reads and comprehends at least four books (or book equivalents) about one issue or subject, or four books by a single writer, or four books in one genre, and produces evidence of reading that:

Components:

E1b.1: makes and supports warranted and responsible assertions about the texts;

E1b.2: supports assertions with elaborated and convincing evidence;

E1b.3: draws the texts together to compare and contrast themes, characters, and ideas;

E1b.4: makes perceptive and well developed connections;

E1b.5: evaluates writing strategies and elements of the author’s craft.

Examples:

Examples of activities through which students might produce evidence of reading comprehension include:

- *Write a saturation report (a report that recounts information on a topic*
- *gathered by a student over a period of time.)*
- *Construct a review of two works by the same author.*
- *Produce a literary response paper.*
- *Produce a research report.*
- *Participate in formal or informal book talks; e.g. Socratic seminar and literature circles.*
- *Create an annotated book list organized according to author, theme, or genre.*

Standard:

E1c: The student reads and comprehends informational materials to develop understanding and expertise and produces written or oral work that:

Components:

E1c.1: restates or summarizes information;

E1c.2: relates new information to prior knowledge or experience;

E1c.3: extends ideas;

E1c.4: makes a connection to related topics or information.

Examples:

Examples of activities through which students might produce evidence of reading informational materials include:

- *Use information to support or enhance a project.*
- *Write a report of information that draws from multiple sources.*
- *Incorporate expert opinions into a speech or position paper.*
- *Use informational materials to reach a conclusion regarding a controversial topic.*
- *Use information to support or enhance a project.*
- *Develop a portfolio of materials regarding a student's hobby or personal interest.*
- *Summarize key points and issues of an historical or artistic exhibit.*
- *Write a report that analyzes several historical records of a single event and attempts to understand the reasons for the similarities and differences.*

Strand:

E2 Writing

Writing is a process through which a writer shapes language to communicate effectively. Writing often develops through a series of initial plans and multiple drafts and through access to informed feedback and response. Purpose, audience, and context contribute to the form and substance of writing as well as to its style, tone, and stance

Standard:

E2a: The student produces a report that:

Components:

E2a.1: engages the reader by establishing a context, creating a persona, and otherwise developing reader interest;

E2a.2: develops a controlling idea that conveys a perspective on the subject;

E2a.3: creates an organizing structure appropriate to purpose, audience, and context;

E2a.4: includes appropriate facts and details;

E2a.5: excludes extraneous and inappropriate information;

E2a.6: uses a range of appropriate strategies, such as providing facts and details, describing or analyzing the subject, narrating a relevant anecdote, comparing and contrasting, naming, explaining benefits or limitations, demonstrating claims or assertions, and providing a scenario to illustrate;

E2a.7: provides a sense of closure to the writing.

Examples

Examples of reports include:

- *An I-search essay (an essay that details a student's search for*
- *information as well as the information itself; I-search papers are developed through a variety of means, e.g. interviews, observation, internet, as well as traditional library research).*
- *A saturation report (a report that recounts substantial information on a topic gathered by a student over a period of time.)*
- *A report produced as part of studies in subjects such as science, social studies, and mathematics.*
- *An informal research paper.*

- *An investigative report.*
- *A report of information on an item of personal interest or experience.*

Standard: **E2b:** The student produces a response to literature that:

Components:

E2b.1: engages the reader through establishing a context, creating a persona, and otherwise developing reader interest;

E2b.2: advances a judgment that is interpretive, analytic, evaluative, or reflective;

E2b.3: supports a judgment through references to the text, references to other works, authors, or non-print media, or references to personal knowledge;

E2b.4: demonstrates understanding of the literary work though suggesting an interpretation;

E2b.5: anticipates and answers a reader's questions;

E2b.6: recognizes possible ambiguities, nuances, and complexities;

E2b.7: provides a sense of closure to the writing.

Examples: *Examples of responses to literature include:*

- *An evaluation of a piece of literature or several pieces of literature.*
- *A comparison of a piece of literature with its media (video, tape, radio, television, ballet, artistic) presentation.*
- *A personal response to a literary work.*
- *An analysis of the significance of a section of a novel in terms of its significance to the novel as a whole.*
- *An evaluation of the role played by setting or character in novel.*
- *An analysis of the effect of a minor character on the plot of a novel.*
- *An explanation or interpretation of a recurring motif in a novel, short story, or a play.*
- *A comparison of two literary works.*

Standard: **E2c:** The student produces a narrative (fictional or autobiographical) account that:

Components:

E2c.1: engages the reader by establishing a context, creating a point of view, and otherwise developing reader interest;

E2c.2: establishes a situation, plot, point of view, setting, and conflict (and for autobiography, the significance of events and of conclusions that can be drawn from the events);

E2c.3: creates an organizing structure;

E2c.4: includes sensory details and concrete language to develop plot and character;

E2c.5: excludes extraneous details and inconsistencies;

E2c.6: develops complex characters;

E2c.7: uses a range of appropriate strategies, such as dialogue, tension or suspense, naming, pacing, and specific narrative action, e.g.; movement, gestures, expressions;

E2c.8: provides a sense of closure to the writing.

Examples: *Examples of narrative accounts include:*

- *A biographical account.*
- *A fiction or non-fiction story.*
- *A personal narrative.*

- *A narrative poem or song based on a hero.*
- *An historical account.*
- *A parody of a particular narrative style; e.g. fable, soap opera.*
- *A response to an autobiographical incident prompt.*

Standard: **E2d:** The student produces a narrative procedure that:

Components:

E2d.1: engages the reader by establishing a context, creating a persona, and otherwise developing reader interest;

E2d.2: provides a guide to action to action for a complicated procedure in order to anticipate a reader's needs; creates expectations through predictable structures, e.g. headings; and provides smooth transitions between steps;

E2d.3: makes use of appropriate writing strategies, such as creating a visual hierarchy and using white space and graphics as appropriate;

E2d.4: includes relevant information;

E2d.5: excludes extraneous information;

E2d.6: anticipates problems, mistakes, and misunderstandings that might arise for the reader;

E2d.7: provides a sense of closure to the writing.

Examples: *Examples of narrative procedures include:*

- *A set of rules for organizing a class meeting.*
- *A set of instructions for playing computer games.*
- *A set of instructions for using media technology.*
- *A report of a mathematical investigation.*
- *A set of instructions for evaluating searches on the web.*

Standard: **E2e:** The student produces a persuasive essay that:

Components:

E2e.1: engages the reader by establishing a context, creating a persona, and otherwise developing reader interest;

E2e.2: develops a controlling idea that makes a clear and knowledgeable judgment;

E2e.3: creates an organizing structure that is appropriate to the needs, values, and interests of a specified audience, and arranges details, reasons, examples, and anecdotes effectively and persuasively;

E2e.4: includes appropriate information and arguments;

E2e.5: excludes information and arguments that are irrelevant;

E2e.6: anticipates and addresses reader concerns and counter-arguments;

E2e.7: supports arguments with detailed evidence, citing sources of information as appropriate;

E2e.8: uses a range of strategies to elaborate and persuade, such as definitions, descriptions, illustrations, examples from evidence, and anecdotes;

E2e.9: provides a sense of closure to the writing.

Examples: *Examples of persuasive essays include:*

- *A position paper.*
- *A problem-solution paper.*
- *An opening statement for a debate.*
- *An evaluation of a product or a policy.*

- *A critique of a public policy.*
- *An editorial on a current issue that uses reasoned arguments to support an opinion.*

Standard: **E2f:** The student produces a reflective essay that:

Components:
E2f.1: engages the reader by establishing a context, creating a persona, and otherwise developing reader interest;

E2f.2: analyzes a condition or situation of significance;

E2f.3: develops a commonplace, concrete occasion as the basis for the reflection, e.g. personal observation or experience;

E2f.4: creates an organizing structure appropriate to purpose and audience;

E2f.5: uses a variety of writing strategies, such as concrete details, comparing and contrasting, naming, describing, creating a scenario;

E2f.6: provides a sense of closure to the writing.

Examples:
Examples of reflective essays include:

- *An analysis of the significance of a proverb or quotation.*
- *A report about a concrete occasion and its implications over time.*
- *An essay comparing a school issue to broader societal concerns.*
- *A paper explaining how some experiences, conditions, or concerns have universal significance.*
- *A self-reflective essay evaluating a portfolio to be submitted.*
- *A comparison of a scene from a work of fiction with a lesson learned from a personal experience.*
- *A paper about a common childhood experience from a more adult perspective.*

Strand:
E3 Speaking, Listening, and Viewing

Speaking, listening, and viewing are fundamental processes which people use to express, explore, and learn about ideas. The functions of speaking, listening, and viewing include gathering and sharing information; persuading others; expressing and understanding ideas; coordinating activities with others; and selecting and critically analyzing messages. The contexts of these communication functions include one-to-one conferences, small group interactions, large audiences and meetings, and interactions with broadcast media.

Standard **E3a:** The student participates in one-to-one conferences with a teacher, paraprofessional, or adult volunteer, in which the student:

Components:
E3a.1: initiates new topics in addition to responding to adult-initiated topics;

E3a.2: asks relevant questions;

E3a.3: responds to questions with appropriate elaboration;

E3a.4: uses language cues to indicate different levels of certainty or hypothesizing, e.g., “what if…,” “very likely…,” “I’m unsure whether…”;

E3a.5: confirms understanding by paraphrasing the adult’s directions or suggestions.

Examples:
Examples of one-to-one interactions include:

- *Book talks using panels, literature circles, or round tables.*
- *Analytical discussion of movies or television program with a teacher or parent in a one to one situation.*

- *Student-teacher conferences regarding a draft of an essay, the student's progress on a mathematics assignment, or the state of a science project.*
- *Assessment interview by a teacher about an author or book.*
- *Discussion of portfolio artifacts.*

Standard: **E3b:** The student participates in group meetings, in which the student:

Components:

E3b.1 displays appropriate turn-taking behaviors;

E3b.2: actively solicits another person's comment or opinion;

E3b.3: offers own opinion forcefully without dominating;

E3b.4: responds appropriately to comments and questions;

E3b.5: volunteers contributions and responds when directly solicited by teacher or discussion leader;

E3b.6: gives reasons in support of opinions expressed;

E3b.7: clarifies, illustrates, or expands on a response when asked to do so; asks classmates for similar expansions;

E3b.8: employs a group decision-technique such as brainstorming or problem-solving sequence (e.g. recognize problem, define problem, identify possible solutions, select optimal solution, implement solution, evaluate solution);

E3b.9: divides labor so as to achieve the overall group goal efficiently.

Examples: *Examples of activities involving group meetings include:*

- *Develop and negotiate a classroom rubric.*
- *Engage in classroom town meetings.*
- *Participate in book talks with other students.*
- *Work as part of a group to solve a complex mathematical task.*
- *Role-play.*
- *Participate in peer writing response groups.*

Standard: **E3c:** The student prepares and delivers an individual presentation, in which the student:

Components:

E3c.1: shapes information to achieve a particular purpose and to appeal to the interests and background knowledge of audience members;

E3c.2: shapes content and organization according to criteria for importance and impact rather than according to availability of information in resource materials;

E3c.3: uses notes or other memory aids to structure the presentation;

E3c.4: develops several main points relating to a single thesis;

E3c.5: engages the audience with appropriate verbal cues and eye contact;

E3c.6: projects a sense of individuality and personality in selecting and organizing content and in delivery.

Examples: *Examples of presentations include:*

- *A presentation of project plans or a report for an Applied Learning project.*
- *A report that analyzes several historical records of a single event and attempts to understand the reasons for the similarities and differences.*
- *A report that presents data collected to prove/disprove a particular hypothesis, along with an appropriate conclusion.*

- *A talk that outlines a plan of action for implementing a new school policy and the reasoning supporting the selected plan over other options.*
- *A report that analyzes a trend running through several literary works.*

Standard: **E3d:** The student makes informed judgments about television, radio, and film productions; that is, the student:

Components:
E3d.1: demonstrates an awareness of the presence of the media in the daily lives of most people;

E3d.2: evaluates the role of the media in focusing attention and in forming opinion;

E3d.3: judges the extent to which the media are a source of entertainment as well as a source of information;

E3d.4: defines the role of advertising as part of media presentation.

Examples: *Examples of activities through which students might produce evidence of making informed judgments about television, radio, and film production include:*

- *Maintain a week's log to document personal viewing habits, and analyze the information collected in the log.*
- *Summarize patterns of media exposure in writing or in an oral report.*
- *Identify the appeal of popular television shows and films for particular audiences.*
- *Explain the use of "propaganda techniques" (e.g. bandwagon, glittering generality commercials.*
- *Analyze the characteristics of different television genres (e.g., the talk show, the situation comedy, the public affairs show).*
- *Analyze and evaluate information available on the internet.*

Standard: **E3e:** The student listens to and analyzes a public speaking performance; that is, the student:

Components:
E3e.1: takes notes on salient information;

E3e.2: accurately summarizes the essence of each speaker's response;

E3e.3: formulates a judgment about the issues under discussion.

Examples: *Examples of activities through which students might provide evidence of analysis of public speaking include:*

- *Take notes of a meeting of a local governing group.*
- *Analyze an address by a political leader (e.g., demagoguery, political bias, propaganda techniques, and political correctness).*

Strand:
E4 Conventions, Grammar and Usage of the English Language

Having control of the conventions and grammar of the English language means having the ability to represent oneself appropriately with regard to current standards of correctness (e.g., spelling, punctuation, paragraphing, capitalization, subject-verb agreement). Usage involves the appropriate application of conventions and grammar in both written and spoken formats

Standard: **E4a:** The student independently and habitually demonstrates an understanding of the rules of the English language in written and oral work, and selects the structures and features of language appropriate to the purpose, audience, and context of the work. The student demonstrates control of:

Components:
E4a.1: grammar;

E4a.2: paragraph structure;

E4a.3: punctuation;

E4a.4: sentence construction;

E4a.5: spelling;

E4a.6: usage.

Examples:

Examples of activities through which students might demonstrate an understanding of the rules of the English language include:

- *Demonstrate in a piece of writing the ability to manage the conventions, grammar, and usage of English so that they aid rather than interfere with reading,*
- *Independently and accurately proofreads the student's own writing or the writing of others, using dictionaries, thesauruses, and other resources as appropriate*
- *Apply the conventions of language during formal oral presentations.*
- *Demonstrate use of a variety of sentence patterns.*

Standard:

E4b: The student analyzes and subsequently revises work to clarify it or make it more effective in communicating the intended message or thought. The student's revisions should be made in light of the purposes, audiences, and contexts that apply to the work. Strategies for revising include:

Components:

E4b.1: adding or deleting details;

E4b.2: adding or deleting explanations;

E4b.3: clarifying difficult passages;

E4b.4: rearranging words, sentences, and paragraphs to improve or clarify meaning;

E4b.5: sharpening the focus;

E4b.6: reconsidering the organizational structure;

E4b.7: rethinking and/or rewriting the piece in light of different audiences and purposes.

Examples:

Examples of activities through which students might provide evidence of analyzing and revising written work include:

- *Incorporate into revised drafts, as appropriate, suggestions taken from critiques made by peers and teachers.*
- *Produce a series of distinctly different drafts that result in a polished piece of writing or presentation.*
- *Critique the writing or presentation of a peer*
- *Describe the reasons for stylistic choices made as a writer or presenter.*
- *Produce a series of papers on the same topic, each serving a different purpose.*
- *Manage a writing portfolio and/or electronic portfolio*

Strand:

E5 Literature

Literature consists of poetry, fiction, non-fiction, and essays as distinguished from instructional, expository or journalistic writing.

Standard:

E5a: The student responds to non-fiction, fiction, poetry, and drama using interpretive, critical, and evaluative processes; that is, the student:

Components:

E5a.1: makes thematic connections among literary texts, public discourse, and media;

E5a.2: evaluates the impact of authors' decisions regarding word choice, style, content, and literary elements;

E5a.3: identifies the characteristics of literary forms and genres;

E5a.4: evaluates literary merit;

E5a.5: explains the effect of point of view;

E5a.6: makes inferences and draws conclusions about fictional and non-fictional contexts, events, characters, settings, themes, and styles;

E5a.7: interprets the effect of literary devices, such as figurative language, allusion, diction, dialogue, description, symbolism;

E5a.8: identifies the stance of a writer in shaping the presentation of a subject;

E5a.9: identifies ambiguities, subtleties, contradictions, ironies, and nuances;

E5a.10: understands the role of tone in presenting literature (both fictional and non-fictional);

E5a.11: demonstrates how literary works (both fictional and non-fictional) reflect the culture that shaped them.

Examples:

Examples of responding to literature include:

- *Analyze stereotypical characters in popular fiction.*
- *Evaluate the effect of literary devices in a number of poems by one author or poems on a common topic.*
- *Compare the literary merits of two or more short stories, biographies of one individual, novels, or plays.*
- *Compare two different video presentations of a literary work.*
- *Compare two works written on the same topic or theme.*
- *Identify and analyze the persona of the writer.*
- *Compare two literary texts that share a similar theme.*
- *Identify and explain the author's point of view toward an issue raised in one of an author's works.*
- *Identify and explain the literary, cultural, and social context of a literary work.*

Standard:

E5b: The student produces work in at least one literary genre that follows the conventions of the genre.

Examples:

Examples of literary genres include:

- *A reflective essay.*
- *A memoir.*
- *A short story.*
- *A short play.*
- *A poem.*
- *A vignette.*

Strand:

E6 Public Documents

A public document is a document that focuses on civic issues or matters of public policy at the community level or beyond. These documents, ranging from speeches to editorials to radio and television spots to pamphlets, do at least one of the following: take issue with a controversial public policy; suggest an alternative course of action; analyze and defend a contemporary public policy; define a public problem and suggest policy.

Standard:

E6a: The student identifies strategies common to public documents and public discourse, including:

Components:

E6a.1: effective use of argument;

E6a.2: use of the power of anecdote;

E6a.3: anticipation of counter claims;

E6a.4: appeal to audiences both friendly and hostile to the position presented;

E6a.5: use of emotionally laden words and imagery;

E6a.6: citing of appropriate references or authorities.

Examples:

Examples of activities through which students might provide evidence of identifying strategies used in public documents include:

- *Identify the main point in a political speech.*
- *Evaluate an editorial.*
- *Examine campaign literature to determine underlying assumptions.*
- *Examine a range of articles published in a magazine or newspaper and drawing inferences about the political stance of that magazine or newspaper.*

Standard:

E6b: The student creates public documents, in which the student:

Components:

E6b.1: exhibits an awareness of the importance of precise word choice and the power of imagery and/or s

E6b.2: utilizes and recognizes the power of logical arguments based on appealing to a reader's emotions;

E6b.3: uses arguments that are appropriate in terms of the knowledge, values, and degree of understanding of the intended audience;

E6b.4: uses a range of strategies to appeal to readers.

Examples:

Examples of public documents include:

- *A proposal for changing an existing social or school policy.*
- *An analysis of a school policy.*
- *A letter to an elected official or editor taking a position on an issue or concern.*
- *A multi-media presentation to school officials, student council, public officials, etc.*

Strand:

E7 Functional Documents

A functional document is a document that exists in order to get things done, usually within a relatively limited setting such as a social club, a business, an office, a church, or an agency. These often take the form of memoranda, letters, instructions, and statements of organizational policies. Functional documents require that particular attention be paid to issue of layout, presentation, and particularly to audience and the way different audiences will interact with the documents.

Standard:

E7a: The student identifies strategies common to effective functional documents, including:

Components:

E7a.1: visual appeal, e.g. format, graphics, white space, and headers;

E7a.2: logic of the sequence in which the directions are given;

E7a.3: point out possible reader misunderstandings and misconceptions;

Examples:

Examples of activities through which students might provide evidence of

- *Critiquing functional documents include:*
- *Analyze a manual.*
- *Analyze a contract.*

- *Review a loan application/bank statement.*
- *Examine tax documents.*
- *Evaluate advertisements.*
- *Critique web sites.*

Standard: **E7b:** The student creates functional documents appropriate to audience and purpose, in which the student:

Components:

E7b.1: reports, organizes, and conveys information and ideas accurately;

E7b.2: includes relevant narrative details, such as scenarios, definitions, and examples;

E7b.3: anticipates readers' problems, mistakes, and misunderstandings;

E7b.4: uses a variety of formatting techniques, such as headings, subordinate terms, foregrounding of main ideas, hierarchical structures, graphics, and color;

E7b.5: employs consistent and appropriate word choices.

Examples: *Examples of functional documents include:*

- *A summary of a meeting.*
- *A manual.*
- *A proposal.*
- *A set of instructions.*
- *A recommendation.*
- *A web site.*

The process standards of **problem solving, reasoning and proof, connections communication, and representation** are interwoven and independent with the content standards and are necessary for the comprehensive understanding of mathematics.

Strand: **M1 Numbers and Operations**

Pre-Kindergarten through Grade 12 instructional programs should enable all students to:

- understand numbers, ways of representing numbers, relationships among numbers, and number systems;
- understand meanings of operations and how they relate to one another;
- understand how to compute fluently and make reasonable estimates.

In Grades 9–12, all students should:

Standards:

M1a: connect physical, verbal and symbolic representations of irrational numbers and properties of special numbers, i.e., ∂, π;

M1b: compare, order, and determine equivalent forms for rational and irrational numbers;

M1c: define the concept of complex numbers in the context of the square root of a negative number;

M1d: using powers and roots including rational exponents, simplify number expressions;

M1e: define the properties of matrices;

M1f: identify and explain which mathematical properties hold for a given set or operations for the real number system, i.e., density, closure, commutative, associative, distributive;

M1g: solve equations and inequalities using the inverse relationship of operations to include powers and roots;

M1h: organize and analyze data using the operations of addition, subtraction, and scalar multiplication for matrices;

M1i: estimate the approximate value of square and cube roots without the use of a calculator;

M1j: use estimation to judge the reasonableness of numerical computations and their results;

M1k: develop fluency in operations with real numbers using mental computation, paper and pencil calculations, and technology;

M1l: Use properties of the number system to judge the validity of results and justify each step of a procedure.

Strand: **M2 Algebra**

Pre-Kindergarten through Grade 12 instructional programs should enable all students to:

- understand patterns, relations, and functions;
- represent and analyze mathematical situations and structures using algebraic symbols;
- use mathematical models to represent and understand quantitative relationships;
- analyze change in various contexts.

In Grades 9–12, all students should:

Standards:

M2a: analyze, generalize, and create a variety of mathematical patterns;

M2b: analyze, interpret, and translate between relationships of patterns, functions, and relationships represented in tables, graphs, and matrices;

M2c: identify, describe, and compare the characteristics and properties of functions and relations including linear and nonlinear;

M2d: represent linear and nonlinear functions with tables, graphs, verbal rules, and symbolic rules and interpret these representations;

M2e: use algebraic representations and functions to generalize geometric properties and relationships;

M2f: write, solve, and interpret the relationship of equivalent forms for equations, inequalities, and systems of equations;

M2g: explain and demonstrate the relationship between various representations of a linear equation;

M2h: add, subtract, and multiply polynomials and divide polynomials by monomials;

M2i: translate between numeric and symbolic form of a sequence or series;

M2j: apply direct and inverse variation to both real-world and mathematical models;

M2k: solve and analyze real-world problems that can be modeled using linear, and nonlinear functions;

M2l: solve and analyze real-world problems that can be modeled using systems of equations and inequalities;

M2m: predict a reasonable conclusion for a problem being modeled, and verify the conclusion through solving the problem;

M2n: approximate and interpret rates of change from graphical and numerical data;

M2o: identify and explain how changes in parameters affect graphs of functions;

M2p: explain and graph the relationship between two variables for linear, periodic exponential, quadratic relationships and a limiting value.

Strand: **M3 Geometry**

Pre-Kindergarten through Grade 12 instructional programs should enable all students to:

- analyze characteristics and properties of two- and three- dimensional geometric shapes and develop mathematical arguments about geometric relationships;
- specify locations and describe spatial relationships using coordinate geometry and other representational systems;
- apply transformations and use symmetry to analyze mathematical situations;
- use visualization, spatial reasoning, and geometric modeling to solve problems.

In Grades 9–12, all students should:

Standards:

M3a: identify undefined terms and explain the need for undefined terms;

M3b: use a variety of ways to represent geometric ideas and recognize relationships among them including coordinates, networks, transformations, and matrices;

M3c: identify and explain relationships among classes of two- and three-dimensional geometric objects, i.e., sides, angles, etc.;

M3d: make conjectures, test, and prove relationships among two- and three-dimensional geometric objects, i.e., congruent triangles;

M3e: distinguish between postulates and theorems and apply them appropriately;

M3f: identify and explain examples of induction and deductive;

M3g: analyze geometric situations using Cartesian coordinates and other appropriate coordinate systems;

M3h: use rectangular coordinates; calculate midpoints of segments, slopes of lines and segments, and distances between two points to solve problems;

M3h: use sketches, coordinates, function notation, and matrices to represent translations, reflections, rotations, and dilations of objects in the plane;

M3i: draw and construct representations for two- dimensional objects using a variety of tools;

M3j: construct vertex-edge graphs to model and solve problems;

M3k: identify and explain projections and cross sections by visualizing different perspectives of three- dimensional objects and spaces;

M3l: Solve problems by applying properties and theorems of lines, angles, polygons, and circles.

Strand: **M4 Measurement**

Pre-Kindergarten through Grade 12 instructional programs should enable all students to:

- understand measurable attributes of objects and the units, systems, and processes of measurement;
- apply appropriate techniques, tools, and formulas to determine measurements.

In Grades 9–12, all students should:

Standards:

M4a: use the appropriate unit or dimensional analysis in measurement situations;

M4b: explain the effect of changes in the measurement of one attribute of an object relating to changes on other attributes;

M4c: recognize and apply alternative methods of measurement;

M4d: apply appropriate formulas for the area, surface area, and volume of geometric figures, including cones, spheres, and cylinders;

M4e: analyze and explain precision, accuracy, and approximate error in measurement situations.

Strand: **M5 Data Analysis** a**nd Probability**

Pre-Kindergarten through Grade 12 instructional programs should enable all students to:

- formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them;
- select and use appropriate statistical methods to analyze data;
- develop and evaluate inferences and predictions that are based on data;
- understand and apply basic concepts of probability.

In Grades 9–12, all students should:

Standards:

M5a: classify and describe data as single (univariate) or two variable (bivariate) and as quantitative (measurement) or qualitative (categorical) data;

M5b: design surveys and apply random sampling techniques to avoid bias in data collection;

M5c: use multiple graphical displays and statistical measures to display and interpret the relationship between two variables;

M5d: compare different sets of data by using summary statistics and select the appropriate graphical representation;

M5e: explain the ways representations can skew data or bias presentations;

M5f: describe and explain the characteristics and limitations of various sampling methods;

M5g: describe and explain how the validity of predictions from a data set are affected by the relative size of a sample and the population;

M5h: use counting techniques and/or combinations to solve explain probability problems;

M5i: describe, create, and analyze a sample space, then calculate the probability;

M5j: use the concept of conditional probability and independent events to apply and interpret the results of a set;

M5k: calculate and explain the probability of compound events;

M5l: use sampling or simulation to construct empirical probability distributions to compare and explain corresponding theoretical probabilities;

M5m: differentiate and explain the relationship between the probability of an event and the odds of an event.

Strand: **M6 Problem Solving**

Standard: **M6a:** Pre-Kindergarten through Grade 12 instructional programs should enable all students to:

- build new mathematical knowledge through problem solving;
- solve problems that arise in mathematics and in other contexts;
- apply and adapt a variety of appropriate strategies to solve problems;
- monitor and reflect on the process of mathematical problem solving.

Strand: **M7 Reasoning and Proof**

Standard: **M7a:** Pre-Kindergarten through Grade 12 instructional programs should enable all students to:

- recognize reasoning and proof as fundamental aspects of mathematics;
- make and investigate mathematical conjectures;
- develop and evaluate mathematical arguments and proofs;
- select and use various types of reasoning and methods of proof.

Strand: **M8 Communication**

Standard: **M8a:** Pre-Kindergarten through Grade 12 instructional programs should enable all students to:

- organize and consolidate their mathematical thinking through communication;

- communicate their mathematical thinking coherently and clearly to peers, teachers, and others;
- analyze and evaluate the mathematical thinking and strategies of others;
- use the language of mathematics to express mathematical ideas precisely.

Strand: **M9 Connections**

Standard: **M9a:** Pre-Kindergarten through Grade 12 instructional programs should enable all students to:

- recognize and use connections among mathematical ideas;
- understand how mathematical ideas interconnect and build on one another to produce a coherent whole;
- recognize and apply mathematics in contexts outside of mathematics.

Strand **M10 Representation**

Standard: **M10a:** Pre-Kindergarten through Grade 12 instructional programs should enable all students to:

- create and use representations to organize, record, and communicate mathematical ideas;
- select, apply, and translate among mathematical representations to solve problems;
- use representations to model and interpret physical, social, and mathematical phenomena.

Environmental Science
Grades 9-12

Strand:

S9 Environmental Science investigates environmental problems from multiple perspectives and utilizes these perspectives to develop decision-making skills utilizing the fields of economics, social studies, and mathematics.

Standards:

Envi S9a: Identifies and describes current environmental issues, and considers of the role of beliefs, attitudes, and values in proposing solutions to environmental problems.

Components:

S9a1. Utilizes research methods to investigate environmental questions, reevaluates their personal beliefs to accommodate new knowledge and perspectives, and is able to effectively communicate this understanding to others

S9a2. Identifies the strengths and weaknesses of different approaches to investigating an environmental issue and identifies some of the assumptions for each approach.

S9a3. Evaluates the advantages and disadvantages of balancing short term interests with long term welfare of the society.

S9a4. Explains how individual activities and decisions can have an impact on the environment.

S9a5. Identifies a variety of approaches to environmental issues and evaluates the benefits and consequences of each from a social, economic, and ecological standpoint.

S9a6. Applies basic principles of cost-benefit analysis and shows who pays and who benefits of selected proposed interventions to environmental problems.

S9a7. Assesses the environmental and social costs and benefits of natural resource management strategies.
Identifies a variety of approaches to environmental issues and evaluates the costs and benefits of each from a social, economic, and ecological standpoint.

S9a8. Evaluates the ways in which government can influence environmental policy.

S9a9. Identifies how the choices individuals make affect the environment.

Standards:

Envi S9b: identifies the effect of human activities on natural processes and interrelationships within ecosystems.

Components:

S9b1. Identifies and describes the factors that have contributed to the growth of the human population.

S9b2. Provides evidence for how human population growth has impacted the environment and the use of natural resources.

S9b3. Describes the ways in which the use of technology has an affected the environment and standard of living.

S9b4. Describes the different ways the environment has been perceived by and utilized by human societies over time.

S9b5. Provides evidence for how people impact their environment through the use of natural resources.

S9b6. Recognizes the ways in which technology, while improving our standard of living, has increased the human impact on the environment.

S9b7. Predicts how changes in the availability and use of natural resources will affect society and human activities.

S9b8. Identifies and analyzes the effects of human resource use on the environment at various scales.

S9b9. Evaluates a variety of land management practices on their ability to restore ecosystem functioning and trophic relationships.

S9b10. Describes how people affect biodiversity through land use practices, pollution, and their use of organisms.

S9b11. Identifies and assesses the effects of human activities on ecosystems at various scales in terms of ecosystem functioning.

S9b12. Recognizes the ways in which technology, while improving our standard of living, has increased the human impact on the environment.

S9b13. Assesses the environmental and societal costs and benefits of various common natural resource management strategies.

Standards:

Envi S9c: identifies a variety of Earth's finite natural resources and their formation.

Components:

S9c1. Identifies minerals that are important to our lives and describes their distribution on Earth.

S9c2. Explains how fossil fuels are formed and where they can be found.

S9c3. Recognizes land, clean air, and fresh water as critical natural resources that are in increasing demand.

S9c4. Illustrates the naturally occurring cycles of Earth's finite resources through Earth's four major systems (atmosphere, hydrosphere, lithosphere, and biosphere) by describing the path of an element or a molecule in a natural resource (for example carbon or water).

S9c5. Recognizes that certain resources are nonrenewable because they are replenished at timescales of thousands to millions of years.

Standards:

Envi S9d: assesses the (sustainable) availability of Earth's natural resources given the growing human demand.

Components:

S9d1. Lists natural resources that play a vital role in daily life and identifies where they come from.

S9d2. Identifies and evaluates multiple uses of natural resources and to which extent society is dependent on them.

S9d3. Recognizes that some natural resources are very rare and some exist in great quantities, but the ability to recover them is just as important as their abundance

S9d4. Presents evidence that as natural resources are depleted, obtaining them becomes more difficult.

S9d5. Assesses how changes to the availability of nonrenewable natural resources might affect society (considering, for example, manufacturing industries, agriculture, transportation).

Standards:

Envi S9e: analyzes the future availability of nonrenewable energy resources considering the trend of human consumption of energy.

Components:

S9e1. Names and describes the three major fossil fuels (gas, coal, and oil) used in the United States and their uses.

S9e2. Evaluates the pros and cons of using fossil fuels.

S9e3. Compares and contrasts the historical demand for fossil fuels in various nations.

S9e4. Compares and contrasts the estimated supply of fossil fuel and the projected demand.

Standards:

Envi S9f: describes the current and potential future effects of the burning of fossil fuels on the environment considering the trend of human consumption of energy.

Components:

S9f1. Summarizes how the burning of fossil fuels generates the power that is used in homes and offices and how it has an impact on the environment.

S9f2. Defines and applies the concept of the human carbon footprint.

S9f3. Compares the effects of natural and human-caused activities that either contribute to or challenge an ecologically sustainable environment.

S9f4. Critiques the use of fossil fuels from an economic and environmental point of view.

Standards:

Envi S9g: proposes renewable energy resources that are alternatives to the burning of fossil fuels and technological developments that can reduce the human carbon footprint.

Components:

S9g1. Lists alternative energy resources and assesses the costs and benefits of these alternative resources on society and the environment.

S9g2. Compares and contrasts the economics of investing into nonrenewable or renewable energy sources for the society.

S9g3. Assesses how changes in the availability of energy will affect society and human activities, such as transportation, agricultural systems, and manufacturing.

S9g4. Concludes that the use of renewable energies and the development of superior technologies can reduce the rate of depletion of natural resources and decrease the human impact on the environment.

S9g5. Outlines the ways in which individuals can alter their own behavior to reduce the human carbon footprint.

Standards:

Envi S9h: explains how geochemical cycles and ecological processes on Earth interact through time to cycle matter and energy and how human activity can alter the rates of these processes.

Components:

S9h1. Recognizes that the different spheres such as the atmosphere are resources.
S9h2. Provides examples and explains that the Earth is a complex system with connected and interconnected components and processes.
S9h3. Describes the major (carbon) reservoirs within Earth's systems.

S9h4. Diagrams and explains multiple pathways of carbon movement between reservoirs.

S9h5. Presents evidence that Earth is a system containing essentially a fixed amount of each stable chemical atom or element which moves among reservoirs in the solid Earth, oceans, atmosphere, and organisms as part of geochemical cycles.

S9h6. Lists potential consequences of increased use of fossil fuels or drastic reduction of vegetation on earth's dynamic equilibrium.

S9h7. Use computer modeling/simulations to predict the effects of carbon dioxide on Earth's systems.

Standards:

Envi S9i: relates the theory of biological evolution to geologic time and addresses speciation, biodiversity, natural selection, and biological classification.

Components:

S9i1. Describes the ways in which biodiversity is important to ecosystems and human society.

S9i2. Assesses the potential value of a single species to a particular ecosystem.

S9i3. Explains how organisms are adapted to the environment in terms of ecological niches and natural selection [DEVELOPED].

S9i4. Investigates and explains how natural selection acts as the mechanism for evolution and can lead to speciation.

S9i5. Provides evidence that natural selection can explain both the unity and diversity of life.

S9i6. Relates the importance of genetic diversity and population size to the conservation of a species.

Envi S5j: analyzes ecology as interrelationships of biotic and abiotic factors and explains the transfer of matter and energy within ecosystems.

Components:

S9j1. Recognizes that the Earth is primarily a closed system with respect to matter.

S9j2. Identifies the factors limiting population growth in a given area (carrying capacity).

S9j3. Gives examples that illustrate how a change in one part of a system can have an impact on other parts of the system.

S9j4. Identifies and describes the factors that have contributed to the growth of the human population and examine the impact this growth will have on the environment.

S9j5. Identifies environmental issues in terms of interrelationships among natural systems in time and space.

S9j6. Evaluates the factors that impact resource availability and explains why certain natural resources are becoming depleted.

S9j7. Takes into consideration that Earth's systems exist in a state of dynamic equilibrium and that certain compositions of the Earth's system(s) may fluctuate on short or long time scales but the Earth's system will generally stay within a certain narrow range for millions of years.

S9j8. Identifies environmental issues in terms of the interconnectedness of nature.

S9j9. Analyzes the natural processes of change in the environment, including examples of succession, evolution, and extinction.

S9j10. Analyzes how the stability and sustainability of ecosystems change as a result of changes in environmental conditions.

S9j11. Identifies factors that influence patterns of ecological succession, including invasive species, loss of biodiversity, change in abiotic conditions, and catastrophic events.

S9j12. Evaluates the factors that determine the plant life existing in a given biome.

S9j13. Predicts changes in population size in response to altered environmental conditions.

S9j14. Assesses the stability and sustainability of ecosystems as a result of changes in environmental conditions.

Earth & Space Science
Grades 9-12

Strand:

S7 Earth & Space Sciences The student demonstrates a conceptual understanding of the organization of Earth and other celestial bodies; that is, the student:

Standards: S7a Categorizes the sources of internal energy in the Earth system, and presents evidence that this internal energy drives slow, but constant plate motion.

Components:

S7a1 Describes the sources of Earth's internal heat energy (gravitational energy from the Earth's original formation and the decay of radioactive isotopes)

S7a2 Diagrams on a global scale how Earth's internal heat energy is released to the surface via convection, and relates convection currents in the mantle to plate tectonic motion.

S7a3 Presents evidence (such as magnetic striping in ocean basins and the change in location of hot spot volcanoes) that plate movement is ongoing.

Standards: S7b: Identifies the geologic activity (such as volcanoes and earthquakes) resulting from the release of Earth's internal energy.

Components:

S7b1 Describes volcanoes as a mechanism for the release of Earth's internal heat, and describes the processes that result in volcanic activity at convergent and divergent boundaries, as well as hot spots in the middle of plates.

S7b2 Explains the relationship between plate tectonics and the fault movements that cause earthquakes.

Standards: S7c Identifies the Sun as the external source of energy to the Earth system, and describes the processes within Earth's atmosphere and hydrosphere that are driven by energy transfer from the Sun.

Components:

S7c1 Describes how radiant energy from the Sun drives convection within the atmosphere and oceans, producing winds and ocean currents.

S7c2 Diagrams the potential pathways of light energy that is transmitted to Earth from the Sun (e.g., reflected by atmosphere back into space, absorbed by atmosphere, reflected off of Earth's surface, absorbed into Earth's surface and reradiated as heat energy)

S7c3 Describes how the transfer of energy from the Sun is influenced by such factors as cloud cover, the albedo of Earth's surface, the composition of the atmosphere, Earth's rotation and revolution, and static conditions (e.g., the position of mountains ranges and oceans).

Standards: S7d Categorizes the sources and types of energy in the Earth system, identifying how the process of nuclear fusion in the Sun and other stars provides enormous amounts of energy over billions of years.

Components:

S7d1 Describes how the Sun and other stars produce energy from nuclear reactions, primarily the fusion of hydrogen to form helium, and how these and other processes in stars have led to the formation of all the other elements.

S7d2 Discusses the constant changes that occur in the Sun, and how solar activity (such as flares and sunspot cycles) can affect life on Earth.

S7d3 Explains the Big Bang Theory, which states that the Universe began in a hot dense state and has been expanding ever since.

Standards: S7e Compares and contrasts the composition of Earth materials and the processes within the geochemical cycle that govern their formation (including rocks, minerals, fossils, and other natural resources)

Components:

S7e1 Identifies common rocks and minerals that make up Earth's crust based on their chemical and physical properties.

S7e2 Relates the formation of igneous, metamorphic and sedimentary rocks to plate tectonic processes driven by Earth's internal energy and surface geologic processes (such as erosion, transport and deposition) driven by external energy from the Sun.

Standards: S7f Presents evidence that Earth is a system containing essentially a fixed amount of each stable chemical atom or element which moves among reservoirs in the solid Earth, oceans, atmosphere, and organisms as part of geochemical cycles.

Components:

S7f1 Presents evidence that Earth is a system containing essentially a fixed amount of each stable chemical atom or element which moves among reservoirs in the solid Earth, oceans, atmosphere, and organisms as part of geochemical cycles.

S7f2 Diagrams and explains multiple pathways of carbon movement between reservoirs (such as from geosphere to atmosphere via volcanic eruptions and fossil fuel combustion; from organisms to geosphere via fossil fuel formation; from organisms to atmosphere via respiration and decomposition, etc.)

Standards: S7g Investigates and displays the relationships among weather, climate, solar input, cloud cover, land features, atmosphere and oceans.

Components:

S7g1 Names and illustrates factors influencing regional and global climate such as solar input, atmospheric circulation, ocean circulation, land features, and atmospheric composition that can change the dynamic equilibrium of Earth's atmosphere.

S7g2 Gives examples to demonstrate how Earth's systems (such as the climate system) contain feedbacks that may oppose changes that occur (and lead to stability) or may encourage more change (and so drive the system toward one extreme or another).

S7g3 Presents how changes to complex patterns and interactions between cloud cover, land features, atmosphere and oceans can have far reaching consequences for the local weather and conditions for animals and plants, but also the climate on Earth as a whole.

Standards: S7h Presents and critiques theories of the origin and evolution of the Solar System.

Components:

S7h1 Describes the solar nebula condensation theory.

S7h2 Recognizes patterns in the physical and chemical characteristics of objects in the Solar System, which provide evidence of Solar System origin (e.g., direction of rotation and revolution of the planets, compositional similarities and differences between planets, etc.).

S7h3 Describes how the known decay rates of radioactive isotopes are used to mathematically determine the absolute age of rocks of terrestrial and extraterrestrial origin, providing evidence of the age of the Solar System.

S7h4 Discusses examples of technology and space explorations and how they contribute to new insights about the origin and evolution of the Solar System.

Standards: S7i Presents and critiques theories of the origin and evolution of the Earth System

Components:

S7i1 Identifies how life on Earth is adapted to certain unique conditions, including the force of gravity that enables the planet to retain an adequate atmosphere, and an intensity of radiation from the Sun that allows water to cycle between liquid and vapor.

S7i2 Describes how the early Earth was very different from the planet we live on today, and gives examples of how interactions among the solid Earth, the oceans, the atmosphere, and organisms have resulted in the ongoing evolution of the Earth system.

S7i3 Describes the atmosphere of early Earth, which contained no molecular oxygen, and relates the development of an oxygen-rich atmosphere to the evolution of photosynthetic plants more than 3 billion years ago (which removed CO2 from the early Earth atmosphere, using C to make sugars and release O2).

Standards: S7j Investigates the nature of stars, and the process of star formation, evolution and destruction.

Components:

S7j1 Describes how billions of stars, in gravitationally-bound clusters called galaxies, form most of the visible mass of the Universe.

S7j2 Describes evidence that although stars differ from each other in size, temperature, and age, they are made up of the same elements that are found on Earth and behave according to the same physical principals.

S7j3 Recognizes that stars are not static objects but rather form, evolve, and eventually die over billions of years. This process of star formation and destruction has been ongoing since the Universe first formed 10 to 20 billion years ago.

Biology
Marine Biology, Anatomy & Physiology and Environmetal Science
Grades 9-12

Strand:

S6 Biology The student demonstrates a conceptual understanding of the organization of life on Earth; that is, the student:

Standard: S6a: Describes, analyzes and compares structure, function, and organization of various cells.

Biology

Components:

S6a1 Analyzes cell differentiation and explains that complex multicellular organisms are formed as a highly organized arrangement of differentiated cells.

S6a2 Explains how individual cells differentiate functions despite having the same genetic materials.

S6a3 Describes the variety of biomolecules in cells and how they join together to form specialized structures.

S6a4 Identifies cell structures and explains how they work together to carry out the functions of the cell (i.e., energy production/transfer, transport, information feedback, waste disposal, storage of genetic material, and synthesis of new molecules).

S6a5 Investigates and illustrates the lipid and protein structure of the cell membrane.

S6a6 Relates the structure of the cell membrane to its diffusion and transport mechanisms (e.g., models how the membrane structure regulates the movement of materials across the membrane).

S6a7 Explains that cells carry out specialized functions as the result of the differential expression of the information in their DNA.

S6a8 Investigates and describes the effect of temperature and acidity on a cell's functioning.

S6a9 Describes the process of cell division (i.e., mitosis) and explains its role in the characteristics of life (i.e., growth, replication, cancer, repair and maintenance).

Anatomy & Physiology

Components:

S6a10 Describes how cells differentiate functions and the importance of this process to multi-cellular organisms.

S6a11 Investigates and describes how cells communicate in order to coordinate body functions.

S6a12 Illustrates and explains how the circulatory system transports nutrients, oxygen, carbon dioxide, cell wastes, and hormones to and from cells throughout the body.

S6a13 Compares and contrasts the structure and function of the components of whole blood.

S6a14 Classifies types of white blood cells and the role-played by each in the immune response.

S6a15 Describes the reactions of antibodies in the body and how they are produced.

S6a16 Determines through investigations the activity of muscle cells in response to a stimulus.

S6a17 Illustrates and describes the mechanisms by which bones produce red and white blood cells.

Biology

Standard: S6b: Analyzes and communicates an understanding of the biochemistry of life including organic compounds, enzymes, cellular respiration and photosynthesis.

Components:

S6b1 Compares and contrasts the molecular structure and functions of biomolecules (i.e., carbohydrates, lipids, proteins, and nucleic acids).

S6b2 Explains the chemical reactions underlying cell functions.

S6b3 Summarizes the characteristics of organic compounds and their importance in organisms by analyzing the chemical composition of biomolecules.

S6b4 Analyzes how cell structures play a role in metabolic processes.

S6b5 Explains how the processes of life depend on metabolism.

S6b6 Traces the flow of molecules and energy from nutrients through the stages of metabolism (i.e., the chemical transformations by which cells break down biomolecules to extract energy and building blocks and create new biomolecules).

S6b7 Analyzes the chemical transformations and transfers of energy that occur during the processes of cellular respiration and describes the temporary storing of energy in the phosphate bonds of ATP.

S6b8 Explains that matter tends toward more disorganized states to the need for continuous input of energy to maintain the chemical and physical organization of living systems.

S6b9 Identifies and describes the properties and functions of enzymes in metabolism (i.e., in catalyzing biochemical reactions through metabolic pathways).

S6b10 Explains the chemical reactions, recycling of matter and transfers of energy that occur during photosynthesis.

S6b11 Analyzes the complementary nature of the processes of photosynthesis and cellular respiration

S6b12 Identifies the importance of proteins in carrying out the work of the cell and their characteristics that are essential to life.

S6b13 Describes the interactions among different molecules within the cell and defines their role in activities such as growth and division.

S6b14 Describes that the diversity of life results from six elements and four types of biomolecules (i.e., carbohydrates, lipids, proteins, and nucleic acids).

S6b15 Models and explains how DNA is made up of pairs of complementary nucleotides (i.e., A, G, C, and T) in a double-helix structure.

S6b16 Differentiates between DNA and RNA and types of RNA.

S6b17 Describes the major steps in the process of photosynthesis and its importance to life on Earth.

S6b18 Explains the transfers of energy that occur during photosynthesis.

Anatomy & Physiology

Components:

S6b19 Explains how molecules make up cells, which, in turn, make up tissues and organs.

S6b20 Relates the molecular structure of biomolecules to their functions within body systems.

S6b21 Explains the gas exchange processes carried out by the respiratory system.

S6b22 Differentiates between breathing, external respiration, internal respiration, and cellular respiration.

S6b23 Compares and contrasts the microscopic structure, organization, function, and molecular basis of contraction in skeletal, smooth, and cardiac muscle.

S6b24 Describes the mechanisms by which muscles obtain and use energy to power contractions.

S6b25 Relates the chemical structure of bone to its development, repair, and growth.

S6b26 Traces the flow of molecules and energy from nutrients through the biochemical processes involved in metabolism (i.e., catabolism and anabolism).

S6b27 Determines through investigations the role of enzymes in metabolism.

S6b28 Describes the pH scale and the role of buffers in body fluids.

Biology

Standard: S6c: Describes the behavior of organisms and hypothesizes the relationship to nervous and endocrine systems and various external stimuli.

Components:

S6c1 Investigates and describes the role of hormones in regulating growth and sexual development.

S6c2 Describes the role of the nervous and endocrine systems in coordinating the activity of the body's cells and in achieving homeostasis.

S6c3 Illustrates how nerve cells communicate with each other, transmitting information from the internal and external environment to generate physiological or behavioral responses.

S6c4 Differentiates between innate and learned behaviors and speculates about the relationship between genetics and environment in influencing behavior.

Marine Biology

Components:

S6c5 Provides examples of organisms using sense organs to monitor their environment and react to stimuli in ways that maximize their fitness.

S6c6 Compares and contrasts the ways motile and non-motile organisms respond to external stimuli.

S6c7 Compares and contrasts innate and learned responses to stimuli (e.g., prey choice, predator avoidance and deterrence, social behavior).

Anatomy & Physiology

Components:

S6c8 Identifies the interrelationships among the nervous system and other organ systems.

S6c9 Describes the role of the nervous and endocrine systems in achieving homeostasis.

S6c10 Identifies the functional relationships between the endocrine system and other body systems.

S6c11 Analyzes and describes the relationship between the endocrine and reproductive systems.

S6c12 Identifies nerve cells as the cellular units of the nervous system and explains their function in the rapid transmission of information.

S6c13 Determines through investigations how stimulus information is signaled to the brain.

S6c14 Analyzes how rapid electrochemical signals transport from one neuron to the next.

S6c15 Illustrates and explains the structure and function of excitatory and inhibitory neurotransmitters in a synapse.

S6c16 Compares the major chemical classes of hormones and relates them to their functions.

S6c17 Analyzes how endocrine glands are stimulated to release hormones.

S6c18 Relates the functions of hormones to processes such as growth and development, metabolism, reproduction, and body defense.

Biology

Standard: S6d: Elaborates on the principles of genetics and explains the role of DNA, genes, chromosomes, and mutation in reproduction and heredity.

Components:

S6d1 Compares and contrasts the processes of mitosis and meiosis (i.e., that sex cells created through meiosis contain half the number of chromosomes of body cells).

S6d2 Examines and describes how meiosis results in haploid sex cells.

S6d3 Explains how fertilization restores the original chromosome number (i.e., two haploid sex cells fuse together to create a new diploid cell).

S6d4 Explains the relationships between sexual reproduction, meiosis, genetic variation, and evolution.

S6d5 Examines and describes the process of fertilization (i.e., a haploid egg and sperm cell fuse together, creating a diploid cell with two copies of each gene, one from each parent) and the stages of embryo formation and development.

S6d6 Identifies the role of DNA in determining the fate of a cell during the formation and development of an embryo.

S6d7 Investigates and describes how DNA acts as the blueprint that directs the processes of life.

S6d8 Explains the function of DNA in encoding the complex information needed to direct the synthesis of proteins.

S6d9 Explains the relationship among DNA, genes, chromosomes, proteins, and traits (i.e., that genes are a portion of DNA, contained on chromosomes, which contain the genetic information, as a string of molecular “letters,” to code for a specific sequence of amino acids which comprise a protein, which in turn, is responsible for a specific trait).

S6d10 Explains that cell functions are regulated by selective expression of specific genes.

S6d11 Describes the structure of chromosomes and relates it to their functions.

S6d12 Illustrates and explains the chromosome replication process.

S6d13 Applies the principles of Mendelian genetics (i.e., dominance and recessiveness, segregation, independent assortment) to predict the outcome of genetic crosses.

S6d14 Uses genetic tools, (i.e., Punnett squares and pedigrees) to predict traits of offspring.

S6d15 Examines and explains more complex patterns of heredity which cannot be explained using Mendel’s findings (e.g., incomplete dominance, codominance, multiple alleles, and polygenic traits).

S6d16 Analyzes the statistical effects of recombination on the variety of gene combinations in offspring.

S6d17 Analyzes how mutations in the DNA sequence of a gene may or may not affect the expression of the gene (i.e., that the type of cell in which a mutation occurs determines heritability of the mutation).

S6d18 Describes that mutations may be harmful, beneficial, or have no impact on the survival of the organism.

S6d19 Relates random mutation (i.e., changes in DNA) and recombination within gametes to the heritable variations that give individuals within a species survival and reproductive advantage or disadvantage over others in the species.

S6d20 Examines and explains the effect of mutation on the genetic variation of a population.

Anatomy & Physiology

Components:

S6d21 Explains how meiosis results in haploid gametes and increases genetic variation within a population.

S6d22 Compares and contrasts the processes that form sperm and egg cells (i.e., spermatogenesis and oogenesis).

S6d23 Summarizes the process of fertilization in terms of the number of chromosomes in each sex cell and the resulting zygotic cell.

S6d24 Explains the importance of cell-to-cell communication and the role of DNA in determining the fate of a cell during the formation and development of an embryo.

Biology

Standard: S6e: Relates the theory of biological evolution to geologic time and addresses speciation, biodiversity, natural selection, and biological classification.

Components:

S6e1 Classifies organisms into groups and subgroups based on similarities that reflect their evolutionary relationships or degree of kinship estimated from the similarity of DNA sequences.

S6e2 Explains the relationship between the variation of organisms within a species and the increased likelihood that at least some members of the species will survive under changed environmental conditions.

S6e3 Relates the diversity of species to the increased chance that at least some living things will survive in the face of large changes in the environment.

S6e4 Provides evidence that natural selection can explain both the unity and diversity of life.

S6e5 Examines and describes the role of evolution over the past 4 billion years in creating the great diversity of organisms and filling every available ecological niche with life forms.

S6e6 Identifies how adaptations arise through mutations and create variation in the gene pool.

S6e7 Describes Darwin's theory and how the principles of natural selection can lead to speciation.

S6e8 Analyzes the factors, which contribute to species evolution (i.e., the potential for a species to increase its population; the genetic variability of offspring due to mutation and recombination of genes; a finite supply of the resources required for life; and the ensuing selection by the environment of those offspring better able to survive and reproduce).

S6e9 Explains that evolution involves changes in the genetic make-up of whole populations over time, not changes in the genes of an individual organism.

S6e10 Investigates and explains how natural selection acts as the mechanism for evolution and can lead to speciation.

S6e11 Relates the variation of organisms within a species and the increased likelihood that at least some members of the species will survive under changed environmental conditions.

S6e12 Describes how natural selection provides a scientific explanation for the fossil record of ancient life forms and the molecular and anatomical similarities observed within the diversity of existing organisms.

S6e13 Describes the relationships between changes in the genetic makeup of populations and the processes of natural selection, speciation, extinction and species diversity.

S6e14 Describes how all of the species that exist today are related by descent from common ancestors.

S6e15 Provides evidence for common ancestry based on the universal nature of the biomolecules and the metabolic processes found in all organisms.

S6e16 Explains how behaviors have evolved through natural selection and often have an adaptive logic when viewed in terms of evolutionary principles.

Marine Biology

Components:

S6e17 Describes the scope of biological diversity in the marine environment and relationships among major groups of marine organisms.

S6e18 Compares and contrasts early and late successional species.

S6e19 Explains the relationship between organisms living in unpredictable environments and the evolution of characteristics that are flexible enough to accommodate uncertainty and change.

S6e20 Distinguishes adaptation from acclimation.

S6e21 Analyzes the costs and benefits, under different environmental conditions, of characteristics that can be observed at the whole-organism level (i.e., structure, chemistry, behavior).

S6e22 Explains why organisms in similar environments converge in form and function.

S6e23 Analyzes life history patterns (e.g., lifespan, age of reproduction, iteroparous vs. semelparous reproduction) in terms of trade-offs in the allocation of limited resources, in a way that optimizes the fitness of the organism.

S6e24 Analyzes dispersal (e.g., migration, larval transport) in terms of risks (e.g., extinction), rewards (e.g., escaping predators and parasites), and the unpredictability of many environments.

S6e25 Explains why, although diversity has traditionally been defined at the species level, distinctions that are broader (e.g., community, ecosystem) and narrower (e.g., within-species) may be necessary for some conservation-related purposes.

S6e26 Summarizes that molecular evidence is generally substantiating the anatomical evidence for evolution, but sometimes altering dramatically the sequence in which various lines of descent are thought to have branched off from one another.

S6e27 Explains why evolution does not necessitate long-term progress in some set direction, or necessarily create traits that are beneficial to the species in the long term (e.g., explaining that the survival value of inherited characteristics may change when the environment changes).

S6e28 Explains that some traits that reduce an individual's chance of survival spread through and are maintained in a population because of advantages those traits confer in reproductive success.

S6e29 Recognizes that some heritable characteristics can persist in a population due to chance alone.

S6e30 Recognizes that populations of species evolve at different rates and may or may not keep up with rates of environmental change.

Environmental Science

Components:

S6e31 Describes the ways in which biodiversity is important to ecosystems and humans

S6e32 Explains how organisms are adapted to the environment in terms of ecological niches and natural selection.

S6e33 Relates the importance of genetic diversity and population size to the conservation of a species.

S6e34 Investigates and explains how natural selection acts as the mechanism for evolution and can lead to speciation.

S6e35 Provides evidence that natural selection can explain both the unity and diversity of life.

Biology

Standard: 6f: Analyzes ecology as interrelationships of biotic and abiotic factors and explains the transfer of matter and energy within ecosystems.

Components:

S6f1 Describes the scope of biological diversity and relationships among major groups of organisms.

S6f2 Explains the effect of evolutionary forces on the diversity of ecosystems and the species within them.

S6f3 Explains how interspecific population interactions and resource use affects population size.

S6f4 Predicts the impact of changes in an ecosystem to its equilibrium.

S6f5 Identifies effects of human activities (e.g., habitat destruction, pollution, technology, and urbanization) on populations and ecosystems.

S6f6 Describes the effects of natural disasters, disease, population increase, and depletion of food on populations.

S6f7 Explains that the distribution and abundance of organisms and populations in ecosystems is limited by the availability of matter and energy and the ecosystem's ability to recycle them.

S6f8 Traces the flow of matter and energy between living systems and the physical environment and analyzes how chemical elements are recombined in different ways.

S6f9 Analyzes how organisms in food webs recycle nutrients and serve as a source of energy for populations within an ecosystem.

S6f10 Investigates and explains the diminishing amount of energy (e.g., loss by heat) available in each succeeding trophic level.

S6f11 Relates death and decomposers to the recycling of organic materials in nature and the transfer of matter and energy in ecosystems.

S6e12 Examines and analyzes the interactions among organisms and their environments.

S6f13 Analyzes the factors which limit the distribution and abundance of organisms in ecosystems (e.g., predators, disease, parasites, resources, and competition).

S6f14 Analyzes the population size that an ecosystem can sustain.

S6f15 Explains how the interrelationships and interdependencies of organisms may generate ecosystems that are stable for hundreds or thousands of years.

Marine Biology

Components:

S6f16 Provides examples of how human activities can alter marine ecosystems in ways hat affect humans (e.g., by introducing new species, adding nutrients to coastal waters, over-harvesting food species).

S6f17 Explains why ecosystems tend to recover from a disturbance in stages that eventually result in a system similar to the original one (e.g., by referring to larval supply, life-history characteristics of organisms, and positive and negative interactions between organisms).

S6f18 Explains why distinct communities can persist in very similar environments (e.g., by referring to succession, trophic cascades, and alternative stable states).

S6f19 Explains that organisms may be well suited for environments other than those in which they are found.Provides examples of interactions between organisms that can be either positive or negative depending on the environmental circumstances.

S6f20 Hypothesizes about how marine ecosystems may change due to climate changes and due to the appearance of one or more new species as a result of migration or transport by humans.

S6f21 Explains why small populations are at increased risk of extinction.

S6f22 Hypothesizes about the likelihood that a given species will become extinct in a given period of time (e.g., based on population size, distribution, specialization, life history traits, and the amount of genetic and phenotypic variation within the species).

S6f23 Justifies recommendations for marine protected areas (e.g., based on source-sink dynamics, analysis of life history characteristics, and human use).

S6f24 Recognizes that the earth is primarily a closed system with respect to matter

S6f25 Recognizes that the earth is primarily a closed system with respect to matter.

S6f26 Analyzes the factors that limit the amount of life a given environment can support (e.g., energy, oxygen, minerals, rate of nutrient cycling).

S6f27 Analyzes the ways in which the physical environment (e.g., currents, tides, waves, weather) influences the structure of marine communities.

S6f28 Explains the effect of heterogeneity within a community and within the larger ecosystem on the abundance and diversity of life that can and does persist within those systems.

S6f29 Compares and contrasts the environmental factors that hold in check different populations of organisms within a given community (e.g., referring to density-dependent vs. density-independent regulation; interactions between disturbance, predation, competition, and larval supply; and different forms of competition).

S6f30 Describes potential effects of size-selective predation on populations, community structure, and ecosystem function.

S6f31 Models simple predator-prey and competitive interactions (e.g., using the Lotka-Volterra models).

S6f32 Provides examples of ecological factors that can allow greater diversity within a community (e.g., facilitation, microhabitats, keystone species, disturbance, prey-switching).

S6f33 Provides examples of factors that limit the distribution of organisms (e.g., larval transport, physiology, predators, food, enemy-free space).

S6f34Explains the role of foundation species in structuring communities.

Environmental Science

Components:

S6f34 Analyzes the natural processes of change in the environment, including examples of succession, evolution, and extinction.

S6f35 Analyzes the natural processes of change in the environment, including examples of succession, evolution, and extinction.

S6f36 Analyzes the stability and sustainability of ecosystems as a result of changes in environmental conditions.

S6f37 Identifies factors that lead to ecological succession, including invasive species, loss of biodiversity, change in abiotic conditions, and catastrophic events.

S6f38 Evaluates the factors that determine the plant life that can exist in a given biome.

S6f39 Identifies environmental issues in terms of interrelationships among natural systems in time and space

S6f40 Evaluates the factors that impact resource availability and explains why certain resources are becoming depleted.

S6f41 Identifies the factors limiting population growth in a given area (carrying capacity).

S6f42 Predicts changes in population size in response to altered environmental conditions.

S6f43 Gives examples that illustrate how a change in one part of a system can have an impact on other parts of the system.

Anatomy & Physiology

Standard: S6g: Analyzes and explains the relationships between the structures, systems, molecular and cellular organization, and processes of multi-cellular organisms, especially humans.

Components:

S6g1 Examines and classifies tissues and the various cells types found in them.

S6g2 Connects the make-up and organization of tissue types and their functions.

S6g3 Explains the significance of organisms' ability to regulate their internal environment to maintain a stable, constant condition (i.e., homeostasis).

S6g4 Identifies how positive and negative feedback are involved in homeostatic regulation.

S6g5 Investigates and describes how body systems interact to maintain homeostasis.

S6g6 Determines through investigations how the integumentary system distinguishes, separates, protects and informs an organism with regard to its surroundings

S6g7 Explains the role of the integumentary system in regulating body temperature and water balance.

S6g8 Describes how the skin responds to injury and repairs itself.

S6g9 Examines and explains how the skeletal and muscular systems work with other systems to support the body and allow for movement.

S6g10 Categorizes types of bone and their functions.

S6g11 Compares and contrasts the major types of joints in terms of their mobility and the tissues that hold them together.

S6g12 Relates the structures of the heart to its pumping function to propel blood through arteries, capillaries, and veins.

S6g13 Investigates and illustrates the flow of blood through the circulatory system.

S6g14 Connects the functions of the liver and the circulatory system.

S6g15 Identifies the structures and functions of the lymphatic system and the interrelationships with other body systems.

S6g16 Explains how the structures of the lymphatic system are functionally related to the circulatory and immune systems.

S6g17 Describes the immune system and the strategies the body uses to protect itself from microscopic organisms, foreign substances, and cancer cells

S6g18 Analyzes the functions of blood in the immune system (i.e., its role in essential protection to combat invading microorganisms, acute inflammation, and immune responses).

S6g19 Relates respiratory functions and the structural specializations of the tissues and organs in the system.

S6g20 Identifies the interrelationships among the respiratory and circulatory systems.

S6g21 Describes the mechanisms by which the digestive system provides cells in the body with macromolecules from food.

S6g22 Explains why metabolic byproducts must be removed from the body by excretion and identifies the organs that are responsible for their excretion.

S6g23 Identifies the interrelationships among the digestive system and other organ systems.

S6g24 Relates the structures of the urinary system to their functions in removing nitrogenous wastes from the blood and producing, storing and eliminating urine.

S6g25 Examines the distribution of water and electrolytes within the body and explains the kidney's role in balancing these levels.

S6g26 Identifies the interrelationships among the urinary systems and other organ systems, particularly with regard to maintaining homeostasis in body fluids.

S6g27 Identifies the interrelationships among the reproductive system and other organ systems.

S6g28 Identifies effects of aging, their causes, and ways of reducing these effects.

S6g29 Describes the hormonal mechanisms regulating male and female reproductive functions.

S6g30 Identifies the stages of development of germ cell layers, the processes that occur in each stage, and the fate of each germ cell layer in humans.

S6g31 Differentiates between a zygote, embryo, and fetus and describes the characteristics and events associated with each stage.

S6g32 Characterizes the major stages of development after delivery.

S6g33 Compares and contrasts patterns of human development to those of other vertebrates.

S6g34 Describes how growth is regulated.

Environmental Science

Standard: S6h: Identifies the effect of human activities on natural processes and interrelationships within ecosystems.

Components:

S6h1 Describes how people impact their environment through the use of natural resources.

S6h2 Identifies and assesses the effects of human resource use at various scales in terms of ecosystem functioning and human health.

S6h3 Predicts how changes in the availability and use of natural resources will affect society and human activities.

S6h4 Describes the ways in which the use of technology has an impact on the environment and the standard of living.

S6h5 Assesses the environmental and societal costs and benefits of various common natural resource management strategies.

S6h6 Identifies and describes the factors that have contributed to the growth of the human population and examine the impact this growth will have on the environment.

Physics
Grades 9-12

Strands:

S5 Physics: The student demonstrates a conceptual understanding of the organization and interaction of matter and energy, and motion and forces; that is, the student:

Standard: S5a: Communicates an understanding of atomic and subatomic structure, addressing parts and properties of the atom, nuclear forces, radioactivity, and nuclear reactions.

Components:

S5a1 Describes matter as being made of minute particles called atoms, and the atoms as composed of even smaller components. (e.g., quarks, mesons)

S5a2 Explains that the electric force between the nucleus and electrons holds the atom together.

S5a3 Explains how neutrons affect the mass and stability of the nucleus, while having little effect on how an atom interacts with others.

S5a4 Describes the process of radioactive decay as the spontaneous breakdown of unstable elements (i.e., radioactive isotopes) into new elements (radioactive or not) through the spontaneous emission by the nucleus of alpha or beta particles and/or wave-like radiation.

S5a5 Calculates the estimated age of material using the predictability of the decay of a large number of the nuclei of radioactive isotopes can be used to estimate the age of materials.

S5a6 Distinguishes nuclear reactions from chemical reactions in relation to the energy involved, and the conversion of a fraction of the mass into energy.

S5a7 Describes and distinguishes among alphas, beta, and gamma particles, and properties of alpha, beta, and gamma radiation in relation to their penetrating power.

S5a8 Distinguishes fission from fusion.

S5a9 Recognizes that reactions of nuclear material, for example fission and fusion, convert a fraction of the mass of interacting particles into energy.

S5a10 Contrasts the nuclear forces that hold the nucleus of an atom together (e.g., usually stronger) to the electric forces that would make it fly apart.

Physics Applications

Components:

S5a11 Describes matter as being made of minute particles called atoms, and the atoms as composed of even smaller components. (e.g., electrons, protons, neutrons, as well as quarks, mesons)

S5a12 Explains that the electric force between the nucleus and electrons holds the atom together and is responsible for the formation of molecules.

S5a13 Describes the process of radioactive decay as the spontaneous breakdown of unstable elements (i.e., radioactive isotopes) into new elements (radioactive or not) through the spontaneous emission by the nucleus of alpha or beta particles and/or wave-like radiation and the impact of radioactive materials found in building materials. (e.g., radon gas).

S5a14 Distinguishes fission from fusion.

S5a15 Contrasts the nuclear forces that hold the nucleus of an atom together (e.g., usually stronger) to the electric forces that would make it fly apart.

Physics

Standards: S5b: Analyzes and explains the relationship between structure and properties of matter in its different energy states [Solid, Liquid, Gas, and Plasma] and uses those relationships to predict physical changes in matter under the influence of various forces and energy change.

Components:

S5b1 Compares and contrasts the physical states of matter based upon their properties and energy state.

S5b2 Connects the behaviors of substances under compression or tension with the physical properties of solids and fluids (e.g., compressibility, elasticity, internal pressure, and fluid velocity).

S5b3 Analyzes physical phenomena that are uniquely demonstrated by solids and fluids in a gravitational field. (i.e., pressure, buoyancy in a liquid, floating in a gas)

S5b4 Contrast the relationships among linear growth, surface area growth, and volumetric growth.

S5b5 Gives examples and practical applications of thermal expansion and contraction of solids and fluids.

S5b6 Infers the behavior of fluids in response to variable pressure, volume, and temperature as defined by the relationships known as gas laws.

S5b7 Evaluates the effects of the local environment (e.g., vapor pressure, dissolved solids and gases) on the temperature at which phase change occurs.

S5b8 Differentiates phase changes in terms of the effect of energy on particle motion and the direction of energy flow (e.g., boiling/condensation, melting/freezing).

Physics Applications

Components:

S5b9 Investigates stress and strain in static materials subject to compression or tension

S5b10 Compares and contrasts the physical states of matter based upon their properties and energy state.

S5b11 Analyzes physical phenomena that are uniquely demonstrated by solids and fluids in a gravitational field. (I.e., pressure, buoyancy in a liquid, floating in a gas)

S5b12 Contrast the relationships among linear growth, surface area growth, and volumetric growth as it relates to changing the sizes and strengths of structures.

S5b13 Gives examples and practical applications of thermal expansion and contraction of solids and fluids.

P**hysics**

Standards: S5c Articulates and demonstrates the principles of motions and forces and applies them to examples of interactions between objects.

Components:

S5c1 Assesses and interprets an object's motion by measurements of position, velocity, and acceleration relative to a specific point in space.

S5c2 Explains that the fundamental difference between objects whose motion is changing and those whose motion is remaining the same is that objects in motion are under the influence of an applied, unbalanced net force.

S5c3 Analyzes the effects of forces on the motion of objects by referencing Newton's three Law's of Motion (i.e., Law of Conservation of Momentum, Law of Conservation of Energy, and Law of Universal Gravitation).

S5c4 Analyzes the magnitude of the change in motion using the relationship F = ma, which is independent of the nature of the force.

S5c5 Evaluates collisions and interactions between objects using laws of motion and conservation.

S5c6 Describes the magnitude of the force that is exerted in the opposite direction whenever one object exerts a force on another.

S5c7 Predicts the conditions required as well as the resulting motion produced, when all the forces and torques acting on a body balance one another such that a state of static and rotational equilibrium exists.

S5c8 Analyzes the effect of unbalanced force acting on the linear and rotary motion of an object and the quantities involved (e.g., momentum, inertia, force, velocity, acceleration, speed, rotational speed, tangential speed).

S5c9 Provides varied examples that show any mass will exert on any other mass the universal force known as Gravitation.

S5c10 Evaluates and predicts the motion of a projectile moving through a force field (gravity, electrical, magnetic).

S5c11 Analyses the approximate strength of the gravitational attractive force between two masses, by considering that force is proportional to the masses and inversely proportional to the square of the distance between them.

S5c12 Analyses the approximate strength and direction of the universal electric force between two charged objects by considering that force is proportional to the magnitude of charge and inversely proportional to the square of the distance between their centers.

S5c13 Describes the universal electric force that exists between any two charged objects, wherein: opposite charges attract while like charges repel, and the strength of the force is proportional to the charges and, as with gravitation, inversely proportional to the square of the distance between them.

S5c14 Differentiates between the relative strength of the electric force between any two charged particles (vastly greater) and the universal gravitational force between the particles.

S5c15 Explains observable forces (e.g., those exerted by a coiled spring or by friction) in terms of the electric forces acting between atoms and molecules.

S5c16 Describes electricity and magnetism as two aspects of a single electromagnetic force since moving or changing electric charges produce magnetic forces and moving or changing magnetic fields produce electric forces.

S5c17 Categorizes and rates the relative strengths and range of fundamental forces (gravitational, electromagnetic, strong and weak nuclear forces).

Physics Applications

Components:

S5c18 Explains that the fundamental difference between objects whose motion is changing and those whose motion is remaining the same is that objects in motion are under the influence of an applied, unbalanced net force.

S5c19 Analyzes the effects of forces on the motion of objects by referencing Newton's three Law's of Motion (i.e., Law of Conservation of Momentum, Law of Conservation of Energy, Law of Universal Gravitation).

S5c20 Analyzes the magnitude of the change in motion using the relationship F = ma, which is independent of the nature of the force.

S5c21 Describes the magnitude of the force that is exerted in the opposite direction whenever one object exerts a force on another.

S5c22 Provides varied examples that show any mass will exert on any other mass the universal force known as Gravitation.

S5c23 Analyses the approximate strength of the gravitational attractive force between two masses, by considering that force is proportional to the masses and inversely proportional to the square of the distance between them.

S5c24 Analyses the approximate strength and direction of the universal electric force between two charged objects by considering that force is proportional to the magnitude of charge and inversely proportional to the square of the distance between their centers.

S5c25 Describes the universal electric force that exists between any two charged objects, wherein: opposite charges attract while like charges repel, and the strength of the force is proportional to the charges and, as with gravitation, inversely proportional to the square of the distance between them.

S5c26 Differentiates between the relative strength of the electric force between any two charged particles (vastly greater) and the universal gravitational force between the particles.

S5c27 Explains observable forces (e.g., those exerted by a coiled spring or by friction) in terms of the electric forces acting between atoms and molecules.

S5c28 Describes electricity and magnetism as two aspects of a single electromagnetic force since moving or changing electric charges produce magnetic forces and moving or changing magnetic fields produce electric forces.

Physics

Standards: S5d: Analyzes the distinctions among thermal, potential, and kinetic energy and explains conservation of energy.

Components:

S5d1 Interprets and provides examples of how energy can be converted from gravitational potential energy to kinetic energy and vice versa in projectiles, falling objects, and athletics.

S5d2 Provides evidence that energy can be transferred for example by collision, but can never be destroyed.

S5d3 Explains why energy is transferred by collisions, reactions, or radiation (i.e., waves), the matter and energy involved will become steadily less ordered (i.e., entropy).

S5d4 Classifies examples of energy as kinetic, potential and/or energy stored in a field (e.g., electromagnetic waves).

S5d5 Differentiates the states of matter based upon their energy state (e.g., the structure of molecules and atoms in these different states varies from rigid in solids to independent motion in a gas.)

S5d6 Explains thermal energy (i.e., heat) in terms of atomic and molecular motion (i.e., the higher the temperature, the greater is the atomic or molecular motion).

S5d7 Justifies that heat is often produced as a byproduct when one form of energy is converted to another form.

S5d8 Distinguishes heat (i.e., energy being transferred from one body to another by virtue of a difference in temperature) from internal energy (i.e., the total potential and kinetic energy contained within a body).

S5d9 Provides examples of the transfer of energy from hotter to cooler objects by conduction, radiation, or convection; and the warming of our surroundings when we burn fuels).

S5d10 Explains the relationships among temperature changes in a substance, the amount of heat transferred, the amount (mass) of the substance, and the specific heat of the substance.

Physics Applications

Components:

S5d11 Differentiates the states of matter based upon their energy state (e.g., the structure of molecules and atoms in these different states varies from rigid in solids to independent motion in a gas.)

S5d12 Explains thermal energy (i.e., heat) in terms of atomic and molecular motion (i.e., the higher the temperature, the greater is the atomic or molecular motion) and performs measurements of temperature.

S5d13 Distinguishes heat (i.e., energy being transferred from one body to another by virtue of a difference in temperature) from internal energy (i.e., the total potential and kinetic energy contained within a body).

S5d14 Provides examples of the transfer of energy from hotter to cooler objects by conduction, radiation, or convection; and the warming of our surroundings when we burn fuels as a consideration in energy conservation.

S5d15 Uses the relationships among temperature changes in a substance, the amount of heat transferred, the amount (mass) of the substance, and the specific heat of the substance to determine the flow of energy through the walls of a closed structure.

S5d16 Provides evidence that energy can be transferred by collisions, reactions, or radiation (i.e., waves), the matter and energy involved will become steadily less ordered (i.e., entropy).

S5d17 Classifies examples of energy as kinetic, potential and/or energy stored in a field (e.g., electromagnetic waves).

Physics

Standards: S5e: Uses knowledge of waves and wave properties (including light, sound, transverse, longitudinal and electromagnetic waves) to analyze the transfer of energy as vibrations.

Components:

S5e1 Explains that energy is a property of many substances and materials (e.g., the disorderly motion of molecules; the arrangement of bonds between atoms; elastically distorted shapes; and energy in the attraction or repulsion between charges and magnetic poles).

S5e2 Recognizes that waves, including sound, seismic waves, waves on water, and light waves, have energy and can transfer energy when they interact with matter.

S5e3 Compares and contrasts the properties and behaviors of mechanical (sounds, earthquake) and electromagnetic waves.

S5e4 Compares the characteristics of vibrations (period, amplitude, resonance) and their relationship to simple harmonic motion.

S5e5 Distinguishes between transverse and longitudinal waves and provides examples of each.

S5e6 Compares, in different materials, the velocity and wavelengths of wave-like disturbances that spread away from a source of vibrations (e.g., sounds, earthquakes, light).

S5e7 Diagrams the process of eave interference and provides examples of its manifestation (e.g., vibration in a string, locations of loud and soft sound in a room, bright and dark interference fringes of light, Young's interference experiment, monochromatic light reflected from a thin material, colors shining from soap bubbles, and gasoline slicks on a wet surface).

S5e8 Generates and attributes the generation of electromagnetic waves to the acceleration or deceleration of a charged object.

S5e9 Categorizes electromagnetic waves by both wavelength and frequency in a continuum spectrum.

S5e10 Organizes electromagnetic waves by both wavelength and frequency in a continuum spectrum.

S5e11 Justifies that only a narrow range of wavelengths of electromagnetic radiation can be seen by the human eye, and that differences of wavelength within that range of visible light are perceived as difference in color.

S5e12 Supports with historical references significant experimental evidence for the fundamental components of quantum theory and mechanics, i.e., 1) each kind of atom or molecule can gain or lose energy only in discrete packets whose magnitudes are inversely proportional to their wavelengths; and 2) these atoms and molecules can absorb and emit light only at wavelengths corresponding to these packets and those wavelengths can be used to identify a specific substance.

S5e13 Presents evidence for the dual nature of light (wave-particle duality) as well as the wave properties of matter and the wave nature of electrons.

Physics Applications

Components:

S5e14 Recognizes that waves, including sound, seismic waves, waves on water, and light waves, have energy and can transfer energy when they interact with matter.

S5e15 Generates and attributes the generation of electromagnetic waves to the acceleration or deceleration of a charged object.

S5e16 Categorizes electromagnetic waves by both wavelength and frequency in a continuum spectrum.

Physics

Standards: S5f: Will articulate and use an understanding of electrical and magnetic fields to describe the requirements for the transfer and storage of energy in electrical and magnetic “circuits”.

Components:

S5f1 Describes the kinds of electric charge and the properties of charged objects (e.g., electric charge is always conserved; and the fundamental unit of charge, e, is the charge of a single electron or proton).

S5f2 Describes the features of an electric circuit represented by current, voltage, resistance, and the connection between them.

S5f3 Illustrates how electric energy can be stored, transferred, and transformed into other energy forms.

S5f4 Distinguishes among semiconductors, conductors, and insulators, in terms of the flow of charge and the materials involved and the temperature of that material.

Physics Applications

Components:

S5f5 Describes the kinds of electric charge and the properties of charged objects (e.g., electric charge is always conserved; and the fundamental unit of charge, e, is the charge of a single electron or proton).

S5f6 Describes the features of an electric circuit represented by current, voltage, resistance, and the connection between them.

S5f7 Distinguishes among semiconductors, conductors, and insulators, in terms of the flow of charge and the materials involved and the temperature of that material.

Chemistry
Grades 9-12

Strand:

S8 Chemistry: The student demonstrates a conceptual understanding of the organization and behavior of matter; that is, the student:

Standard: S8a: Communicates an understanding of atomic structure, addressing parts and properties of the atom.

Components:

S8a1 Describes matter (e.g., chemical substances, common materials, living organisms) as being made of enormous numbers of minute particles called atoms (e.g., by referring to mixtures, pure substances, Avogadro's number, and the mole concept).

S8a2 Explains that each substance is characterized by a unique set of physical and chemical properties because it has a unique atomic composition and arrangement.

S8a3 Analyzes the relationship between the measurable properties of atoms (e.g., mass, volume, charge) and the properties of the smaller components of which atoms are composed (i.e., protons and neutrons in the nucleus, electrons in the electron cloud).

S8a4 Illustrates the structure of the atom, including the charge, relative mass, relative volume, and position within the atom of the electrons (in the electron cloud), and the protons and neutrons (which compose the nucleus).

S8a5 Recognizes the relationship between the charges on the nucleus and electrons, and the electric force that holds the atom together.

S8a6 Compares and contrasts isotopes of the same element (e.g., based on number of protons, neutrons, and electrons; atomic mass; electric charge; stability of the nucleus).

S8a7 Analyzes the relationship between the measurable properties of atoms (e.g., mass, volume, charge) and the properties of the smaller components of which atoms are composed (i.e., protons and neutrons in the nucleus, electrons in the electron cloud).

S8a8 Compares and contrasts isotopes of the same element (e.g., based on number of protons, neutrons, and electrons; atomic mass; electric charge; stability of the nucleus).

S8a9 Describes matter as being made of enormous numbers of minute particles called atoms (e.g., by referring to mixtures, pure substances, Avogadro's number, and the mole concept).

S8a10 Illustrates the structure of the atom, including the charge, relative mass, relative volume, and position within the atom of the electrons (in the electron cloud), and the protons and neutrons (which compose the nucleus).

S8a11 Recognizes the relationship between the charges on the nucleus and electrons, and the electric force that holds the atom together.

Chemistry

Standard: S8b: Analyzes and demonstrates the relationship between the structure and the properties of matter, focusing on chemical properties of elements and their placement in the Periodic Table.

Components:

S8b1 Distinguishes elements (i.e., substances composed of a single kind of atom) from compounds (i.e., substances composed of two or more kinds of atoms bonded together chemically).

S8b2 Predicts the placement of elements on the Periodic Table given physical and chemical properties, and vice versa (e.g., by referring to the atomic number, classes of elements, and repeating patterns of physical and chemical properties that identify families of elements with similar properties).

S8b3 Identifies, and explains the relationships between, trends in the properties of atoms on the Periodic Table (e.g., atomic number, number of valence electrons, ionization energy, electronegativity, relative sizes of atoms and ions).

S8b4 Analyzes the relationship between the chemical properties of an element, and the tendency of atoms of that element to interact with other atoms by transferring or sharing electrons that are furthest from the nucleus (e.g., using the octet rule and differences in electronegativity).

Chemistry Applications

Components:

S8b5 Predicts the placement of elements on the Periodic Table given physical and chemical properties, and vice versa (e.g., by referring to the atomic number, classes of elements, and repeating patterns of physical and chemical properties that identify families of elements with similar properties).

Chemistry

Standard: S8c: Analyzes and demonstrates the relationship between the structure and the properties of matter focusing on physical properties of molecular substances.

Components:

S8c1 Predicts that particles with opposite charges will attract (e.g., protons and electrons, positive and negative ions, molecules with partial but opposite charges), that particles with like charges will repel (e.g., protons in the nucleus, electrons in the electron clouds of atoms and molecules), and that the strength of the electric force between the particles increases in proportion to the charges but decreases with distance.

S8c2 Describes the factors that affect how simple molecules interact and form intermolecular bonds (e.g., constituent atoms, distances and angles between the atoms, charges and partial charges on the molecules).

S8c3 Explains physical properties of molecular substances (e.g., melting point, boiling point, density, viscosity, vapor pressure, solubility in different solvents) based on the nature of the interactions among those substances' molecules (e.g., tendency to form intermolecular attractions and crystalline structures).

S8c4 Compares and contrasts solids, liquids, and gases, based on the ability of molecules or atoms to move around or away from each other (i.e., based on average kinetic energy of the system, and the strength of attraction between molecules or atoms).

S8c5 Applies the kinetic molecular theory to explain the behavior of gases, and the relationship between pressure and volume, volume and temperature, pressure and temperature, and the number of particles in a gas sample.

S8c6 Compares and contrasts the properties of solutions and pure solvents (e.g., boiling point and melting point, vapor pressure, separate and combined volumes, ability to conduct electricity).

Chemistry Applications

Components:

S8c7 Applies the atomic-molecular theory to chemical reactions (e.g., balancing equations, calculating percent yield, identifying limiting reactants, determining percent composition).

S8c8 Applies the kinetic molecular theory to explain the behavior of gases, and the relationship between pressure and volume, volume and temperature, pressure and temperature, and the number of particles in a gas sample.

S8c9 Compares and contrasts the properties of solutions and pure solvents (e.g., boiling point and melting point, vapor pressure separate and combined volumes, ability to conduct electricity).

S8c10 Compares and contrasts solutions, suspensions, and colloids, using knowledge of intermolecular forces.

S8c11 Compares and contrasts water and other substances in their solid, liquid, and gaseous states, based on the ability of molecules or atoms to

move around or away from each other (i.e., based on average kinetic energy of the system, and the strength of attraction between molecules or atoms).

S8c12 Describes the factors that affect how simple molecules interact and form intermolecular bonds (e.g., constituent atoms, distances and angles between the atoms, charges and partial charges on the molecules).

S8c13 Describes the process (for petroleum, as an example) of fractional distillation and names the products from each fraction.

S8c14 Distinguishes between chemical and physical properties and/or changes.

S8c15 Distinguishes between chemical and physical properties and/or changes.

S8c16 Explains physical properties of molecular substances (e.g., food matter) as based on the nature of the interactions among those substances' molecules (e.g., carbohydrates and fats).

S8c17 Explains physical properties of water, petroleum, and other molecular substances (e.g., melting point, boiling point, density, viscosity, vapor pressure, solubility in different solvents) based on the nature of the interactions among those substances' molecules (e.g., tendency to form intermolecular attractions and crystalline structures) and the implications of these properties for transformations in manufacturing.

S8c18 Identifies the chemical and physical processes of conserving renewable and nonrenewable resources.

S8c19 Identifies the chemical and physical processes of conserving renewable and nonrenewable resources.

S8c20 Predicts that particles (such as those in water) with opposite charges will attract (e.g., protons and electrons, positive and negative ions, molecules with partial but opposite charges), those with like charges will repel (e.g., protons in the nucleus, electrons in the electron clouds of atoms and molecules), and that the strength of the electric force between the particles increases in proportion to the charges but decreases with distance.

S8c21 Describes the process (for petroleum, as an example) of fractional distillation and names the products from each fraction.

Chemistry

Standard: S8d: Assesses interactions of matter focusing on chemical reactions and bonds.

Components:

S8d1 Explains chemical bonding (e.g., covalent, polar-covalent, ionic) as the pairing of electrons via transfer or sharing between atoms, resulting in distinct molecules or repeating three-dimensional crystalline arrangements of atoms.

S8d2 Applies the atomic-molecular theory to chemical reactions (e.g., balancing equations, calculating percent yield, identifying limiting reactants, determining percent composition).

S8d3 Categorizes chemical reactions into one of five basic types (i.e., synthesis, decomposition, single replacement, double replacement, combustion) based on chemical equations and experimental observations.

S8d4 Compares and contrasts reactions that involve the transfer of electrons (i.e., oxidation/reduction reactions) or hydrogen ions (i.e., acid/base reactions) between reacting ions, molecules, or atoms.

S8d5 Explains the role of highly reactive radicals in chemical chain reactions (e.g., the presence of ozone and greenhouse gases in the atmosphere, the burning and processing of fossil fuels, the formation of polymers, and explosions).

S8d6 Explains why such an enormous variety of substances (e.g., synthetic polymers, oils, the large molecules essential to life) can be formed from a backbone of carbon atoms (i.e., because carbon atoms can form four bonds, including single, double, and triple bonds, and bond to each other to form chains, rings, and branching networks).

S8d7 Explains why such an enormous variety of substances (e.g., synthetic polymers, oils, the large molecules essential to life) can be formed from a backbone of carbon atoms (i.e., because carbon atoms can form four bonds, including single, double, and triple bonds, and bond to each other to form chains, rings, and branching networks).

S8d8 Provides examples of and describes chemical reactions that occur in everyday life (e.g., in health care, cooking, cosmetics, automobiles, and in our bodies).

Chemistry Applications

Components:

S8d8 Applies the atomic-molecular theory to chemical reactions (e.g., balancing equations, calculating percent yield, identifying limiting reactants, determining percent composition).

S8d9 Compares and contrasts reactions that involve the transfer of electrons (i.e., oxidation/reduction reactions) or hydrogen ions (i.e., acid/base reactions) between reacting ions, molecules, or atoms

S8d10 Compares saturated/unsaturated hydrocarbons (models, formulas, structures, properties).

S8d11 Describes chemically the transformations of elements (e.g., nitrogen) and molecules (e.g., water) through the environment (e.g., water and nitrogen cycles).

S8d12 Explains the role of highly reactive radicals in chemical chain reactions (e.g., the presence of ozone and greenhouse gases in the atmosphere, the burning and processing of fossil fuels, the formation of polymers, the extraction of minerals from ores, and explosions.)

S8d13 Explains why such an enormous variety of substances (e.g., synthetic polymers, oils, the large molecules essential to life) can be formed from a backbone of carbon atoms (i.e., because carbon atoms can form four bonds, including single, double, and triple bonds, and bond to each other to form chains, rings, and branching networks).

S8d14 Provides examples of and describes chemical reactions that occur in everyday life (e.g., in health care, cooking, cosmetics, automobiles, and in our bodies).

Chemistry

Standard: S8e: Analyzes variables that govern the rates of chemical and physical change.

Components:

S8e1 Compares and contrasts physical and chemical change (e.g., based on bond strength, reversibility, applicability of conservation laws), explaining both as changes in the arrangement and motion of atoms and molecules

S8e2 Describes the enormous range of time periods over which chemical reactions can take place (i.e., from a few seconds to billions of years).

S8e3 Describes factors that can change the rate of dissolving (e.g., concentration, pressure, temperature, mixing, particle size and shape, surface area).

S8e4 Investigates and explains the effect of factors that can change the rate of chemical reactions (e.g., concentration, pressure, temperature, mixing, particle size and shape, surface area).

S8e5 Compares and contrasts catalysis by metal surfaces and by enzymes.

S8e6 Investigates and describes equilibrium systems (e.g., buffers, indicators, and other chemical systems) and factors that can cause a shift in the equilibrium of a system (e.g., concentration, pressure, volume, temperature).

Chemistry Applications

Components:

S8e7 Compares and contrasts catalysis by metal surfaces and by enzymes (such as the effect of proteins on cellular reactions).

S8e8 Describes factors that can change the rate of dissolving (e.g., concentration, pressure, temperature, mixing, particle size and shape, surface area).

S8e9 Investigates and explains the effect of factors that can change the rate of chemical reactions (e.g., concentration, pressure, temperature, mixing, particle size and shape, surface area).

Chemistry

Standard: S8f Explains and illustrates the conservation of energy.

Components:

S8f1 Explains that energy can be transferred (e.g., by collisions and radiations) but never destroyed.

S8f2 Provides examples of kinetic energy (e.g., electrical, radiant, thermal) being transformed into potential energy (e.g., chemical) and vice versa (e.g., during chemical reactions, changes of state, and the formation of solutions).

S8f3 Explains that energy tends to spread out uniformly (e.g., from hotter to cooler objects) unless hindered (e.g., by insulation, or by high-energy intermediates in some chemical reactions).

S8f4 Provides examples of energy being released by or initiating chemical reactions (e.g., burning fossil fuels, photosynthesis, the evolution of urban smog).

S8f5 Predicts whether energy will be released or absorbed during a chemical or physical change (e.g., chemical reaction, change of state, formation of a solution), given the configuration of atoms and molecules and their associated energy levels.

S8f6 Predicts and explains the ability of electric energy to flow readily through some materials (e.g., metals, ionic solutions) but not others (i.e., relating conductivity to the ability of charged particles to flow through the material).

S8f7 Distinguishes between temperature and heat.

S8f8 Explains that each kind of atom or molecule can gain or lose energy only in particular discrete amounts.

Chemistry Applications

Components:

S8f9 Describes major sources of energy and alternative sources of fuels and builder molecules.

S8f10 Explains that energy can be transferred (e.g., by collisions and radiation) but never destroyed.

S8f11 Explains that light can initiate reactions such as photosynthesis and the evolution of urban smog.

S8f12 Provides examples of kinetic energy (electrical, radiant, thermal) being transformed into potential energy (e.g., chemical) and vice versa (e.g., during chemical reactions, changes of state, and the formation of solutions).

S8f13 Distinguishes the split (fission) of certain nuclei into small nuclei and several neutrons from the combination (fusion) of two small nuclei into a more massive, given high temperature and pressure.

S8f14 Provides examples of energy being released by or initiating chemical reactions (e.g., burning petroleum and other fossil fuels, photosynthesis, the evolution of urban smog).

S8f15 Predicts whether energy will be released or absorbed during a chemical or physical change (e.g., chemical reaction, change of state, formation of a solution), given the configuration of atoms and molecules and their associated energy levels.

S8f16 Predicts and explains the ability of electrical energy to flow readily through some materials (e.g., metals, ionic solutions) but not others (i.e., relating conductivity to the ability of charged particles to flow through the material).

Social Studies: Grade 9 - World Regions/Cultures

Standards Introduction:

The standards for ninth grade students provide opportunities to expand knowledge of world cultures and world regions. The standards include major emphasis on the themes of Culture, Space and Place, Individuals, Groups and Institutions, and Power, Authority and Governance. Students learn to recognize characteristics of a community or culture and explain reasons for cultural diversity. The ability to compare and contrast regional geographic features throughout the world is an important student outcome. Activities include using texts, maps, charts, other resources, research, and technological skills to aid in historical analysis.

SK – Skills

The Social Studies program promotes essential skills to increase the students ability to acquire information and manipulate data, develop and present policies and debates, construct new knowledge, and participate in groups. Each skill is dependent upon and enriched by all other skills so that the learner can:

Skills:

- **SK1a:** interpret world maps.
- **SK1b:** interpret data and create and design graphic displays (charts, graphs, diagrams, graphic organizers) using technology.
- **SK1c:** infer information from captions, cartoons, political posters, photographs, etc.
- **SK1d:** test the validity of information using primary sources (biographies, journals, interviews, letters).
- **SK1e:** correlate and cross reference social studies materials (index, appendix, glossary).
- **SK1f:** observe, analyze interpret and draw conclusions using the Internet and databases.
- **SK1g:** create multimedia presentations using text, color, and importing graphics, sound, special effects and animation.

Strand/Theme:

SS1 Citizenship

Social studies programs should include experiences that provide for the study of the ideals, principles, and practices of citizenship in a democratic republic, so that the learner can:

Standards:

- **SS1a:** model the qualities of being a global citizen.
- **SS1b:** exhibit tolerance for people from other cultures.
- **SS1c:** participate in service programs.

Strand/Theme:

SS2 Culture

Social studies programs should include experiences that provide for the study of culture and cultural diversity, so that the learner can:

Standards:

- **SS2a:** compare and contrast cultures.
- **SS2b:** analyze and describe how language, literature, the arts, and artifacts demonstrate beliefs and values and contribute to the transmission of culture.
- **SS2c:** analyze changes in traditional cultures.
- **SS2d:** explain reasons for cultural diversity and the need for tolerance.

Strand/Theme:
SS3 Time, Continuity, and Change

Social studies programs should include experiences that provide for the study of the way human beings view themselves in and over time, so that the learner can:

Standards:

SS3a: identify the influence of developed nations on developing nations.

SS3b: analyze the roles of art, music, literature, and folklore in historical development.

SS3c: describe the historical development of culture in a specific region.

SS3d: analyze attitudes, values, and behaviors of people in different historical contexts.

Strand/Theme:
SS4 Space and Place

Social studies programs should include experiences that provide for the study of space and place, so that the learner can:

Standards:

SS4a: apply geographical tools (e.g., maps, charts, tables, graphs) to analyze and solve problems.

SS4b: explain how topography, climate, vegetation, population, distribution, and resources impact a region or country.

SS4c: differentiate ways that humans shape and adapt the environment to meet their needs.

Strand/Theme:
SS5 Individual Development and Identity

Social studies programs should include experiences that provide for the study of individual development and identity, so that the learner can:

Standards:

SS5a: explore how gender, race, culture, nationality, family, economic, and religious status influence an individual's self concept.

SS5b: explain how knowledge and experiences broaden an individual's perception.

SS5c: describe how individuals can contribute to the well-being of others.

Strand/Theme:
SS6 Individuals, Groups, and Institutions

Social studies programs should provide for the study of the interaction among individuals, groups, and institutions, so that the learner can:

Standards:

SS6a: identify groups based on language, religion, family, and nationality.

SS6b: discuss ways in which technological, political, economic, or environmental changes affect a social system.

SS6c: explain how groups and institutions influence and perpetuate people's values, beliefs, attitudes, events, and culture.

SS6d: compare differences in gender roles for various cultures.

SS6e: identify resources for participation in community/related projects.

Strand/Theme:
SS7 Production, Distribution, and Consumption

Social studies programs should include experiences that provide for the study of how people organize for the production, distribution, and consumption of goods and services, so that the learner can:

Standards:

SS7a: compare how countries' resources are allocated and utilized.

SS7b: analyze how the unequal distribution of wealth creates conflict.

SS7c: describe the significance of international economic organizations.

Strand/Theme:
SS8 Power, Authority, and Governance

Social studies programs should include experiences that provide for the study of how people create and change structures of power, authority, and governance, so that the learner can:

Standards:

SS8a: compare and contrast basic political and economic systems.

SS8b: explain the development and role of international political organizations and multinational organizations.

SS8c: discuss how universal human rights are viewed by different political systems.

Strand/Theme:
SS9 Science, Technology, and Society

Social studies programs should include experiences that provide for the study of the relationships among science, technology, and society, so that the learner can:

Standards:

SS9a: explain how science and technology have transformed the physical world and have influenced economic and political institutions.

SS9b: evaluate the effects of technology on cultural values and the physical environment.

SS9c: explain societal changes in values, beliefs, and attitudes that have resulted from new scientific knowledge.

SS9d: identify laws and policies which affect science and technology.

Strand/Theme:
SS10 Global Connections

Social studies programs should include experiences that provide for the study of global connections and interdependence, so that the learner can:

Standards:

SS10a: identify behaviors which foster global cooperation and create conflict.

SS10b: explain how technology and economics affect global cooperation.

SS10c: analyze how language, art, music, literature, belief systems, and other cultural elements can either connect people or cause misunderstandings.

SS10d: describe the historical development of a global consciousness and concept of a world citizen.

SS10e: develop an awareness of current events.

Social Studies: Anthropology

Standards Introduction: The standards of anthropology emphasize the study of early and contemporary human beings in relation to culture and physical environment. Students study language development, social institutions, religion, the arts, physical and mental traits, and similarities and differences among cultures. Students will investigate cultures and plan and develop projects that illustrate cultural diversity of groups.

SK – Skills The Social Studies program promotes essential skills to increase the students ability to acquire information and manipulate data, develop and present policies and debates, construct new knowledge, and participate in groups. Each skill is dependent upon and enriched by all other skills, so that the learner can:

Skills:

- **SK1a:** select an appropriate strategy to solve a problem or plan a field study.
- **SK1b:** use a variety of sources to complete oral and written reports on anthropological inquiry.
- **SK1c:** access and use complex electronic databases and communication networks of all types including, but not limited to, the Internet.

Strand/Theme:
SS1 Citizenship Social studies programs should include experiences that provide for the study of the ideals, principles, and practices of citizenship in a democratic republic, so that the learner can:

Standards:

- **SS1a:** describe the concept of civilization.
- **SS1b:** identify why humans live in societal patterns.
- **SS1c:** explain how cultural views influence characteristics of citizenship.

Strand/Theme:
SS2 Culture Social studies programs should include experiences that provide for the study of culture and cultural diversity, so that the learner can:

Standards:

- **SS2a:** identify characteristics of culture.
- **SS2b:** Explain how various family structures, traditions, celebrations, and heritage affect societal systems.
- **SS2c:** Explain the value of cultural diversity and cohesion within and across groups.
- **SS2d:** Explain the major themes of anthropological inquiry.

Strand/Theme:
SS3 Time, Continuity, and Change Social studies programs should include experiences that provide for the study of the way human beings view themselves in and over time, so that the learner can:

Standards:

- **SS3a:** describe the changing relationship between human beings and their environment.
- **SS3b:** Compare and contrast differences in life styles for specific geographical locations and identify changes.
- **SS3c:** Describe ways in which technological, political, economic, or environmental changes affect the structure and function of a social system.
- **SS3d:** Relate how people interpret and view history differently.

Strand/Theme:
SS4 Space and Place

Social studies programs should include experiences that provide for the study of space and place, so that the learner can:

Standards:

SS4a: describe the effects of physical environment and population on societal development.

SS4b: explain the effects of geography on patterns of global connections and interdependence.

SS4c: Identify cultural similarities and differences as influenced by the geography of a region.

Strand/Theme:
SS5 Individual Development and Identity

Social studies programs should include experiences that provide for the study of individual development and identity, so that the learner can:

Standards:

SS5a: identify the theories of physical and physiological development of homo sapiens.

SS5b: describe the relationship of the individual to various cultures and ethnic groups.

SS5c: explain how racial, cultural, economic, and religious status influence an individual's self-concept.

Strand/Theme:
SS6 Individuals, Groups, and Institutions

Social studies programs should provide for the study of the interaction among individuals, groups, and institutions, so that the learner can:

Standards:

SS6a: explain how and why groups and institutions are formed.

SS6b: describe how individuals, groups, and institutions interact and how beliefs, values, and attitudes influence and perpetuate those interactions.

SS6c: explain the role of groups and institutions in furthering continuity and change.

SS6d: Identify cultural influences on individuals, groups, and institutions.

Strand/Theme:
SS7 Production, Distribution, and Consumption

Social studies programs should include experiences that provide for the study of how people organize for the production, distribution, and consumption of goods and services, so that the learner can:

Standards:

SS7a: describe how civilizations/nations use resources to meet basic needs.

SS7b: explain how economics are influenced and affected by individuals, groups, and institutions.

SS7c: evaluate the relationship among cultural universals such as food, shelter, and economic systems.

SS7d: explain how economic factors such as the impact of money and monetary systems contribute to cultural change and global interdependence.

Strand/Theme:
SS8 Power, Authority, and Governance

Social studies programs should include experiences that provide for the study of how people create and change structures of power, authority, and governance, so that the learner can:

Standards:

SS8a: explain the development of and differences among political systems.

SS8b: describe the need for and the development of rules and laws.

SS8c: compare government institutions, agencies, and organizations.

SS8d: explain the concepts and development of civil, equal, and universal human rights.

Strand/Theme:
SS9 Science, Technology, and Society

Social studies programs should include experiences that provide for the study of the relationships among science, technology, and society, so that the learner can:

Standards:

SS9a: explore the historical relationship of science and technology to societal systems.

SS9b: evaluate how science and technology have transformed the physical world and human society.

SS9c: determine how humans shape and adapt the environment to meet various needs.

SS9d: explain how changes in values, beliefs, and attitudes have resulted from scientific knowledge

Strand/Theme:
SS10 Global Connections

Social studies programs should include experiences that provide for the study of global connections and interdependence, so that the learner can:

Standards:

SS10a: detail the historical development of a global consciousness and the concept of a world citizen.

SS10b: explain why certain areas of the world have been cradles of civilization.

SS10c: examine behaviors which foster global cooperation and conflict among individuals, communities, and nations.

SS10d: evaluate the effect of cultural conditions and motivations of global cooperation among societies

Social Studies: Economics

Standards Introduction:

The standards of economics emphasize the major concepts in the study of economics. Students use a broad range of economic concepts as they examine the complex nature and essential characteristics of economic systems throughout the world. The problem of scarcity and the resulting need for societies to form economic systems are emphasized. Students focus on the market as the place where the consumers decide how they allocate their spending among competing goods and services. Students analyze the production, distribution, and accumulation of wealth. Students study the topics dealing with supply and demand, money and banking, the role of the federal government, the organization of business, and comparisons among economic systems.

SK – Skills

The Social Studies program promotes essential skills to increase the students ability to acquire information and manipulate data, develop and present policies and debates, construct new knowledge, and participate in groups. Each skill is dependent upon and enriched by all other skills, so that the learner can:

Skills:

- **SK1a:** acquire information by reading print, visual and graphic materials, by on-site observations and by using databases
- **SK1b:** use economic data to engage in hypothetical and real decision making
- **SK1c:** plan and design budgetary graphs that reflect distribution of resources
- **SK1d:** access and use complex electronic databases and communication networks of all types

Strand/Theme:

SS1 Citizenship

Social studies programs should include experiences that provide for the study of the ideals, principles, and practices of citizenship in a democratic republic, so that the learner can:

Standards:

- **SS1a:** describe the role and responsibilities of the citizen within a free enterprise society.
- **SS1b:** explain how actions of citizens can affect the economic system.
- **SS1c:** determine how economic public policies stem from issues of public concern.
- **SS1d:** describe how the values and beliefs of individuals influence different economic situations.

Strand/Theme:

SS2 Culture

Social studies programs should include experiences that provide for the study of culture and cultural diversity, so that the learner can:

Standards:

- **SS2a:** identify the economic values and ideals of various cultures.
- **SS2b:** describe how economics often determines class and status.

Strand/Theme:

SS3 Time, Continuity, and Change

Social studies programs should include experiences that provide for the study of the ways human beings view themselves in and over time, so that the learner can:

Standards:

- **SS3a:** explain the historical development of the leading economic systems.
- **SS3b:** use economic indicators to predict and evaluate economic trends.

SS3c: evaluate the role of institutions and interest groups in furthering economic continuity and change.

SS3d: examine the ways prominent economists have been influenced by their societies and environment.

Strand/Theme:
SS4 Space and Place

Social studies programs should include experiences that provide for the study of space and place, so that the learner can:

Standards:

SS4a: explain how economic patterns are affected by geography.

SS4b: describe how people use the earth's resources to meet their economic needs.

SS4c: explain the relationship between economic necessity and population movement.

Strand/Theme:
SS5 Individual Development and Identity

Social studies programs should include experience that provide for the study of individual development and identity, so that the learner can:

Standards:

SS5a: determine how economics influence individual and group behavior.

SS5b: explain how socioeconomic factors affect self-concept.

SS5c: explain the relationship between socioeconomic factors and personal and cultural opportunity.

Strand/Theme:
SS6 Individuals, Groups, and Institutions

Social studies programs should provide for the study of the interaction among individuals, groups, and institutions, so that the learner can:

Standards:

SS6a: analyze the role of economics in the formation of institutions and groups (e.g., labor unions and corporations).

SS6b: explain how beliefs, values, and attitudes influence a society's economic development.

SS6c: describe how individuals, groups, and institutions influence economics.

Strand/Theme:
SS7 Production, Distribution, and Consumption

Social studies programs should include experiences that provide for the study of how people organize for the production, distribution, and consumption of goods and services, so that the learner can:

Standards:

SS7a: identify and define economic terminology relating to various economic systems.

SS7b: describe the principles and theories economists use to solve economic problems.

SS7c: trace the development of various economic systems.

SS7d: explain how decisions about spending and production made by households, businesses, and governments influence the nation's levels of income, employment, and prices.

Strand/Theme:
SS8 Power, Authority, and Governance

Social studies programs should include experiences that provide for the study of how people create and change structures of power, authority, and governance, so that the learner can:

Standards:

SS8a: explain the relationship between politics and economics.

SS8b: describe the concept of international trade and its relationship to government regulations.

SS8c: evaluate the effects of technology, global economic interdependence, and competition on the development of national policies.

Strand/Theme:
SS9 Science, Technology, and Society

Social studies programs should include experiences that provide for the study of the relationships among science, technology, and society, so that the learner can:

Standards:

SS9a: determine how individuals and societies shape and adapt the environment to meet economic needs.

SS9b: explain how science and technology affect and influence economic development.

SS9c: analyze how technology affects a nation's work force and economy.

Strand/Theme:
SS10 Global Connections

Social studies programs should include experiences that provide for the study of global connections and interdependence, so that the learner can:

Standards:

SS10a: evaluate economic behaviors which lead to and foster global conflicts.

SS10b: explain the basic characteristics of international trade (e.g., absolute and comparative advantage, barriers to trade, exchange rates, and balance of trade).

SS10c: cite examples to illustrate global economic interdependence and competition.

Social Studies: Psychology

Standards Introduction:

The standards of psychology engage students in an exploration of human behavior and the personal characteristics of individuals. Students examine methods used by professional psychologists to study human behavior. Students focus on human growth and development, learning, the effects of emotions on behavior, and adaptation to and interaction in a variety of environments. Students study motivational theory, theories of personality, and mental wellness, and illness.

SK - Skills

The Social Studies program promotes essential skills to increase the students' ability to acquire information and manipulate data, develop and present policies and debates, construct new knowledge, and participate in groups. Each skill is dependent upon and enriched by all other skills so that the learner can:

Skills:

- **SK1a:** acquire information from a variety of sources including written, graphic and experimental sources.
- **SK1b:** use rational decision making strategy for planning and problem solving.
- **SK1c:** conduct interviews and participate in self-awareness and group dynamic activities.
- **SK1d:** complete research through oral and written reports, interviews with resource people and visits to institutions.
- **SK1e:** access and use complex electronic databases and communication networks of all types.

Strand/Theme:

SS1 Citizenship

Social studies programs should include experiences that provide for the study of the ideals, principles, and practices of citizenship in a democratic republic, so that the learner can:

Standards:

- **SS1a:** exhibit sensitivity to attitudes and values of others.
- **SS1b:** recognize the social influence of groups on attitude development, (e.g., conformity, prejudice, and obedience to authority).
- **SS1c:** compare/contrast the effect of communication patterns and leadership styles on group interactions.

Strand/Theme:

SS2 Culture

Social studies programs should include experiences that provide for the study of culture and cultural diversity, so that the learner can:

Standards:

- **SS1a:** describe positive aspects of diversity.
- **SS2b:** explain why environment, cultural attitudes, and goal expectations influence perception of self and others.
- **SS2c:** examine the effects of prejudice on the individual and group.
- **SS2d:** analyze why behaviors do not occur in isolation.

Strand/Theme:

SS3 Time, Continuity, and Change

Social studies programs should include experiences that provide for the study of the way human beings view themselves in and over time, so that the learner can:

Standards:

- **SS3a:** identify classical and modern personality theorists with emphasis on Freud, Skinner, Maslow and Rogers.

SS3b: recognize psychological disorders that "short circuit" a person's view of the world.

SS3c: evaluate the effects of perception, motivation, stress, environment, and personal experiences as they relate to one's view of self and the surrounding world.

Strand/Theme:
SS4 Space and Place

Social studies programs should include experiences that provide for the study of space and place, so that the learner can:

Standards:

SS4a: develop an understanding of the unique nature of one's personal environment through aesthetic modes of literary and visual expression.

SS4b: describe the effects of interaction between people and the environment.

SS4c: explain how geographic location affects one's perception of the world.

Strand/Theme:
SS5 Individual Development and Identity

Social studies programs should include experiences that provide for the study of individual development and identity, so that the learner can:

Standards:

SS5a: evaluate the emotional, intellectual, and physical factors that influence the development of the individual from infancy to old age.

SS5b: examine basic survival, psychological, and self-actualization needs as they relate to individual development and identity.

SS5c: analyze the influence of groups on individual perceptions, prejudices, and values.

Strand/Theme:
SS6 Individuals, Groups, and Institutions

Social studies programs should provide for the study of the interaction among individuals, groups, and institutions, so that the learner can:

Standards:

SS6a: analyze impact of group motives and values on the individual's need to conform.

SS6b: examine how individuals, groups, and institutions react to stress and other emotional stimuli.

SS6c: apply conflict resolution techniques to a variety of scenarios.

Strand/Theme:
SS7 Production, Distribution, and Consumption

Social studies programs should include experiences that provide for the study of how people organize for the production, distribution, and consumption of goods and services, so that the learner can:

Standards:

SS7a: examine the impact of psychological research and media on the economy.

SS7b: evaluate the cost of mental health care services provided by government and/or the private sector.

SS7c: Explain how economics (e.g., employment, unemployment, affluence) influence and affect the behavior of individuals and groups.

Strand/Theme:
SS8 Power, Authority, and Governance

Social studies programs should include experiences that provide for the the study of how people create and change structures of power, authority, and governance, so the learner can:

Standards:

SS8a: identify societal sanctions on unacceptable behavior.

SS8b: locate and access information related to government-sponsored mental health studies and programs.

SS8c: identify laws which have changed educational policies for mentally challenged citizens.

Strand/Theme:
SS9 Science, Technology, and Society

Social studies programs should include experiences that provide for the study of the relationships among science, technology, and society, so that the learner can:

Standards:

SS9a: trace the changes in treatment for the mentally ill and show the impact on the fabric of society.

SS9b: evaluate psychology as a behavioral science.

SS9c: examine the impact of the media on the psychological development of the individual.

SS9d: access sources of information pertaining to jobs and careers in the field of psychology.

SS9e: analyze how age, perception, and emotion affect retrieval and processing of information.

Strand/Theme:
SS10 Global Connections

Social studies programs should include experiences that provide for the study of global connections and interdependence, so that the learner can:

Standards:

SS10a: identify physiological, psychological, and self-actualization needs common to all people.

SS10b: evaluate the effects of media on our perception of the world.

SS10c: discriminate stereotypical and prejudicial messages in the media.

SS10d: analyze the impact of global events on an individual.

Social Studies: Sociology

Standards Introduction:

The standards for sociology deal with the study of the structure of society, its groups, institutions, and cultures. Students investigate societal and cultural phenomena that influence the behavior of groups and individuals. Students study current social problems and use methods of sociological investigation and research.

SK – Skill

The Social Studies program promotes essential skills to increase the students ability to acquire information and manipulate data, develop and present policies and debates, construct new knowledge, and participate in groups. Each skill is dependent upon and enriched by all other skills, so that the learner can:

Skills:

- **SK1a:** plan, design, and develop research projects relative to the study of institutions and society.
- **SK1b:** participate in interviews, conduct case studies, and interact with agencies and community personnel who are working with people.
- **SK1c:** correlate and cross reference social studies materials (indexes, appendices, glossaries).
- **SK1d:** access and use complex electronic databases and communication networks of all types. Select an appropriate strategy to solve a societal problem and determine a rational course of action to solve that problem.

Strand/Theme:

SS1 Citizenship

Social studies programs should include experiences that provide for the study of the ideals, principles, and practices of citizenship in a democratic republic, so that the learner can:

Standards:

- **SS1a:** explain factors that affect social change.
- **SS1b:** recognize group behavior as shown by fads, language, leadership, and tradition.
- **SS1c:** identify how group behavior can be influenced through voting.
- **SS1d:** analyze factors that encourage or impede social mobility.

Strand/Theme:

SS2 Culture

Social studies programs should include experiences that provide for the study of culture and cultural diversity, so that the learner can:

Standards:

- **SS2a:** classify the traits of culture as artifacts, beliefs, practices, or values.
- **SS2b:** explore reasons for cultural diversity.
- **SS2c:** discuss cultural pluralism in societal systems.
- **SS2d:** describe how ethnocentrism and nationalism impact our relationships with other groups.

Strand/Theme:

SS3 Time, Continuity, and Change

Social studies programs should include experiences that provide for the study of the ways human beings view themselves in and over time, so that the learner can:

Standards:

- **SS3a:** describe the changing relationship between human beings and their environment.
- **SS3b:** identify factors that lead to group identification.
- **SS3c:** explore the development and changing roles of the family.

SS3d: explain the impact of women in the work force on society.

SS3e: describe the problems faced by the elderly in societal systems.

Strand/Theme:
SS4 Space and Place

Social studies programs should include experiences that provide for the study of space and place, so that the learner can:

Standards:

SS4a: assess how location affects an individual or a group's perception of the world.

SS4b: recognize the interrelationship between geographical location and behavior.

Strand/Theme:
SS5 Individual Development and Identity

Social studies programs should include experiences that provide for the study of individual development and identity, so that the learner can:

Standards:

SS5a: describe the influences of various historical and contemporary cultures on the life of an individual.

SS5b: assess various institutional influences that affect personal goals.

SS5c: evaluate the effects of social class on individual aspirations and potential.

SS5d: explain how socialization transmits cultural beliefs and values.

SS5e: identify effects resulting from contact between two or more cultures.

Strand/Theme:
SS6 Individuals, Groups, and Institutions

Social studies programs should provide for the study of the interaction among individuals, groups, institutions, so that the learner can:

Standards:

SS6a: apply sociological methodology to the basic institutions in our society.

SS6b: analyze the development of various institutions.

SS6c: identify societies' sanctions for unacceptable behavior.

SS6d: discuss criminal justice systems, and evaluate suggested reforms.

Strand/Theme:
SS7 Production, Distribution, and Consumption

Social studies programs should include experiences that provide for the study of how people organize for the production, distribution, and consumption of goods and services, so that the learner can:

Standards:

SS7a: describe how economic development affects the social system and societal values.

SS7b: describe various ways in which a society creates divisions of labor related to status, class, rank, and prestige.

SS7c: analyze social problems that arise from economic imbalance.

Strand/Theme:
SS8 Power, Authority, and Governance

Social studies programs should include experiences that provide for the study of how people create and change structures of power, authority and governance so that the learner can:

Standards:

SS8a: discuss criminal justice systems, and evaluate suggested reforms.

SS8b: describe how different forms of government (e.g., local, state, national, foreign) address social issues.

SS8c: explain factors that contribute to conflict and cooperation within and among nations.

SS8d: explain factors that contribute to conflict and cooperation within and among nations.

SS8e: analyze ideas and mechanisms to manage conflict and establish order and security.

SS8f: examine recurring issues involving rights, roles, and status of the individual.

Strand/Theme:
SS9 Science, Technology, and Society

Social studies programs should include experiences that provide for the study of the relationships among science, technology, and society, so that the learner can:

Standards:

SS9a: explain and apply existing scientific theory and modes of inquiry examining recurring social issues and problems.

SS9b: analyze how science and technology influence the core values, beliefs, and attitudes of society.

SS9c: evaluate how science and technology have transformed the physical world and human society.

Strand/Theme:
SS10 Global Connections

Social studies programs should include experiences that provide for the study of global connections and interdependence, so that the learner can:

Standards:

SS10a: analyze the interrelationships between national and international institutions.

SS10b: identify and discuss universal human rights issues.

SS10c: explain the causes and effects of xenophobia.

Social Studies: Asian Culture

Standards Introduction:

Asian culture is designed to study the historical and current developments that have influenced culture characteristics of China, Japan, India, Korea and other Asian nations. Students study the historical developments of nations from pre-history to the present. The study of the historical development helps students identify the major characteristics of Asian society and how these characteristics influence foreign affairs, economics, and demographic trends.

SK – Skills

The Social Studies program promotes essential skills to increase the students ability to acquire information and manipulate data, develop and present policies and debates, construct new knowledge, and participate in groups. Each skill is dependent upon and enriched by all other skills, so that the learner can:

Skills:

SK1: interpret climate, topographic, demographic and historical maps.

SK1a: formulate and communicate an opinion based on critical examination of information.

SK1b: use and cite a variety of primary and secondary sources to formulate and defend positions on issues both orally and in writing.

SK1c: design and develop a personal database.

SK1d: access and use electronic databases and communication networks of all types including the Internet.

Strand/Theme:

SS1 Citizenship

Social studies programs should include experiences that provide for the study of the ideals, principles, and practices of citizenship in a democratic republic, so that the learner can:

Standards:

SS1a: describe changes in governments.

SS1b: exhibit tolerance for people from other cultures.

SS1c: be aware of the rights of citizens in societies.

Strand/Theme:

SS2 Culture

Social studies programs should include experiences that provide for the study of culture and cultural diversity, so that the learner can:

Standards:

SS2a: recognize the diversity of Asian cultures.

SS2b: evaluate the roles of families and the influence of language in unifying or dividing Asian peoples.

SS2c: describe and interpret values and attitudes that pose obstacles to cross-cultural understanding.

SS2d: analyze how language, literature, the arts, artifacts, religions, and philosophies have contributed to the transmission of culture.

Strand/Theme:

SS3 Time, Continuity, and Change

Social studies programs should include experiences that provide for the study of the way human beings view themselves in and over time, so that the learner can:

Standards:

SS3a: trace the arrivals of people to Asian lands.

SS3b: discuss economic and social changes that have resulted from contact with foreign nations.

Strand/Theme:
SS4 Space and Place

Social studies programs should include experiences that provide for the study of space and place, so that the learner can:

Standards:

- **SS4a:** analyze geographic explanations for the distribution of Asia's population.
- **SS4b:** compare factors that contributed to the development of industry and agriculture.
- **SS4c:** contrast life in rural and urban areas.
- **SS4d:** analyze the ecological consequences of rapid economic development in Asia.
- **SS4e:** compare land use in Asia with other parts of the world.

Strand/Theme:
SS5 Individual Development and Identity

Social studies programs should include experiences that provide for the study of individual development and identity, so that the learner can:

Standards:

- **SS5a:** evaluate how an individual's view of the world is affected by one's gender, class, religion, education, race, and family.
- **SS5b:** describe experiences that broaden perceptions of Asian cultures.
- **SS5c:** analyze conflicts which develop between one's individual needs and one's obligations and service to their nation.

Strand/Theme:
SS6 Individuals, Groups, and Institutions

Social studies programs should provide for the study of the interaction among individuals, groups, and institutions, so that the learner can:

Standards:

- **SS6a:** assess how family life, women's roles, and minority rights have been impacted by changes in technology, politics, the economy, and the environment.
- **SS6b:** explain how groups and institutions influence and perpetuate people's values, beliefs, attitudes, events, and culture.

Strand/Theme:
SS7 Production, Distribution, and Consumption

Social studies programs should include experiences that provide for the study of how people organize for the production, distribution, and consumption of goods and services, so that the learner can:

Standards:

- **SS7a:** analyze how trade is affected by relationships among Asian nations.
- **SS7b:** describe the impact of international policies on economic development.

Strand/Theme:
SS8 Power, Authority, and Governance

Social studies programs should include experiences that provide for the study of how people create and change structures of power, authority, and governance, so that the learner can:

Standards:

- **SS8a:** describe how cultural views have influenced the development and establishment of power.
- **SS8b:** compare and contrast the political and economic systems in Asia.
- **SS8c:** evaluate the concept of universal human rights in Asia.
- **SS8d:** analyze the influences of foreign nations on Asian governments and economies.

Strand/Theme:
SS9 Science, Technology, and Society

Social studies programs should include experiences that provide for the study of the relationships among science, technology, and society, so that the learner can:

Standards:

SS9a: trace the development of technology and its effects on society.

SS9b: evaluate the conflicting ideas between traditional Asian societies and the modern “Western” culture.

SS9c: discuss the impact of education on a nation’s scientific and technological advancements.

Strand/Theme:
SS10 Global Connections

Social studies programs should include experiences that provide for the study of global connections and interdependence, so that the learner can:

Standards:

SS10a: describe how trade contributed to the exchanges of languages, art, belief systems, and scientific knowledge.

SS10b: analyze conditions and events that led to conflict and cooperation among Asian societies and foreign nations.

SS10c: evaluate the effect of world opinion on Asian policies when discussing human rights, the environment, and territorial disputes.

SS10d: analyze the impact of foreign influence on Asian cultures.

Social Studies: Minority Studies

Standards Introduction: The standards for Minority Studies require students to study the cultural, sociological, and historical development of minorities. Students study the concepts of human, civil, and equal rights. Students examine the role of economical, political, cultural, and social processes in shaping patterns of human interdependence.

SK – Skills The Social Studies program promotes essential skills to increase the students ability to acquire information and manipulate data, develop and present policies and debates, construct new knowledge, and participate in groups. Each skill is dependent upon and enriched by all other skills, so that the learner can:

Skills:

- **SK1:** select an appropriate strategy to solve a problem and determine a rational course of action.
- **SK1a:** use a variety of primary and secondary resources to express and defend personal convictions.
- **SK1b:** participate in persuading, compromising, debating, and negotiating in the resolution of conflicts and differences.
- **SK1c:** participate in interviews, conduct case studies, and interact with agencies and community personnel who are working with people.

Strand/Theme:
SS1 Citizenship Social studies programs should include experiences that provide for the study of the ideals, principles, and practices of citizenship in a democratic republic, so that the learner can:

Standards:

- **SS1a:** identify and explain the reasons for having fair and equitable laws and rules.
- **SS1b:** demonstrate respect and tolerance for all groups.
- **SS1c:** exemplify principles of good citizenship.
- **SS1d:** evaluate and analyze the concepts of liberty and “justice for all.”

Strand/Theme:
SS2 Culture Social studies programs should include experiences that provide for the study of culture and cultural diversity, so that the learner can:

Standards:

- **SS2a:** describe and evaluate values and attitudes that pose obstacles to cross-cultural understanding.
- **SS2b:** identify characteristics of culture and tradition.
- **SS2c:** examine the effects of cultural interactions.
- **SS2d:** analyze how language, literature, the arts, and artifacts transmit varied cultural beliefs and values.
- **SS2e:** Show how cultural values affect one’s personal life.

Strand/Theme:
SS3 Time, Continuity, and Change Social studies programs should include experiences that provide for the study of the way human beings view themselves in and over time, so that the learner can:

Standards:

- **SS3a:** analyze liberty and “justice for all” from a variety of present-day and historical perspectives to include women, Native Americans, African Americans etc.

SS3b: develop timelines that clarify the relationship between historical events and the development of minority groups.

SS3c: identify religious, political and philosophical ideas that have influenced the course of history.

SS3d: trace the evolution and historical significance of oppressed and minority groups.

SS3e: use historical inquiry processes and resources.

Strand/Theme:
SS4 Space and Place

Social studies programs should include experiences that provide for the study of space and place, so that the learner can:

Standards:

SS4a: describe the demographic structure of a population.

SS4b: examine how economic, political, cultural, and social processes interact to shape patterns of human population, interdependence, cooperation, and conflict.

SS4c: trace the development of specific cultural groups in the different regions of the United States.

Strand/Theme:
SS5 Individual Development Identity

Social studies programs should include experiences that provide for the study of individual development and identity, so that the learner can:

Standards:

SS5a: examine personal beliefs and biases as they relate to discrimination.

SS5b: explain how an individual's view of the world is affected by one's gender, class, religion, age, education, race and family.

SS5c: use the perspective of diversity as a framework for the examination of intolerant behaviors.

Strand/Theme:
SS6 Individuals, Groups, and Institutions

Social studies programs should provide for the study of the interaction among individuals, groups, and institutions, so that the learner can:

Standards:

SS6a: predict/assess the effects of government policies on minority groups.

SS6b: explain how individuals, groups, and institutions perpetuate values, beliefs and attitudes.

SS6c: identify groups or historical figures that have influenced our individual or national identity.

SS6d: practice positive interpersonal behavior.

SS6e: examine the impact of intolerance on racial, cultural and religious groups.

Strand/Theme:
SS7 Production, Distribution, and Consumption

Social studies programs should include experiences that provide for the study of how people organize for the production, distribution, and consumption of goods and services, so that the learner can:

Standards:

SS7a: examine how economic changes contribute to civil unrest.

SS7b: identify and analyze how policies are formulated in response to economic demand or the resolution of economic problems.

SS7c: examine the relationship between politics and the distribution of wealth.

SS7d: analyze our economic system and its impact on minorities/cultural groups.

Strand/Theme:
SS8 Power, Authority, and Governance

Social studies programs should include experiences that provide for the study of how people create and change structures of power, authority, and governance, so that the learner can:

Standards:

SS8a: analyze and explain the concepts of human, civil and equal rights.

SS8b: examine the impact of governmental policies on social issues and minority groups.

SS8c: examine how political, economic, cultural and social processes interact to shape patterns of human population, interdependence, cooperation and conflict.

SS8d: identify and analyze the complex nature of decision making to include weighing alternatives and assessing multiple perspectives.

SS8e: analyze current legislation that suggests continued intolerance.

Strand/Theme:
SS9 Science, Technology, and Society

Social studies programs should include experiences that provide for the study of the relationships among science, technology, and society, so that the learner can:

Standards:

SS9a: discuss and explain how science, technology and economic activity have affected cultural and minority groups.

SS9b: analyze how core values, beliefs, and attitudes shape scientific and technological change.

SS9c: compare and contrast changes in standards of living and their impact on minority groups.

SS9d: discuss and explain intolerance within a cause and effect framework making inferences, hypotheses and predictions.

Strand/Theme:
SS10 Global Connections

Social studies programs should include experiences that provide for the study of global connections and interdependence, so that the learner can:

Standards:

SS10a: identify stereotypical and prejudicial messages in the media.

SS10b: analyze the impact of global events on minority groups.

SS10c: Analyze and explain how language, art, music, literature, belief systems, and other cultural elements either connect people or cause conflict and misunderstanding.

Social Studies: Contemporary Issues

Standards Introduction: Students of Contemporary Issues examine contemporary world problem areas. Emphasis is placed upon the role of the United States in these areas. Shaping of United States foreign policy, in addition to studying the relationship among the superpowers, is studied in detail. Students will study about world crises and problems (population, poverty, famine, and environmental degradation).

SK – Skills

SK1: The students will acquire information from a variety of sources:

SK1a: Gather and organize information about a given contemporary event/ issue form a variety of sources.

SK1b: Show relationships between historical events and contemporary events/ issues.

SK1c: Compare and contrast different interpretations of key contemporary events/issues.

SK1d: Evaluate documents related to a contemporary event or issue in terms of reliability, credibility, authority, authenticity, and completeness.

SK1e: Establish a plan to detect bias, distortion of the facts, and propaganda by omission, suppression, or invention of facts.

SK – Skills

SK2: The students will use information for problem solving, decision-making, and planning:

SK2a: Pose analytical questions or hypotheses that suggest solutions for an issue.

SK2b: Formulate conclusions or generalizations that suggest solutions for an issue.

SK2c: Evaluate a decision by raising new questions or issues for further investigation.

SK – Skills

SK3: The students will develop skills in constructive interpersonal relationships and in social participation:

SK3a: Develop an ability to listen actively and critically.

SK3b: Use questioning techniques to understand personal thoughts, develop ideas, or evaluate an event or issue.

SK3c: View contemporary events/issues through the eyes of those who experience them.

SK3d: Investigate the roles and contributions of individuals and groups in relation to key contemporary events/issues.

SK – Skills

SK4: The students will participate effectively in civic affairs:

SK4a: Take, defend, and evaluate positions about attitudes that facilitate thoughtful and effective participation in public affairs.

SK4b: Prioritize the solutions based on established criteria.

SK4c: Propose an action plan to address the issue or to resolve the problem.

SK4d: Evaluate the consequences for each solution or course of action proposed in an action plan.

The issues will be studied under the 10 Themes of Social Studies.

In addition to the content standards, Health Education teachers must instill health literacy skills (HESK) into classroom activities. The six HESK have a two-fold benefit. First, they promote personal, family, and community health. Second, they teach essential and transferable skills that include accessing data, analyzing information, setting goals, and communicating ideas.

Strand:
HESK Health Literacy Skills

The student applies health literacy skills in concert with health concepts to enhance personal, family and community health; that is, the student will:

Standards:

- **HESK1:** access valid health information;
- **HESK2:** practice health-enhancing behavior;
- **HESK3:** analyze influences on health;
- **HESK4:** use interpersonal communications skills to enhance health;
- **HESK5**: use goal setting and decision making skills to enhance health; and
- **HESK6:** advocate for health.

Strand:
HE1 Personal and Community Health

The student understands the basic concepts of hygiene, health habits, and health promotion; that is, the student will:

Standards:

- **HE1a:** evaluate the impact of technology on personal, family, and community health;
- **HE1b:** analyze how family, peers, and community influence the health of the individual;
- **HE1c:** evaluate health practices that delay the onset or reduce the risk of health problems during adulthood;
- **HE1d:** examine environmental health risks in the community;
- **HE1e:** evaluate claims made by promoters of health-related products and services; and
- **HE1f:** analyze personal and community health careers in relation to personal interests and skills.

Strand:
HE2 Safety and Injury Prevention

The student demonstrates understanding of basic concepts related to safety, injury prevention or sudden illness, and prevention of child abuse and child neglect; that is, the student will:

Standards:

- **HE2a:** evaluate the prevalence of risk taking behaviors related to accidents, unintentional injuries and violence among adolescents and young adults;
- **HE2b:** analyze short- and long-term consequences of safe, risky, and harmful behaviors;
- **HE2c:** demonstrate personal safety strategies for preventing/avoiding unsafe and violent situations in the home, at school, and in the community;
- **HE2d:** describe symptoms of potential suicide and recommended preventive actions;
- **HE2e:** Demonstrate steps for CPR and the Heimlich maneuver;
- **HE2f:** analyze choices related to driving and transportation safety; and

HE2g: analyze careers related to safety and injury prevention in relation to personal interests and skills.

Strand:
HE3 Nutrition and Physical Activity

The student understands how healthful nutrition and physical activity contribute to growth and energy and help prevent chronic diseases such as heart disease, cancer, and diabetes; that is, the student will**:**

Standards:

HE3a: analyze physical inactivity and obesity trends in children, adolescents, and adults in the United States since 1995;

HE3b: analyze the complexity of internal and external influences on food choices and eating habits;

HE3c: compare and contrast school, family, and community sources for maintaining balanced nutrition; and

HE3d: report on careers related to physical activity and nutrition in relation to personal interests and skills.

Strand
HE4 Mental Health

The student understands how mental health contributes to general well-being; that is, the student will**:**

Standards:

HE4a: identify signs and symptoms of physical and emotional stress, potential suicide, eating disorders, clinical depression, and mental illness;

HE4b: analyze verbal and nonverbal skills needed to develop and maintain healthful interpersonal relationships;

HE4c: describe the influences of group identity on development of self-esteem and relationships with others;

HE4d: analyze message tactics and protective strategies to manage and diminish bullying, harassment, and other aggressive behaviors;

HE4e: evaluate personal coping strategies that address deployments and military community life;

HE4f: evaluate community mental health resources; and

HE4g: analyze careers related to mental health in relation to personal interests and skills.

Strand
HE5 Alcohol, Tobacco, and Other Drugs

The student understands licit and illicit drugs and how to prevent abuse and access intervention and treatment resources; that is, the student will**:**

Standards:

HE5a: analyze recent statistics for trends related to teenage alcohol, tobacco, and substance use and abuse;

HE5b: explain the importance of taking medicinal drugs in the dosage and duration as prescribed;

HE5c: identify local alcohol and other drug-related laws, including driving-related laws;

HE5d: evaluate local community resources for alcohol, tobacco, and other drug-related interventions and treatments available to teenagers and adults;

HE5e: Set personal goals for resisting peer pressure to use alcohol when underage and any use of tobacco or other illicit drugs;

HE5f: demonstrate avoidance strategies useful when pressured to use alcohol, tobacco, and other illicit drugs; and

HE5g: report on careers related to alcohol, tobacco, and other drug-related intervention and treatment in relation to personal interests and skills.

Strand

HE6 Family Life and Human Sexuality

The student understands the developmental changes that occur as he or she grows and matures through childhood to young adulthood and how these changes prepare one for adult roles in the family and society; that is, the student will:

Standards:

HE6a: analyze the anatomy and physiology of the human reproductive system;

HE6b: analyze roles and responsibilities of family members as they relate to the dynamics of total family health (e.g., external influences, media, job pressures, finances, and loss of family members);

HE6c: analyze issues related to healthful sexual relationships (e.g., respecting the individual's romantic/sexual limits, sexual abuse prevention);

HE6d: analyze routine preventive health practices (e.g., breast and testicular self-examination, and use of barriers to prevent contact with body fluids);

HE6e: analyze how interpersonal communications affect relationships;

HE6f: evaluate the effectiveness of various methods of family planning;

HE6g: describe strategies for preventing and reporting sexual discrimination, assault, harassment, and rape;

HE6h: analyze consequences of teenage pregnancy from different viewpoints;

HE6i: evaluate HIV and STD prevention, treatment, and control strategies; and

HE6j: research careers related to family life and human sexuality based on personal interests and skills.

Physical Education: Required Personal Fitness (9–12)

To a greater extent than in the core academic subjects, Physical Education teachers must infuse personal and social skill development in helping students meet and exceed the content standards. Consequently, the presentation of the Physical Education Standards is preceded by a list of complementary Personal and Social Development Skills (PESK). Including the PESK components in teaching the Physical Education standards is critical in promoting lifelong, healthy physical activity and in realizing the wide range of benefits associated with participation in dance, sports, games, and other physical activities.

Strand:
PESK Personal and Social Development Skills

The student applies responsible personal and social development skills in a physical activity setting. In the Personal Fitness course all students will:

Standards:

- **PESK1:** participate fully and communicate cooperatively with others;
- **PESK2:** perform activities safely and follow rules of etiquette and ethical behavior;
- **PESK3:** display age appropriate self-control and discipline;
- **PESK4:** display a willingness to receive and use feedback to improve performance;
- **PESK5:** accept the decisions of and respond positively to teachers/officials in charge of games/activities;
- **PESL6:** choose healthful physical activities to experience fun, challenge, self-expression and/or social interaction;
- **PESK7:** display an interest in and assist and encourage others' efforts;
- **PESK8:** display behaviors that are supportive and inclusive;
- **PESK9:** self-initiate behaviors that contribute to personal and partner/group effort;
- **PESK10:** adjust behavior to prevent/reconcile conflicts.

Strand:
PE1 Motor Skills and Movement Patterns

Competency in motor skills and movement patterns is needed to perform a variety of physical activities. In the Personal Fitness course, all students will:

Standards:

- **PE1a:** demonstrate proper form and execution of warm-up and cool-down exercises specific to selected physical fitness development activities;
- **PE1b:** demonstrate proper muscle-stretching techniques in flexibility development activities;
- **PE1c:** demonstrate proper posture and training techniques in muscular strength and endurance activities; and
- **PE1d:** demonstrate proper posture and training techniques in aerobic fitness activities.

Strand:
PE2 Physical Activity and Fitness

A physically active lifestyle is essential to maintain a health-enhancing level of physical fitness. In the Personal Fitness course, all students will:

Standards:

- **PE2a:** engage in a self-assessment of health- and skill-related fitness;
- **PE2b:** analyze fitness assessment data, set goals, and implement a personal plan for physical fitness development;

PE2c: apply FITT (frequency, intensity, time, and type) training principles to aerobic fitness development activities based on personal fitness goals;

PE2d: evaluate personal fitness development plan and progress toward achievement of personal fitness goals;

PE2e: analyze the relationship of aerobic fitness (cardiovascular and cardio-respiratory) to disease prevention and heart-rate recovery after vigorous physical activity;

PE2f: record and analyze progress in reaching personal fitness development goals in a muscular stretching and strengthening program;

PE2g: record and analyze progress in reaching personal fitness development goals in an aerobic fitness development program;

PE2h: examine how physical fitness development can promote health and wellness throughout life;

PE2i: identify reliable sources of fitness-related information on the Internet;

PE2j: measure personal body composition and distinguish the important functions of lean and fat body mass;

PE2k: examine the relationship between proper posture, body mechanics, and efficient movement in selected physical fitness activities; and

PE2l: identify physical exercises that can be harmful to the body and explain why they should be avoided (e.g., neck circles, deep knee bends, double leg lifts, back arching).

Physical Education: Required Lifetime Sports (9–12)

To a greater extent than in the core academic subjects, Physical Education teachers must infuse personal and social skill development in helping students meet and exceed the content standards. Consequently, the presentation of the Physical Education Standards is preceded by a list of complementary Personal and Social Development Skills (PESK). Including the PESK components in teaching the Physical Education standards is critical in promoting lifelong, healthy physical activity and in realizing the wide range of benefits associated with participation in dance, sports, games, and other physical activities.

Strand:
PESK Personal and Social Development Skills

The student applies responsible personal and social development skills in a physical activity setting. In the Lifetime Sports course all students will:

Standards:

- **PESK1:** participate fully and communicate cooperatively with others;
- **PESK2:** perform activities safely and follow rules of etiquette and ethical behavior;
- **PESK3:** display age appropriate self-control and discipline;
- **PESK4:** display a willingness to receive and use feedback to improve performance;
- **PESK5:** accept the decisions of and respond positively to teachers/officials in charge of games/activities;
- **PESL6:** choose healthful physical activities to experience fun, challenge, self-expression and/or social interaction;
- **PESK7:** display an interest in and assist and encourage others' efforts;
- **PESK8:** display behaviors that are supportive and inclusive;
- **PESK9:** self-initiate behaviors that contribute to personal and partner/group effort;
- **PESK10:** adjust behavior to prevent/reconcile conflicts.

Strand:
PE1 Motor Skills and Movement Patterns

Application of movement concepts and procedures is needed to perform a variety of physical activities. In the Lifetime Sports course, all students will:

Standards:

- **PE1a:** demonstrate competency in basic skills in a few lifetime sports;
- **PE1b:** evaluate personal progress towards skill competency;
- **PE1c:** analyze and adjust performance using informal self- and peer assessment;
- **PE1d:** set realistic, personal skill development goals;
- **PE1e:** monitor progress and modify strategies for achieving personal lifetime sports skills goals; and
- **PE1f:** demonstrate skill in applying rules and strategies in a few lifetime sports.

Strand:
PE2 Physical Activity and Fitness

A physically active lifestyle is essential to maintain a health-enhancing level of physical fitness. In the Lifetime Sports course, all students will:

Standards:

- **PE2a:** engage in a variety of lifetime sports that promote personal health and fitness goals, documenting frequency, duration, and reasoning;

PE2b: develop personal warm-up and cool-down procedures tailored for specific lifetime sports;

PE2c: apply appropriate stretching and strengthening exercises in preparation for lifetime sports participation;

PE2d: analyze fitness level conditioning procedures associated with readiness for lifetime sports participation;

PE2e: demonstrate appropriate body alignment and breathing when performing lifetime sport skills;

PE2f: analyze common lifetime sports injuries and their prevention and treatment;

PE2g: assess lifetime sports opportunities available for school-age youth in the community; and

PE2h: modify rules, equipment, facilities to meet varying conditions for lifetime sports participation.

Physical Education: Required Physical Activity and Nutrition (9–12)

To a greater extent than in the core academic subjects, Physical Education teachers must infuse personal and social skill development in helping students meet and exceed the content standards. Consequently, the presentation of the Physical Education Standards is preceded by a list of complementary Personal and Social Development Skills (PESK). Including the PESK components in teaching the Physical Education standards is critical in promoting lifelong, healthy physical activity and in realizing the wide range of benefits associated with participation in dance, sports, games, and other physical activities.

Strand:
PESK Personal and Social Development Skills

The student applies responsible personal and social development skills in a physical activity setting. In the Physical Activity and Nutrition course all students will:

Standards:

- **PESK1:** participate fully and communicate cooperatively with others;
- **PESK2:** perform activities safely and follow rules of etiquette and ethical behavior;
- **PESK3:** display age appropriate self-control and discipline;
- **PESK4:** display a willingness to receive and use feedback to improve performance;
- **PESK5:** accept the decisions of and respond positively to teachers/officials in charge of games/activities;
- **PESL6:** choose healthful physical activities to experience fun, challenge, self-expression and/or social interaction;
- **PESK7:** display an interest in and assist and encourage others' efforts;
- **PESK8:** display behaviors that are supportive and inclusive;
- **PESK9:** self-initiate behaviors that contribute to personal and partner/group effort;
- **PESK10:** adjust behavior to prevent/reconcile conflicts.

Strand:
PE1 Motor Skills and Movement Patterns

Competency in motor skills and movement patterns is needed to perform a variety of physical activities. In the Physical Activity and Nutrition course, all students will:

Standards:

- **PE1a:** plan and implement a personal/group physical activity learning project, focusing on an alternative to traditional sports;
- **PE1b:** demonstrate knowledge and movement skill readiness in an activity that is an alternative to traditional sports;
- **PE1c:** demonstrate conditioning activities that develop the basic fitness qualities needed to perform a selected alternative physical activity; and
- **PE1d:** self-assess performance of alternative physical activity skills and evaluate and adjust alternative physical activity learning plan.

Strand:
PE2 Physical Activity and Fitness

A physically active lifestyle is essential to maintain a health-enhancing level of physical fitness. In the Physical Activity and Nutrition course, all students will:

Standards:

- **PE2a:** identify the health and fitness benefits of selected alternative physical activity;

PE2b: evaluate personal fitness requirements for participation in selected alternative physical activity;

PE2c: understand the relationship of caloric intake, energy expenditure, and weight management;

PE2d: analyze personal energy balance by documenting personal food intake and daily physical activity, using food and activity diaries; and

PE2e: identify ways to balance nutritional needs with physical activity energy expenditure.

Foreign Language: Level III

Performance Descriptions: In Level III, students continue to develop oral proficiency skills. This enables them to perform routine language functions on a variety of topics. Students are able to ask and answer questions, sustain conversation and express ideas with increasing facility. Students continue to develop reading and writing skills appropriate to the level in cultural contexts. Students demonstrate increased appreciation of the culture and people of the target language.

Strand:

FL1 Speaking, Listening, and Understanding

Speaking, listening, and understanding are fundamental processes which people use to express, explore, and learn about ideas. The student speaks and understands the target language as a result of various instructional strategies focusing on oral proficiency. These include use of the target language in familiar situations to enhance vocabulary development and oral proficiency skills.

Standard:

FL1a: The student understands and interprets spoken expression in the target language on a variety of topics with increasing facility, and comprehends short conversations and narrative passages. The student:

Components:

FL1a.1: builds and expands vocabulary in the target language;

FL1a.2: continues to refine an understanding of the sound system of the target language; and discriminates individual sounds and intonation of the target language;

FL1a.3: understands basic idiomatic expressions and cognates;

FL1a.4: responds appropriately to spoken commands; and

FL1a.5: comprehends the main ideas in a variety of spoken presentations.

Examples:

Examples of activities through which students provide evidence of listening and understanding include:

- *Understand and respond to appropriately to teacher instructions.*
- *Listen to popular songs and interpret meaning.*
- *Answer simple questions about a listening activity in the target language with graphic fill-ins.*
- *Listen for a series of events in a listening activity.*

Standard:

FL1b: The student engages in conversations; provides and obtains information, expresses feelings and emotions, and exchanges opinions in the target language. The student:

Components:

FL1b.1: engages in basic classroom interactions;

FL1b.2: uses basic idiomatic expressions and expressions of courtesy;

FL1b.3: uses the target language in everyday situations; and

FL1b.4: demonstrates increasing control of vocabulary.

Examples:

Examples of activities which provide evidence of speaking include:

- *Create short conversations and narrative passages.*
- *Formulate answers to questions based on personal experiences.*
- *Initiate questions.*
- *Discuss simple topics related to self and immediate environment.*
- *Describe and compare qualities, people, and things.*
-

Strand:

FL2 Reading and Writing

Reading is a process of understanding the written target language. It requires students to recognize the printed word, interpret the text, and demonstrates comprehension of the text in the target language. Writing is a process through which the writer shapes the target language to communicate effectively.

Standard: **FL2a:** The student reads material in the target language. The student:

Component:

FL2a.1: reads and comprehends written directions;

FL2a.2: reads a passage;

FL2a.3: recognizes cognates and words in context; and

FL2a.4: reads aloud using correct pronunciation, inflection, and intonation.

Examples: *Examples of activities through which students provide evidence of reading material in the target language include:*

- *Organize key information read using essays, newspapers, magazines and internet resources.*
- *Categorize newspaper clippings about employment opportunities, apartment availability, furniture, restaurants and entertainment.*
- *Recite a simple literary passage.*

Standard: **FL2b:** The student comprehends and interprets the main idea of a variety of written materials in the target language. The student:

Components:

FL2b.1: expands reading vocabulary;

FL2b.2: reads and comprehends functional readings and/or literature from a variety of genres;

FL2b.3: predicts meaning of key words in a selection; and

FL2b.4: understands new vocabulary with contextual clues.

Examples: *Examples of activities through which students provide evidence of reading material in the target language include:*

- *Analyze functional text as well as novice level literary text.*
- *Produce commercials from media sources.*
- *Summarize current event acquired via the internet.*

Standard: **FL2c:** The student writes words and simple expressions in the target language. The student:

Components:

FL2c.1: writes forms of familiar spoken language using idiomatic expressions and colloquialisms;

FL2c.2: researches and writes reports on a variety of topics; and

FL2c.3: writes descriptions about diverse themes using variations of patterns previously learned.

Examples: *Examples of activities through which students provide evidence writing in the target language include:*

- *Write about current events.*
- *Investigate historical events and create time lines.*
- *Clarify directions.*
- *List recommendations on a variety of topics (e.g., how to be a good student, travel etc.).*
- *Creates travel or other brochures.*

Standard: **FL2d:** The student demonstrates written communication in the target language for a variety of needs. The student:

Components:
FL2d.1: writes questions to obtain information;
FL2d.2: writes appropriate answers to questions on familiar topics; and
FL2d.3: creates a writing sample with point of view and purpose.

Examples: *Examples of activities through which students provide evidence writing in the target language include:*

- *Write a "Dear Abby" letter seeking advice.*
- *Respond to a classmate's "Dear Abby" letter.*
- *Produce pen pal letters, e-mails, and chat with other students via the internet.*
- *Review a movie or a restaurant.*
- *Complete an authentic document requesting information (e.g., job and visa application, or document from the internet).*

Standard: **FL2e:** The student demonstrates communicative and interpretative skills in both reading and writing in the target language. The student:

Component: **FL2e.1:** reads and comprehends material, and produces written work that reflects understanding of text.

Examples: *Examples of activities through which students provide evidence of reading material and writing in the target language include:*

- *Interpret an essay question and write a response following set criteria.*
- *Read a selection on a controversial topic and write responses to be presented in a classroom debate.*
- *Read historical information and write about the importance of a particular event.*
- *Analyze cultural selections and write comparisons and contrasts to their own heritage.*

Strand:
FL3 Cultures

The understanding of another culture includes the relationships among the perspectives (attitudes, values), the practices (patterns of social interactions), and the products (foods, book, games, etc,) of a society.

Standard: **FL3a:** The student demonstrates an understanding of the different aspects of the culture studied. The student:

Components:
FL3a.1: recognizes attitudes, values and beliefs;
FL3a.2: explores formal social, political and economic institutions;
FL3a.3: examines celebrations, holidays, traditions, folk stories, legends;
FL3a.4: discovers foods; and
FL3a.5: explores fine arts, literature and entertainment.

Examples: *Examples of activities through which students provide evidence of cultural understanding and sensitivity of the target language include:*

- *Draw a picture that exemplifies the stereotype of the average person of the culture studied. (Students compare the pictures with those of the other students and tally the most recurrent traits.)*
- *Learn to associate the main accents with the different regions of the country.*
- *Choose a typical product of the culture studied and present it to the class (ex: model car, ice cream etc.).*

- *Learn about the school system of the culture studied.*
- *Listen and learn the most popular fairy tales of the culture studied.*
- *Learn about dishes from different regions.*
- *Listen, learn, and sing a song from a popular pop singer.*
- *Bring the covers of the most popular magazines in the target language in order to identify and discuss the most famous people of the moment.*

Standard: **FL3b:** The student reinforces and expands their knowledge of other disciplines through the culture studied, and vice versa. The student:

Components:
FL3b.1: connects information studied in other subjects to their learning of the culture studied and vice versa; and

FL3b.2: applies the concepts acquired in the culture studied in other curricular areas.

Examples: *Examples of activities through which students provide evidence of cultural understanding and sensitivity of the target language include:*

- *Search (and possibly visit) a statue or a famous piece of art of the country of the culture studied and make a model or a drawing for art class.*
- *Learn and identify some cognates and borrowings from the target language and his/her native language and report them in his/her English class.*
- *Report in geography class on the landscape of the culture studied as a project.*

Standard: **FL3c:** The student expands his/her views of the world through the exploration of the culture studied by making parallels between the culture studied and his/her own. The student:

Components:
FL3c.1: discovers and compares similarities and differences between the two cultures;

FL3c.2: develops an awareness and understanding of alternative views;

FL3c.3: analyzes and evaluates similarities and differences between the two cultures; and

FL3c.4: develops the ability to hypothesize about cultural systems in general.

Examples: *Examples of activities through which students provide evidence of cultural understanding and sensitivity of the target language include:*

- *Identify and compare the different ways to express respect in the culture studied and his/her own culture.*
- *Learn about the most popular children's games in the culture studied.*
- *Compare the ads from two magazines of both cultures and look for the products that are advertised most frequently.*
- *Hypothesize how a newspaper from the culture studied would advertise a certain product (a simple catchy slogan, etc.) after being given a logo that represents a certain product.*

Standard: **FL3d:** The student demonstrates cultural understandings by interacting in real-life situations, applying appropriate social protocols and language. The student:

Components:
FL3d.1: communicates on a personal level with target language speakers;

FL3d.2: participates in community celebrations in the target culture; and

FL3d.3: involves him/herself in local community events and activities or simulated real-life situations.

Examples:

Examples of activities through which students provide evidence of cultural understanding and sensitivity of the target language include:

- *Write a letter or email to a student of the same grade in a school in the culture studied.*
- *Call the weather forecast office and inquire about the forecast in the culture studied for the weekend.*
- *Send a birthday holiday card to a native speaker in the community of the culture studied.*
- *Write a letter of recommendation for a friend who would like to work as a volunteer in the local hospital during the weekends.*

Strand:
VA1 Media, Techniques, and Processes

Demonstrates understanding and can apply media, techniques, and processes.

Standards:

VA1a: The student demonstrates increasing proficiency in the production of two-and three-dimensional art forms by using a variety of materials and advanced technology.

VA1b: The student produces a portfolio that incorporates a variety of works of art to include media, technological, tools, techniques, and processes.

VA1c: The student uses and explains how media, technological tools, techniques, and processes are used to solve visual art problems.

VA1d: The student uses art materials and tools, including technology, in a safe and responsible manner.

VA1e: The student understands and analyzes the elements and principles of color theory.

Strand:
VA2 Structures and Functions

Demonstrates knowledge of structures and functions.

Standards:

VA2a: The student demonstrates an increased proficiency in the use of the elements of art and principles of design.

VA2b: The student creates works of art that demonstrate a variety of purposes and intents.

VA2c: The student selects and uses the elements of art and principles of design to communicate ideas, solve visual problems and develop personal expression.

Strand:
VA3 Subject Matter, Symbols, and Ideas

Chooses and evaluates a range of subject matter, symbols, and ideas.

Standards:

VA3a: The student creates a work of art to communicate intended meaning using information and ideas from a variety of sources.

VA3b: The student considers and compares the sources for subject matter, symbols and ideas in personal work and that of others.

Strand:
VA4 History and Culture

Demonstrates understanding of the visual arts in relation to history and cultures.

Standards:

VA4a: The student demonstrates knowledge of and compares the characteristics and purposes of works of art representing various cultures, historical periods, and artists.

VA4b: The student recognizes and describes works of art according to artist and style.

VA4c: The student compares and contrasts works of art in terms of history, aesthetics and culture.

VA4d: The student compares the cultural diversity of American art with that of the host nation and other cultures.

Strand:
VA5 Characteristics and Merits of Work

Reflects upon and assesses the characteristics and merits of their work and the work of others.

Standards:

VA5a: The student demonstrates knowledge and understanding that works of art can be analyzed by using a formal system of evaluation to determine merit without bias.

VA5b: The student describes and analyzes visual characteristics of works of art using visual art terminology.

VA5c: The student compares and contrasts the quality, craftsmanship, and effectiveness of personal work and that of others by using a formal system.

Strand:
VA6 Connections to Other Disciplines

Makes connections between the visual arts and the other disciplines.

Standards:

VA6a: The student identifies how art and other disciplines are interrelated, and that they play a role in daily life.

VA6b: The student demonstrates knowledge and understanding that there are a variety of careers and leisure pursuits in the visual arts.

VA6c: The student applies visual art problem-solving skills to other disciplinary studies.

VA6d: The student identifies and compare works of art that share similar subjects, themes, purposes, historical periods or technologies.

Strand:
VA7 Technology Integration

Understands and creates art through technology.

Standards:

VA7a: The student knows and understands that technology is an important art tools for the 21st Century.

VA7b: The student creates original works of art by accessing and manipulating images from a variety of sources.

VA7c: The student creates a portfolio that demonstrates increased competency and complexity by using technological tools and materials.

Music: Grade 9 - 12

Strand:

MU1 Performs alone and/or with others a varied repertoire of music

Standards:

MU1a: The student performs Level 3 (Refer to Glossary) instrumental/3-part vocal music demonstrating correct posture, playing position, breath, bow, or stick control.

MU1b: The student demonstrates well-developed ensemble skills with technical accuracy in tone quality, articulation, pitch, phrasing, and rhythm.

MU1c: The student demonstrates expression, interpretation and harmonic balance in performance and sight-reading.

Strand:

MU2 Reads and notates music

Standards:

MU2a: The student reads and notates music with changes of simple meters using whole, half, quarter, eighth, sixteenth, and dotted notes/rests, to include sight-reading short examples and taking rhythmic dictation.

MU2b: The student identifies tonal centers; reads and notates music in at least 8 keys to include some relative minors.

MU2c: The student interprets standard symbols and terms for tempo, articulation, and expression.

Strand:

MU3 Listens to, responds to, and describes music

Standards:

MU3a: The student identifies and explains musical events and techniques that are used to provide unity, variety, and tension and release in a musical work.

MU3b: The student uses appropriate terminology to describe musical events occurring in musical performance.

MU3c: The student analyzes aural examples of a varied repertoire and indicates the use of the elements of music and expressive devices.

MU3d: The student creates simple melodies, harmonies, arrangements, or improvisations based on given criteria.

Strand:

MU4 History and Culture Demonstrates understanding of music in relation to history and culture.

Standards:

MU4a: The student classifies music according to genre, style, medium, historical period, and culture.

MU4b: The student compares and contrasts music from various styles and cultures, to include the host nation.

MU4c: The student performs music of different historical periods and cultures.

Strand:
MU5 Characteristics and Merits of Works and Performances

Reflects upon and assesses the characteristics and merits in performances in their music and the music of others.

Standards:

MU5a: The student uses specific criteria for making informed, critical evaluations of the quality and effectiveness of performances, musical works, and arrangements.

MU5b: The student uses specific criteria for evaluating his or her own performances or arrangements.

MU5c: The student evaluates a performance, composition, or arrangement by comparing it to similar or exemplary works.

Strand:
MU6 Connections to Other Disciplines

Makes connections between music and the other disciplines.

Standards:

MU6a: The student integrates music with other disciplines.

MU6b: The student identifies the contributions of music and other disciplines in a multi-disciplinary project or performance.

MU6c: The student researches music career opportunities.

Strand:
MU7 Technology Integration

Understands and creates music through technology.

Standards:

MU7a: The student uses technological tools to research music, musicians, careers, historical periods, and interdisciplinary connections.

MU7b: The student participates in creating a simple musical work using a variety of technological tools with increased competency.

MU7c: The student uses technology for self-assessment.

MU7d: The student develops an awareness of music career opportunities in technology.