Virginia's General Educational Development Content Standards

Virginia Department of Education
Office of Adult Education and Literacy

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When the GED content standards development process began in 2002, the steering committee quickly agreed that it was crucial for the standards to be written and tested by a team that included teachers and administrators from a wide variety of programs, as well as state staff and outside content experts. The committee and the Office of Adult Education and Literacy recognize the outstanding efforts of the following teachers, specialists, and consultants.

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Preface

Goals for Standards-based Education

To provide a uniform framework for adult education curriculum and instruction throughout Virginia

To align content standards, learner assessment, and program performance standards

Virginia Dept. of Education, Office of Adult Education and Literacy

> Content standards are meant to serve as general guides for curriculum and should ideally be general, visionary, and not at all prescriptive (Stites, 1999).

How do you use the Virginia Adult GED Content Standards?

These standards have been written and disseminated to provide a framework for instruction and program design in adult GED programs in Virginia. They are not prescriptive but, rather, comprise a guide for what it is expected of each learner to know and be able to do in order to pass the GED tests. Programs and practitioners should not have to discard their current curricula in order to incorporate these standards into their lessons. These standards do not necessarily follow the scope and sequence of any commercial textbook, established curriculum, or other set of state standards, though many of each of these have been consulted in the research and writing of these standards.

How did these standards come into being?

For the Virginia GED Content Standards to be the field-based document that it is, many adult education practitioners across the state played and continue to play active roles in its development. Teachers, specialists, and administrators played many roles in the research, writing, piloting, and revising of this document. Their expertise, advice, and wisdom have insured that this document reflects what GED learners should know and be able to do to be successful on the tests and in their everyday lives.

GED practitioners submitted applications to participate in drafting the GED standards. Members of the standards committee reviewed these applications and selected the members of the writing teams that met in Roanoke in June 2003. The members were chosen for their expertise, the type of program in which they taught, and the geographic area of their programs to ensure the best representation possible of the entire state.

These writing teams, one for each content area (reading, writing, mathematics, science, and social studies), were composed of a team leader (a Virginia practitioner chosen by peers), a content area expert, three additional Virginia GED practitioners, and a representative from the planning committee. Once these five teams drafted the standards, the drafts underwent several levels of review. First, a national standards expert, Susan Pimentel, reviewed the content and provided extensive feedback. At the same time, five GED instructors who had not participated in the writing process reviewed the standards for clarity and applicability to the classroom. Two practitioners – a teacher and a program manager – edited the first draft for consistency of language and format. Finally, during the spring of 2006, a field test in five GED programs and six Department of Correctional Education programs was conducted. Extensive comments from these pilot sites were compiled with Pimentel's feedback, and this information guided a revision retreat held in August 2006.

As should be evident, the Virginia GED Content Standards are a product of many experienced and informed minds. The committee and the Office of Adult Education and Literacy are grateful to them for their commitment to benefit the field of adult education and literacy and, ultimately, the lives of their learners. A full list of all the contributors is included in the acknowledgment pages.

Language Arts, Writing

The GED writing test is a two-part examination requiring test takers to use the standards of Edited American English (EAE) to recognize and correct errors in usage, mechanics, sentence structure, and paragraph organization, as well as to write a unified and coherent essay. By preparing for this test, learners also gain skills that will serve them in their various roles as parents, workers, and citizens.

Language Arts, Writing, Part 1 is a multiple-choice assessment that presents learners with excerpts of authentic documents from the home, workplace, and community. The questions in Part I require the learner to understand the meanings and relationships of words and ideas. Additionally, the test requires learners to rearrange sentences and paragraphs in the most effective order. These skills reflect everyday writing, proofreading, and editing tasks.

Language Arts, Writing, Part 2 measures technical mastery of skills and requires the writer to demonstrate creative mental processes: imagination, recollection, planning, logical organization, and elaboration of ideas by using clear connections and precise word choices. In Part 2, learners are challenged to create an essay that presents a main idea addressing a prompt, to establish logical organization, to achieve coherent development with specific and relevant details and examples, to control sentence structure using the conventions of Edited American English, and to demonstrate varied and precise word choices.

The GED Writing Standards are organized as building blocks for developing a mastery of the essential components of coherent writing. The order of progression of the writing standards begins with word usage and punctuation, proceeds to sentence construction and paragraph organization, and culminates with essay development.

These standards are a guide for teachers to assist their learners in attaining necessary writing skills. Effective writing reflects the use of these skills to express learners' personal experiences and opinions and empowers learners to communicate more confidently. Ultimately, their mastery will help them reach their full potential as parents, workers, and citizens.

Language Arts, Writing, Part I

Content Area: Usage

Standard Statements	References
LAW.1 The learner will apply the subject and verb number agreement rules to perform the following. a) Choose the correct subject and verb when they are separated by a phrase or clause b) Choose the correct subject and verb when the verb precedes the subject in a sentence c) Choose the appropriate verb for a **collective noun** LAW.2 The learner will apply the verb tense rules to perform the following. a) Recognize and correct errors in verb tense b) Select tense using context clues c) Recognize and correct errors in regular and irregular verb forms LAW.3 The learner will apply pronoun rules to perform the following. a) Recognize and choose the correct pronouns b) Recognize and choose the correct **subject** and **object** pronouns c) Recognize and correct vague pronoun references d) Recognize and correct faulty agreement between pronouns and **antecedents**	GED Test Writer's Manual, 11-12 Official GED Practice Test Administrator's Manual II- 4 & 5 Virginia Standards of Learning: Writing 9.7 Texas Standardized Curriculum Framework 1.02

Content Area: Writing Mechanics

Standard Statements	References
LAW.4 The learner will apply the capitalization rules to the following. a) Proper nouns and proper adjectives b) Days of the week, months of the year, and seasons c) Titles LAW.5 The learner will apply the comma usage rules to perform the following. a) Separate a list of items in a series	Virginia Standards of Learning: Writing 9.7 GED Test Writer's Manual, 12-13 Official GED Practice Test Administrator's Manual II- 4 & 5

b) Separate **independent clauses** joined by a **conjunction** c) Separate introductory elements from the rest of a sentence d) Separate non-essential **appositives** and **parenthetical expressions** from the rest of the sentence e) Eliminate unnecessary commas f) Separate nouns of direct address LAW.6 The learner will apply spelling rules to perform the following. a) Spell singular and plural **possessive nouns** with the appropriate use of an apostrophe b) Spell **possessive pronouns** c) Identify correct use of apostrophes in contractions d) Differentiate between or among frequently confused **homonyms**	

Content Area: Sentence Structure

Standard Statements	**References**
LAW.7 The learner will apply sentence structure rules to perform the following. a) Recognize and correct sentence fragments b) Recognize and correct run-on sentences LAW.8 The learner will apply modifier rules to perform the following. c) Recognize and correct **misplaced modifiers** d) Recognize and correct **dangling modifiers** LAW.9 The learner will apply parallelism rules to perform the following. a) Recognize and correct items in a list that lack **parallel structure** b) Recognize and correct items in a list when combinations of words, **phrases** and **clauses** are used together	Virginia Standards of Learning: Writing 9.7 Texas Standardized Curriculum Framework, 1.03 GED Test Writer's Manual, 10 Official GED Practice Test Administrator's Manual II- 4 & 5

Content Area: Organization

Standard Statements	**References**
LAW.10 The learner will recognize paragraph structure rules in order to perform the following.	Official GED Practice Test

a) Identify the main idea and supporting details b) Properly place a topic sentence in a paragraph LAW.11 The learner will recognize paragraph development rules in order to perform the following. a) Determine proper placement of transitions to maintain logical flow of ideas, sentences, or paragraphs b) Remove, revise, or edit sentences that do not contribute to the coherence of the paragraph c) Combine related ideas into one effective paragraph d) Divide documents into appropriate paragraphs	Administrator's Manual II- 4 & 5 Virginia Standards of Learning: Writing 9.6, 11.7 Texas Standardized Curriculum Framework 1.04.2, 1.04.7, 1.06.2

Language Arts, Writing, Part II

Content Area: Essay	
Standard Statements	**References**
LAW.12 The learner will use pre-writing strategies to perform the following. a) Generate ideas for writing b) Organize ideas for writing LAW.13 The learner will organize ideas for writing in order to perform the following. a) Present a main idea that addresses the prompt b) Develop supporting ideas c) Establish a clear and logical organization LAW.14 The learner will develop a well-balanced essay using substantial and concrete support to perform the following. a) Incorporate personal observations b) Include relevant explanations c) Provide specific details/examples LAW.15 The learner will write an essay to perform the following. a) Demonstrate control of sentence structure b) Observe the conventions of **Edited American English** c) Exhibit varied and precise word choices	

Language Arts, Reading

The GED Language Arts, Reading Test assesses an individual's ability "to read and understand texts similar to those encountered regularly in high school English classrooms (IRM, p. 4). Two types of text are the focus of the assessment: literary and nonfiction. Most (75%) of the 40 test items focus on literary texts; the remainder of the test questions (25%) require individuals to focus on nonfiction.

Elements in Bold

Words in **bold** indicate areas specific to reading with which teachers will want to be well acquainted.

Literary Selections

Five selections on the test come from the following areas:

- *Prose Fiction*: The test will include one selection from each of three periods: before 1920, 1920-1960, and after 1960.
- *Poetry*: The test will include one poem (or excerpt) comprised of 8-25 lines.
- *Drama*: The test will include one 200- to 400-word selection.

Nonfiction Selections

Two selections on the test are drawn from the following areas:

- *General Nonfiction:* This area includes biographies, autobiographies, newspaper and magazine articles, editorials, speeches, reports, etc.
- *Reviews of the Arts:* This area includes commentaries and reviews of television programs, movies, and books.
- *Workplace and Community Documents*: This area includes memos, letters, manuals, and legal documents.

The test items require individuals to apply a range of cognitive skills, including comprehension, analysis, synthesis, and application. Sixty to seventy percent of the questions assess the individual's ability to analyze text and integrate information presented throughout a piece of text or across multiple texts.

Content Area: Prose Fiction

Standard Statements	References
LAR.1 The learner will identify and rephrase the **stated** or **implied theme**. LAR.2 The learner will recognize **cause** and **effect** in the plot and character actions. LAR.3 The learner will **compare** and **contrast** characters' personalities, actions, and motivations. LAR.4 The learner will identify **elements of plot**. LAR.5 The learner will determine narrator's **point of view**. LAR.6 The learner will interpret **tone**, **mood**, and **style**. LAR.7 The learner will analyze a **character's traits** and **motivation.** LAR.8 The learner will identify and interpret **figurative language**, **symbols**, and **imagery**. LAR.9 The learner will determine the meaning of unfamiliar words through **context**.	Virginia Standards of Learning: Reading 8.5, 8.6, 9.3, 10.3 GED Language Arts, Reading Test: Item Writer's Manual, 20, 29 Official GED Practice Test, PC #1, PD #3, PD #14, PD #20, PE #18

Content Area: Poetry

Standard Statements	References
LAR.10 The learner will interpret **stated** or **implied theme**. LAR.11 The learner will recognize the effect of **rhythm** and **rhyme**. LAR.12 The learner will interpret **figurative language**, **symbols**, and **imagery**. LAR.13 The learner will identify **structural elements** such as *stanza* and *line*. LAR.14 The learner will draw **inferences** based on stated and suggested information.	Virginia Standards of Learning: Reading 10.3, 10.5

Content Area: Drama

Standard Statements	References
LAR.15 The learner will identify the **stated** or **implied theme**. LAR.16 The learner will synthesize **elements of plot**. LAR.17 The learner will perform the following. a) Analyze **character traits** and motivation b) Rely on **stage directions** and **dialogue** prompts to understand **dramatic text** c) **Draw conclusions** about characterization from dialogue and **staging**	Virginia Standards of Learning: Reading 9.3, 10.3, 10.6 Official GED Practice Test PB #20

Content Area: Non-Fiction

Standard Statements	References
LAR.18 The learner will identify the **author's purpose**, **style**, **tone**, and **intended audience**. LAR.19 The learner will locate and apply relevant information. LAR.20 The learner will summarize the **main points** and **supporting details**. LAR.21 The learner will recognize the **author's bias** and **assumptions**. LAR.22 The learner will draw conclusions based on evidence presented. LAR.23 The learner will apply concepts from **informational materials** to new situations. LAR.24 The learner will compare and contrast ideas and practical information. LAR.25 The learner will determine the meaning of unfamiliar words through **context**.	Virginia Standards of Learning: Reading 9.4, 10.4, 12.4 Official GED Practice Test PB #7, PB #12, PC #1, PC #5, PD #3, PD #4

Mathematics

The report by the GED Testing Service document, "Alignment of National and State Standards," states, "Both national and state standards agree that the achievement of mathematical power is not to be limited to an elite group of students and advocate access to *meaningful mathematics* for all high school students" ( ). It is the purpose of these adult education mathematics content standards to extend that access to all adult learners.

The content of the GED mathematics standards supports the following four goals for learners: becoming competent mathematical problem solvers, communicating mathematically, reasoning mathematically, and making mathematical connections.

The math content standards are divided into four areas: Number and Number Sense; Algebra, Functions, and Patterns; Data Analysis, Probability, and Statistics; and Measurement and Geometry. Within each standard, bolded items represent key concepts, terminologies, and strategies with which teachers will want to be well acquainted. The formula sheet referred to in italics is a tool with which students should be familiar before they take the test.

Questions on the GED test often assess multiple skills simultaneously. Similarly, although several standards dealing with alternate answer formats, test-taking strategies, sufficiency of information, and calculator use are included only in the Number Sense section, they apply to all content areas.

We encourage teachers to use all of the various versions of the practice tests to be sure they cover all content areas. Textbooks and other materials should be chosen based on the content standards and should be used as resources to teach the standards. Teachers should NOT rely on textbooks as content guides. Teachers are encouraged to go beyond the standards and to select instructional strategies and assessment methods appropriate for their students.

Content Area: Numbers and Number Sense

Standard Statements	**References**
M.1 The learner will demonstrate fluency with **basic operations** using the following. a) A calculator b) Mental math c) Pencil and paper M.2 The learner will select and apply correct operations or procedures to solve a practical problem. This will include simple and multi-step problems. Procedures will include the following. a) Identifying **relevant** information b) Determining whether or not there is **sufficient** information to solve a problem M.3 The learner will use **estimation** as a strategy to solve a problem and to check the reasonableness of the results. M.4 The learner will apply the concept of **place value** in a practical context. M.5 The learner will determine **equivalent relationships** between fractions, decimals, and percents and **convert** between forms. M.6 The learner will **solve** practical problems using the following. a) **Rational numbers** b) **Percentages** M.7 The learner will set up and solve a variety of problems involving **rates**. *Refer to the formula sheet*. M.8 The learner will set up a **ratio** to represent a comparison using the following notations. a) *a*/*b* b) *a*:*b* c) *a* to *b*	Virginia Standards of Learning: Math 6.1, 6.2, 6.4, 6.5, 6.7, 6.8, 7.1, 7.2, 7.5, 7.6, 8.1, 8.3, 8.5 Official GED Practice Test PA #7, PA #10, PA #12, PA #14, PA #16, PA #23, PA #25, PB #4, PB #9, PB #11, PB #12, PB #13, PB #17, PB #18, PB #23, PB #24, PB #25, PC #1, PC #2, PC #4, PC #8, PC #9, PC #12, PC #13, PC #15, PD #3, PD #4, PD #5, PD #6, PD #7, PD #8, PD #10, PD #16, PD #17, PD #21, PD #23, PE #1, PE #3, PE #5, PE #6, PE #7, PE # 7, PE #8, PE #10, PE #11, PE #14, PE #15, PE #17, PE #18, PE #19,

M.9 The learner will solve a variety of practical problems by using **proportions.** Problems may include the following.

a) Scale drawings
b) Maps
c) Percentages

M.10 The learner will **compare** and **order** whole numbers, fractions, decimals, and **integers** (signed numbers) as they relate to the number line.

M.11 The learner will solve practical problems involving basic operations with integers.

M.12 The learner will **evaluate expressions** using the **order of operations**.

M.13 The learner will evaluate numerical expressions which may contain the following.

a) **Exponents**
b) **Roots**

M.14 The learner will use a variety of problem-solving and test-taking strategies, including the following.

a) **Working backwards**
b) **Guess and check**
c) **Substituting simpler numbers**
d) **Recognizing patterns**
e) **Estimating**
f) **Evaluating reasonableness of answers**

M.15 The learner will provide answers in various formats, including the following.

a) **Multiple choice**
b) **Standard grid**
c) **Coordinate plane grid**

Content Area: Algebra, Functions, and Patterns

Standard Statements	Reference
M.16 The learner will analyze and represent a situation involving **variable quantities** with an **expression** or **equation.** M.17 The learner will analyze a set of data for the existence of a **pattern**. Data may appear in the following formats. a) **Tabular** b) **Symbolic** c) **Graphical** d) **Verbal** e) **Physical representations** M.18 The learner will **substitute** numbers for the **variables** in an expression and evaluate, including familiar and unfamiliar formulas. *Refer to the formula sheet.* M.19 The learner will perform basic operations to **simplify** expressions containing variables. The expressions may contain the following. a) **Exponents** b) **Roots** M.20 The learner will solve the following. a) Single- and multi-step **linear equations** and **inequalities** with one variable b) L**iteral equations (formulas**) for a given variable M.21 The learner will find **square roots** by performing the following. a) Recognizing **perfect squares** b) **Approximating** the square root of any whole number less than 200 c) Using the scientific calculator M.22 The learner will convert between different representations of a **function**, including the following representations. a) **A table of values** b) **An equation** c) **A graph** d) **A verbal description**	Virginia Standards of Learning: Math 6.22, 6.23, 7.19, 7.22, 8.14, 8.15, 8.16, 8.17, A.1 A.2, A.3, A.5, A.7, A.8, A.10, A.13 Official GED Practice Test PA #1, PA #3, PA #6, PA #9, PA #11, PA #19, PA #24, PA #25, PB #10, PB #12, PB #13, PB #16, PB #22, PB #23, PB #25, PC #3, PC #10, PC #20, PC #23, PC #24, PC #25, PD #9, PD #10, PD #11, PD #12, PD #18, PE #4, PE #11, PE #13, PE #15, PE #25

M.23 The learner will calculate the **slope** of a line when given any of the following. a) The **coordinates** of two points on the line b) The equation of the line c) The graph of the line *Refer to formula sheet.* M.24 The learner will recognize the general shape of a function and relate it to a data set. Types of functions will include the following. a) **Linear** b) **Quadratic** c) **Exponential**	
Content Area: Data Analysis, Probability, and Statistics	
Standard Statements	**Reference**
M.25 The learner will solve problems involving the following **measures of central tendency**. a) **Mean** b) **Median** c) **Mode** d) **Range** *Refer to the formula sheet.* M.26 The learner will **predict** the effect of changing the data set on the measures of central tendency. M.27 The learner will **analyze** data to identify **trends**. This will include making **comparisons**, **predictions**, and **inferences** using information displayed in the following formats. a) **Tables** b) **Frequency distributions** c) **Scatter plots** d) **Line, bar, circle, and picture graphs** M.28 The learner will **construct** an appropriate representation of a given data set. Representations include the following.	Virginia Standards of Learning: Math 6.18, 6.19, 6.20, 7.15, 7.16, 7.17, 7.18, 8.11, 8.12, 6.20 Official GED Practice Test PA #1, PA #2, PA #3, PA #4, PA #5, PA #6, PA #13, PA #15, PA #20, PA #21, PB #1, PB #2, PB #7, PB #8, PB #14, PB #15, PB #19, PB #21, PC #5, PC #6, PC #7, PC #16, PC #17, PC #18, PC #19, PD #2, PD #6, PD #14, PD #15, PD #19, PD #20, PD #25, PE #2, PE #9, PE #18

a) Tables b) Frequency distributions c) Scatter plots d) Line, bar, circle, and picture M.29 The learner will interpret data presented in various forms and use the data to solve problems. This includes recognizing **sampling errors** and **bias.** M.30 The learner will determine **correlation** and distinguish it from **causation**. M.31 The learner will determine the probability of both **independent** and **dependent events**. M.32 The learner will represent the probability of an event as a **ratio** or as a percentage between 0% and 100%. M.33 The learner will identify the number of possible **combinations** of several objects using the following. a) A **tree diagram** b) The fundamental basic **counting principle**	

Content Area: Measurement and Geometry	
Standard Statements	**Reference**
M.34 The learner will read and interpret measuring devices. M.35 The learner will convert measurements within a measurement system as part of solving a problem. Measurement systems include the following. a) **U.S. Customary System** b) **Metric system** *The intent of this standard is for students to make ballpark comparisons and not to memorize conversion factors between U.S. Customary System and metric units.*	Virginia Standards of Learning: Math 6.9, 6.11, 6.12, 6.14, 6.15, 7.7, 7.8, 7.9, 7.11, 7.12, 7.13, 8.6, 8.7, 8.8, G.3, G.5, A.7, 8.10, G.7, G.13, G.14 Official GED Practice Test PA #8, PA #11, PA #17, PA #18, PA # 22, PA #25, PB #5

M.36 The learner will apply the concepts of **line** and **angle relationships** to solve problems. This includes, but is not limited to, the following concepts. a) **Parallelism** b) **Perpendicularity** c) **Complementary angles** d) **Supplementary angles** e) **Congruence** f) **Similarity of figures** M.37 The learner will identify and use the **properties of plane figures** to solve practical problems. *Refer to the formula sheet for specific plane figures.* M.38 The learner will determine if geometric figures are **similar** and write **proportions** to express the relationships between **corresponding parts** of similar figures. M.39 The learner will determine if a problem situation involving geometric figures represents the application of any of the following concepts. a) **Perimeter** b) **Circumference** c) **Area** d) **Volume** M.40 The learner will **predict** the effect on the following of changing a **linear dimension**. a) Perimeter b) Area c) Volume M.41 The learner will use estimate solutions and solve problems involving the following. a) Perimeter b) Circumference c) Area d) Volume M.42 The learner will identify and plot **ordered pairs** in the four **quadrants** of a **coordinate plane**.	PB #6, PB #10, PB # 13, PB #16, PB # 22, PC #8, PC #11, PC #12, PC #14, PC #21, PC # 22, PD #5, PD #13, PD #14, PD #15, PD #16, PD # 19, PD # 22, PD #24, PE #12, PE #13, PE #17, PE #20, PE #21, PE #22, PE #23, PE #24, PE #25

M.43 The learner will **transform** a geometric figure represented on a coordinate plane by performing the following. a) **Rotating** b) **Sliding** c) **Flipping** d) **Dilating** M.44 The learner will determine the ***y*-intercept** of a line when given any of the following. a) An equation of the line b) The graph of the line c) Two points on the line M.45 The learner will solve problems using the following. a) Slope b) *Y*-intercept c) **Point of intersection** of two lines M.46 The learner will determine distance between points on a line. *Refer to the formula sheet.* M.47 The learner will recognize when the **Pythagorean relationship** applies and use it to solve problems. *Refer to the formula sheet.*	

Science

"The *Science Test* measures the major and lasting expected outcomes of a sound, well-rounded high school science education. These outcomes include the acquisition of a broad knowledge base and the ability to use a range of reasoning skills. Test questions focus on the comprehensive, integrated skills typical of what the candidate must know, understand, and be able to perform in order to be scientifically literate." (The Official GED Practice Test Administrator's Manual)

The GED Science Test supports the National Science Education Standards (NSES) content standards. To succeed on the GED Test, the candidate must use higher order thinking skills. Additionally, certain habits of mind are essential to success in learning. These include curiosity, open-mindedness, creativity, wonderment, confidence. (Massachusetts Adult Education Standards 2003, pp. 9-11)

These standards rely on verbs drawn from Bloom's Taxonomy to communicate the range of skills and knowledge levels embedded in each standard. The GED learner does not study a particular scientific subject in depth, nor do they conduct laboratory experiments as in a traditional science class. Consequently, the objective of the GED science content standards is to assure that learners who earn the GED are scientifically literate and can recognize and apply scientific concepts and methodologies to everyday life.

The GED Science Test assesses the learner's understanding of basic science concepts and principles. The questions are drawn from three categories: Life Science (45%), Physical Science (35%), and Earth and Space Science (20%). The questions include passages and graphic-based materials, such as charts, graphs, tables, and diagrams. The questions require the learner to use information to analyze and solve problems, apply information to new situations, explain results, and interpret information. (The Official GED Practice Test Administrator's Manual). This process is frequently referred to as the scientific method, experimental design, or inquiry-based learning.

Science Fundamentals

The thought processes involved in scientific inquiry apply to the everyday life of the adult learner. Teachers and learners, together, identify questions about the world around them, and use the process to answer those questions. Learning to approach questions and solving problems in this manner is integral to acquiring the skills to be successful on the GED, and for lifelong learning.

Students and teachers may find a way to organize their learning and teaching by examining unifying concepts that cross the (often artificial) boundaries between disciplines (e.g. social science, health, math, and science). In addition, by researching and communicating about current issues that bombard us with dilemmas and decisions based in science and technology, the GED curriculum can incorporate scientific knowledge and ways of thinking into contexts that are engaging and that immediately impact adult learners.

Earth Science

Earth science is the study of Earth and the processes that affect it. It involves the study of many topics that concern our planet, such as how the planet formed and is changing, its structure, and the forces acting upon it. An understanding of Earth and its characteristics is basic to our very survival.

Life Science

Life science (also called Biology) is the study of all living things. Most of GED life science focuses on the study of plant and animal structures and life cycles. Life science addresses such topics as the dynamic relationship between man and his environment and the factors affecting the quality of human life. Crucial issues affecting the adult learner, such as overpopulation, environmental quality, and human impact on and interdependence with other organisms, are addressed by these standards.

Physical Science

GED physical science is a combination of chemistry and physics. Chemistry explores the structure of atoms and molecules and their properties. Physics deals generally with the laws of motion, energy, and matter. By understanding the basics of the physical sciences, we not only understand the structure of the world around us, but also it is through this understanding that we are able to maintain and manipulate our world.

Content Area: Science Fundamentals

Standard Statements	References
SC.1 The learner will understand and apply the concept of **scientific thinking** by performing the following. a) Distinguish facts from **hypotheses** and **opinions** b) Recognize **unstated assumptions** c) Identify **cause and effect** relationships d) Distinguish a **conclusion** from **supporting statements** SC.2 The learner will evaluate **scientific information** by performing the following. a) Distinguish **relevant** from **irrelevant** information in order to judge the value of available information b) Determine if there is enough information to support a conclusion c) Interpret data expressed in charts and graphs (line, bar, and circle) SC.3 The learner will objectively evaluate evidence using the **scientific method**. Steps in the scientific method include the following. a) Identifying the problem b) Collecting information c) Forming a hypothesis d) Testing the hypothesis e) Analyzing results and drawing conclusions	**Contemporary's GED Science, Chpt. 3, pp 67-94**

Content Area: Earth and Space Science

Standard Statements	References
SC.4 The learner will gather, analyze, and interpret information from maps, models, charts, graphs, and other geographical and informational representations. Key concepts include the following. a) Maps b) Directions, measurements, and distances on any map c) **Latitude** and **longitude**	Virginia Standards of Learning: ES.3, ES.4, ES.6, ES.7, ES.8, ES.9, ES.11, ES.12, ES.13, ES.14

d) Three-dimensional representations	
SC.5 The learner will examine and comprehend the structure of the earth, including the **geosphere**, **hydrosphere**, and **atmosphere.**	Official GED Practice Test PA #1, PA #5, PB #18, PB #24, PB #25, PC #2, PC #16, PD #1, PD #4, PD #15, PE #9, PE #10, PE #17
SC.6 The learner will describe basic geologic processes and predict how these processes are factors in the ever-changing face of the earth. Key concepts include the following. a) The **rock cycle** b) **Fossils** and the changing earth c) Geologic processes including **continental drift**, volcanoes, earthquakes, weathering, and erosion	
SC.7 The learner will interpret basic information from weather maps, charts, and images and recognize the effects of **weather phenomenon** and climate on human activities. Key concepts include the following. a) Influence of the sun on weather b) The water cycle c) Factors affecting climate d) Earth's seasons	
SC.8 The learner will understand that oceans are complex, interactive systems that have a major impact on the **climate**, **environment**, and life of humankind. Key concepts include the following. a) Effects of the oceans on weather, climate, and the environment b) Tides and currents c) Effects of the oceans on human activities d) Effects of human activities on the oceans	
SC.9 The learner will comprehend the basic theories of the origin and characteristics of the earth and **solar system.** Key concepts include the following. a) Formation of the **universe**, including the **Big Bang Theory** b) Position of the earth, planets, and other **spatial bodies** in the solar system c) Relationships among the sun, earth, and moon (**tides**, **eclipses**)	
SC.10 The learner will compare and differentiate **renewable resources**	

from **non-renewable resources.** Key concepts include the following. a) **Fossil fuels** b) Alternative energy sources c) Water and soil conservation, including **watershed** systems such as the Chesapeake Bay d) Recycling, pollution, and **depletion**	
Content Area: Life Science	
Standard Statements	**References**
SC.11 The learner will identify the components of **cells**, comprehend the organization of cells, and understand how cellular components function. Key concepts include the following. a) Thee structure of the cell and its **organelles** b) **Meiosis** and **mitosis** c) The difference between plant and animal cells d) Life functions that are the end result of cellular functions SC.12 The learner will know the characteristics of living things and recognize the basic needs of organisms that must be met to supply energy needed for life processes. Key concepts include the following. a) **Photosynthesis** b) **Respiration** SC.13 The learner will understand how and why **organisms** are classified, and will apply that knowledge in using a **dichotomous key.** Key concepts include the following. a) Comparing and contrasting physical traits that scientists use to classify organisms b) Using a simple dichotomous key SC.14 The learner will analyze the complex relationship between the living and non-living elements of earth's environment by looking at the basic cycles that take place in **ecosystems.** Key concepts include the following. a) The concept of an ecosystem b) Energy flow that keeps an ecosystem c) Interlinked cycles of nitrogen, water, and carbon	Virginia Standards of Learning: LS.2, LS.3, LS.4, LS.5, LS.6, LS.7, LS.8, LS.9, LS.10, LS.11, LS.12, LS.13, LS.14, HE.8 Official GED Practice Test PA #6, PA #7, PA #8, PA #9, PA #9, PA #10, PA #21, PA #25, PB #2, PB #7, PB #12, PB #13, PB #14, PB #15, PB #16, PB #17, PB #19, PB #20, PB #21, PC #3, PC #5, PC #6, PC #7, PC #8, PC #11, PC #12, PC #17, PC #25, PD #2, PD #5, PD #7, PD #8, PD #14, PD # 16,

SC.15 The learner will understand that organisms within an ecosystem are dependent upon one another and on the non-living components of the environment and apply this information to become aware of how humans fit into this complex relationship. Key concepts include the following. a) **Food webs** b) Energy flow in ecosystems SC.16 The learner will comprehend the complex relationship between humans and the world they live in, and assess the impact that humans have on the ecosystem. Key concepts a) Overpopulation b) Environmental quality c) Human impact and interdependence on other organisms SC.17 The learner will examine how organisms pass their **traits** on to new generations and identify the connection between **genes** and the traits expressed by those genes. Key concepts include the following. a) **Mendelian laws** of inheritance b) The role of **DNA** and **RNA** in the makeup of genes and **chromosomes** c) The role of **dominant** and **recessive** genes in the expression of physical traits SC.18 The learner will examine and evaluate the various factors that cause organisms to change over time. Key concepts include the following. a) **Mutation** b) **Adaptation** c) **Natural selection** d) **Extinction** SC.19 The learner will understand basic **human anatomy** and identify the connection between healthy habits and physical and mental well-being. Key concepts include the following. a) Basic human biology b) Wellness/fitness c) Nutrition d) Disease e) Safety	PD #18, PE #1, PE #3, PE #6, PE #7, PE #8, PE #15, PE #16, PE #18, PE #19, PE #20, PE #22, PE #24, PE #25

f) The effects of choices on human health	
Content Area: Physical Science	
Standard Statements	**References**
SC.20 The learner will explore the composition and interactions of the modern models of **atomic** and **molecular structure**, and apply that knowledge in understanding how molecular structure affects every aspect of our lives. Key concepts include the following. a) The **Periodic Table of Elements** b) **Protons, neutrons,** and **electrons** c) The **Law of Conservation of Matter** d) Basic **chemical bonds** and **formulas** SC.21 The learner will utilize the concepts of the modern models of atomic and molecular structure to demonstrate comprehension of the basic nature of **matter**, **reactions**, and **energy.** Key concepts include the following. a) States of matter b) Types of reactions, **reactants**, and **products** c) The **Law of Conservation of Energy** SC.22 The learner will define the **Laws of Motion** and& apply these laws in everyday life situations. Key concepts include the following. a) **Newton's First, Second, and Third Laws of Motion** b) How these laws relate to **mass**, **work**, and **force** SC.23 The learner will compare and contrast the basic types of **waves**, their characteristics, and functions. Key concepts include the following. a) **Amplitude** b) **Wavelength** c) **Frequency** d) **Longitudinal, transverse,** and **electromagnetic waves** SC.24 The learner will understand the basic principles of electricity and magnetism and apply this knowledge to daily life situations. Key concepts include the following. a) **Static electricity**	Virginia Standards of Learning: PS.2, PS.3, PS.5, PS.6, PS.8, PS.11, CH.2, CH.3, PH.9, Official GED Practice Test PA #16, PA #18, PA #19, PA #22, PA #23, PB #1, PB #3, PB #8, PB #9, PB #11, PB #22, PC #1, PC #8, PC #9, PC #14, PC #20, PC #25, PD #6, PE #2, PE #5, PE #13, PE #21

b) **Current electricity** c) **Circuits** d) **Voltage** e) **Magnetic fields** f) **Conductors**	

Social Studies

All learners need to know and understand our national heritage in order to become informed citizens. The GED social studies standards are intended to inform educators of the knowledge and skills from history, geography, civics, and economics that enable our learners to place in perspective the people, ideas, and events that have shaped our nation and the world. The content identified in the standards should instill in learners a thoughtful pride in the history of the United States of America. This is based on an understanding that what "We the People of the United States" launched more than two centuries ago was not a perfect union, but a continual effort to build a more perfect union, one that has become the world's most successful experiment in constitutional self-government. The standards also should enable learners to understand the basic values, principles, and operation of American constitutional democracy and prepare them for informed and responsible citizenship.

Using this Document

The GED social studies standards are organized in sections by academic disciplines. Within each section, educators should focus on the relevant skills and content covered on the GED social studies assessment. Specific examples from official GED practice tests and the Virginia Standards of Learning (SOL) for history and the social sciences are referenced for each standard.

History

History should be the integrative core of the GED standards and accompanying curriculum through which both the humanities and the social sciences come to life. Through the study of history, learners can better understand their own society as well as those of others. By understanding the relationship between past and present, learners will be equipped to deal with future problems that might arise. They will understand chronological thinking and the connections between causes and effects, and between continuity and change. History enables learners to see how people in other times and places have grappled with the fundamental questions of truth, justice, and personal responsibility, to understand that ideas have real consequences, and to realize that events are shaped both by the ideas and the actions of individuals.

Geography

The goal of geography instruction is to provide learners with an understanding of the human and physical characteristics of the earth's places and regions, and how people of different cultural backgrounds interact with their environment. Learners should understand how the United States is affected by conditions and events in distant places, as well as the influence the United States has on other places. Themes covered by the geography standards include location and place, human interactions with the physical environment, migration, and region. Geographic skills include the ability to use maps, interpret graphs, tables, diagrams, pictures and other graphic media.

Civics and Government

The goal of civics instruction is to develop in all learners the requisite knowledge and skills to become informed, responsible participants in public life. Civics instruction should provide regular opportunities for learners to develop a basic understanding of the structure and function of government, and to practice the skills of good citizenship. Learners should develop an understanding of the values and principles of American constitutional democracy. They should be aware of their rights and responsibilities as citizens in a free society.

Economics

The United States is recognized as a leader among the nations of the world in large part because of its economic strength. To maintain that strength, American citizens must understand the basic economic principles that underlie our market economy. They must understand how the U.S. and other economic systems function. Learners should make wise economic decisions about their own lives and become informed consumers, employers, and workers. A solid grounding in economics will help learners prepare for the global marketplace and the complex world of tomorrow.

Content Area: History

Standard Statements	References
SS.1 The learner will use a variety of methods and sources, including the following, to understand history. a) Interpreting speeches, letters, and newspapers b) Reading maps, graphs, and timelines SS.2 The learner will evaluate sources of opposing viewpoints to analyze information about historical events. SS.3 The learner will draw conclusions from supporting details and summarize ideas and events based on world and United States history. SS.4 The learner will identify and describe cause and effect relationships from significant historical periods such as the following. a) The **colonial period** b) The **Civil War** c) The **Great Depression** d) **World War I** and **World War II** SS.5 The learner will analyze patterns of continuity and change of **cultures** over time. Examples include the following. a) Evolution of transportation b) Infusion of technology c) Migration/Isolation d) War and disease	Virginia Standards of Learning: VUS.1 Virginia Standards of Learning: WHI.1, WHII.1 Official GED Practice Test PB #9, PB #10, PB #11, PB #12, PB #24, PB #25, PC #8, PC #9, PC #10, PC #11, PC #16, PE #13, PE #14, PE #15, PE #16

Content Area: Geography	
Standard Statements	**References**
SS.6 The learner will interpret maps (keys and symbols), charts, and graphs to analyze data and to draw conclusions about physical patterns (such as migration). SS.7 The learner will describe how regions reflect different cultural, political, economic, and physical characteristics. SS.8 The learner will identify the **cause and effect relationships** between the physical and cultural influence humans and on the environment. SS.9 The learner will analyze the effects of the locations of **natural and capital resources** and the availability of transportation on the distribution and growth rates of human populations. SS.10 The learner will analyze past and present trends in human migration and cultural interaction, as they are influenced by social, economic, political, and environmental factors.	Virginia Standards of Learning: WG.1, WG.3, WG.4 Official GED Practice Test PB # 4, PB #14, PD #15

Content Area: Civics and Government

Standard Statements	References
SS.11 The learner will describe the structure, functions, and primary responsibilities of **executive, legislative**, and **judicial branches** of governments. SS.12 The learner will understand the historical contexts of and interpret concepts from historical documents such as the following. a) The Declaration of Independence b) The Federalist Papers c) The U.S. Constitution d) Landmark Supreme Court decisions SS.13 The learner will compare and contrast the concepts of **limited government** and **rule of law** among systems of government. SS.14 The learner will identify the rights, liberties, and obligations of **citizenship** in the United States. SS.15 The learner will analyze and understand the following. a) Political cartoons b) Political advertisements c) Pictures d) Other graphic media (graphs, charts, tables)	Virginia Standards of Learning: GOVT.1, GOVT.2, GOVT.3, GOVT.4, GOVT.5, GOVT.7, GOVT.8, GOVT.9, GOVT.10, GOVT.11, GOVT.17, GOVT.18, Official GED Practice Test PB #6, PB #7, PB #9, PB #10, PB #13, PD #11, PD #4, PD #10, PD #11, PD #13

Content Area: Economics

Standard Statements	Reference
SS.16 The learner will recognize that **scarcity of resources** requires choices by individuals and societies. SS.17 The learner will understand the following concepts. a) **Goods and services** b) **Productivity** c) **Supply and demand** d) **Competition** e) **Opportunity cost** f) **Balance of trade** g) **Global economic trends** SS.18 The learner will identify the elements of economic reasoning and apply those concepts to real life problem solving. SS.19 The learner will compare and contrast capitalism, socialism, and communism.	Virginia Standards of Learning: WG.7, WG.8, GOVT.14, GOVT.15, GOVT.16 PC #3, PC #4, PD #6, PD #24, PE #17, PE #20, PE #21, PE #22

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