

Assessment Guide for Educators

Introduction

October 2020



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Note on the June 2016 Edition

Assessment Guide for Educators — Social Studies:

Minor correction of typographical error. Percentages incorrectly listed as 40% and 30%, now corrected to 50% and 20%. Page 184.

Note on the March 2016 Edition

GED Testing Service has published the March 2016 Edition of the Assessment Guide for Educators to include the following:

1. Updated performance level information to reflect the new performance levels: Below Passing, Pass/High School Equivalency, GED® College Ready, and GED® College Ready + Credit
2. Updated information on the Social Studies test to reflect the elimination of the Social Studies Extended Response question
3. Streamlining and simplification of the guide, based on adult educator feedback, to make the guide more user-friendly and to eliminate redundancies

Note on the October 2020 Edition

GED Testing Service has enhanced the Science Practices to include subskills.

Overview

Introduction

In 2014, GED Testing Service launched the latest GED® test to ensure that the GED® testing program is no longer an endpoint for adults, but, instead, a springboard to further education, training, and better paying jobs. Four test subjects—Reasoning Through Language Arts (RLA), Mathematical Reasoning, Science, and Social Studies—measure a foundational core of knowledge and skills reflecting high school equivalency. Two additional performance levels show whether adults have shown readiness for credit-bearing postsecondary courses or have already demonstrated postsecondary level work. The highest performance level actually offers adults the opportunity to earn up to 10 college credits through the ACE CREDIT® recommendation program and ACE Transcript.

The *Assessment Guide for Educators (AGE)* is designed to help adult educators and administrators better understand the content of the GED® test. This guide is tailored to each test subject and highlights the test's item types, assessment targets, guidelines for how items will be scored, and much more. This 2016 edition of the AGE has been updated to include the most recent information about the test, reflecting the adjustments that have been made in the first two years since launch.

Continuing the Tradition of Opportunity

The GED® testing program continues to provide adults the opportunity to earn a high school credential, as it has done since 1942. It measures career- and college-readiness skills that are

not only the focus of today's curriculum, but are also needed for success in both workforce and college programs.

GED Testing Service has also taken a significant leap forward in score reporting. The Enhanced Score Reports that learners receive from each test subject provide information about test-taker strengths and weaknesses. This detailed scoring information benefits test-takers, teachers, postsecondary institutions, and employers.

Today's world is dramatically different than when GED Testing Service introduced the previous edition of the GED® test in 2002. Adults want opportunities for better paying jobs, and ways to support their families. The GED® test and its supporting products and services help adults better demonstrate those skills and abilities necessary to earn a high school equivalency credential and those sought by both employers and postsecondary education institutions, and training programs.

Definition of Readiness

GED Testing Service worked closely with various consulting groups, organizations, and representatives from K-12, two-year and four-year postsecondary institutions, and employers to shape the assessment targets for the GED® test. The assessment targets are derived from nationally recognized career- and college-readiness standards. The targets are informed by research suggesting that a clear and succinct set of essential skills are necessary for success in credit-bearing postsecondary courses as well as in job training programs.

The targets:

- Are clear, understandable, and consistent
- Include rigorous content and require applications of knowledge through a range of cognitive complexity levels
- Are based on evidence

See the section titled "Webb's Depth of Knowledge" in Chapter 1 for a detailed explanation of **Cognitive Complexity**.

The Bottom Line

Test-takers who pass the GED® test must remain competitive with students who complete their high school education and receive

credentials in the traditional manner. As educators and employers increasingly embrace career-and-college-readiness standards, the GED® test has been designed to meet the market's demand for test-takers to be able to demonstrate these high-level skills.

National Curriculum Survey and other recent research evidence suggests that test-takers who demonstrate fluency with the skills measured on the GED® test are better prepared for various career and college pathways. A GED® graduate no longer simply holds a high-school equivalency credential, but instead he or she holds a roadmap for life's success. The GED® testing program today is actively fulfilling its promise to be a stepping-stone toward a college classroom or a better career paying family-sustaining earnings.

Establishing the Performance Standards on the GED® Test

Overview

Since the inception of the GED® testing program in the 1940s, the key purpose of the GED® test has been to provide an opportunity for adults who did not complete a formal high school program to certify their attainment of high school-level academic knowledge and skills in order to earn their jurisdiction's high school-equivalency credential. The current GED® test continues this core purpose. Although the **content** of the current test is based on career- and college-ready content standards, the **Passing Standard**—the score on each test subject that a test-taker must achieve in order to demonstrate the level of performance deemed necessary to receive a high school equivalency credential—is tied to the performance on the GED® test of high school students who graduated and received their diplomas in the spring of 2013.

Standardization and Norming

As previously noted, the score scale for the GED® test is tied to the performance of 2013 high school graduates who took the current version of the GED® test. This allows adult test-takers the opportunity to demonstrate that their knowledge and skills are comparable to those of high school graduates. This referencing of the GED® test score scales to a national sample of high school graduates is often referred to as "norming."

Benefits of Career- and College-Ready Content and Norm-Referenced Passing Standard

There are significant benefits to basing the GED® test content on career and college ready standards, while at the same time tying the passing standard to the performance of 2013 high school graduates.

First, tying the passing standard on the GED® test to empirical performance data means that adults who are seeking a high school-equivalency credential will be able to earn one even though they have not necessarily received instruction in the full range, depth, and breadth of content that is covered by career- and college-ready content standards. High school graduation requirements are likely to become more rigorous across the country once career- and college-ready curriculum becomes the norm in public education. However, it will likely take a number of years before this effect is felt in K-12 schools. GED Testing Service monitors both the public education environment and adult GED® test performance and is committed to revising the passing standard as circumstances dictate. In fact, the test performance standards originally established in the fall of 2013 were adjusted in early 2016 as described on the GED Testing Service website at <http://www.gedtestingservice.com/uploads/files/e4b463eb7a4fc68024098c42f851dd6a.pdf>.

Second, career-and-college ready skills have become increasingly important in a wide range of jobs, careers, and post-secondary certificate and credential programs. As a result, the college and career-based information on the score reports has demonstrated its value in helping test-takers plan their path forward.

Test-takers receive informative performance feedback regarding the content knowledge and skills they have demonstrated on the GED® test. GED Testing Service and other content and testing experts have examined how the test content aligns with the score scale to identify performance levels. Test-takers receive feedback on the knowledge and skills associated with performance within that performance levels. Identifying these areas of content knowledge and skills was a critical step in providing feedback and information to test-takers on how they are progressing toward career and college readiness, and what actions they might need to take to improve their skills going forward.

Finally, there are future benefits to having performance levels that measure progress toward career and college readiness. In conjunction with higher education institutions, GED Testing Service is conducting targeted longitudinal research studies to provide empirical evidence to support meaning and relevance of the GED® test performance levels and test-taker outcomes

Involvement of Higher Education in Performance Level Identification

GED Testing Service involved content experts from higher education community to define the performance levels on the GED® test. Test-taker skill attainment is an important aspect of the test, and higher education professionals have been integral in setting the performance levels.

Conclusion

In summary:

- The GED® test is tied to career- and college-readiness content, in order to provide information to test-takers on how they exhibit critical academic knowledge and skills required for success in the majority of jobs and postsecondary programs in today's economy.
- The GED® test has a **Passing Standard** (which test-takers need to reach in order to obtain a high school-equivalency credential) tied to empirical performance of a national sample of 2013 high school graduates, resulting in the continuing ability of the GED® testing program to meet its longstanding purpose of being an alternate pathway to a high school credential for thousands of adults who need a second chance at success.
- Now that so many careers require some sort of postsecondary education or credential, the GED® test has additional performance levels that give test-takers feedback that will help them progress toward career and college readiness and even earning of college credits.

Indicator

Indicators are fine-grained descriptions of specific skills that will be assessed in individual test items. (See the individual content area sections — RLA, Mathematical Reasoning, Science and Social Studies — of the AGE for more information on Indicators for each subject.)

Webb's Depth of Knowledge Model

The Depth of Knowledge (DOK) model was developed by Dr. Norman L. Webb in 1997 to analyze the varying levels of cognitive complexity in academic standards and curricula. GED Testing Service is using Webb's DOK model to guide item development for the current GED® test, in the same manner as Bloom's Taxonomy of learning objectives was used to guide development of previous test editions.

GED Testing Service uses Webb's DOK model to measure the cognitive complexity of test items. The model has four levels. The levels serve to categorize varying cognitive complexities of items and are not a hierarchy of importance. The table below identifies the four DOK levels.

Level 1	Recall and Reproduction
Level 2	Skills and Concepts
Level 3	Strategic Thinking
Level 4	Extended Thinking

Cognitive Complexity

In order to understand Webb's DOK model, one must understand the meaning of cognitive complexity. The term *complexity* refers to the cognitive steps a test-taker must go through to arrive at a correct answer. Complexity does **not** refer to an item's level of difficulty.

For example, listing all U.S. presidents in order is relatively simple for someone who has memorized the list. However, it would be quite challenging for someone who has not. Regardless, this is a straightforward task one-step task that relies on direct recall. Therefore, the

Cognitive Complexity refers to the cognitive demand of the item. In other words, it is determined by how many steps are necessary for the test-taker to answer a question or solve a problem. **Item difficulty** is determined by the percentage of students who chose the correct answer on an assessment.

task would be labeled as DOK level 1. On the other hand, writing a response that compares the roles of the legislative and judicial branches of government requires strategic analysis. Test-takers need to go through multiple steps in order to analyze information and transform it using their own words. This task would likely be labeled as DOK level 3.

Cognitive complexity is impacted by a number of factors, including (1) the steps required in developing a response, (2) the type of response test-takers need to produce, and (3) the types of stimulus materials all help determine cognitive complexity.

Comparing Bloom's Taxonomy and Webb's DOK

Differences between Bloom's Taxonomy and Webb's DOK are shown in the comparison table below. At first glance, DOK might seem to resemble Bloom's Taxonomy, but DOK actually takes a different approach. In Bloom's Taxonomy, the focus is on a learner's activity (e.g. applying, analyzing, creating, etc.). In DOK, the emphasis is on the complexity of the cognitive processes that each of those activities (applying, analyzing, creating) requires on the part of the learner.

A Comparison: Bloom’s Taxonomy and Webb’s Depth of Knowledge¹

BLOOM’S TAXONOMY	WEBB’S DEPTH OF KNOWLEDGE ²
<p>KNOWLEDGE</p> <p>“The recall of specifics and universals, involving little more than bringing to mind the appropriate material”</p>	<p>RECALL</p> <p>Recall of a fact, information, or procedure (e.g. What are three critical skill cues for the overhand throw?)</p>
<p>COMPREHENSION</p> <p>“Ability to process knowledge on a low level such that the knowledge can be reproduced or communicated without a verbatim repetition.”</p>	
<p>APPLICATION</p> <p>“The use of abstractions in concrete situations.”</p>	<p>BASIC APPLICATION OF SKILL/CONCEPT</p> <p>Use of information, conceptual knowledge, procedures, two or more steps, etc. (e.g. Explain why each skill cue is important to the overhand throw. “By stepping forward you are able to throw the ball further.”)</p>
<p>ANALYSIS</p> <p>“The breakdown of a situation into its component parts.”</p>	<p>STRATEGIC THINKING</p> <p>Requires reasoning, developing a plan or sequence of steps; has some complexity; more than one possible answer; generally takes less than ten minutes to do (e.g. Design 2 different plays in basketball and explain what different skills are needed and when the plays should be carried out.)</p>
<p>SYNTHESIS AND EVALUATION</p> <p>“Putting together elements & parts to form a whole, then making value judgments about the method.”</p>	<p>EXTENDED THINKING</p> <p>Requires an investigation; time to think and process multiple conditions of the problem or task; and more than ten minutes to do non-routine manipulations (e.g. Analyze three different tennis, racquetball, and badminton strokes for similarities, differences, and purposes. Then, discuss the relationship between the mechanics of the stroke and the strategy for using the stroke during game play.)</p>

1 Bloom’s Taxonomy and Webb’s Depth of Knowledge comparison table source: <http://www.palmbeachschools.org/qa/documents/WebbsDepthofKnowledge.pdf>

2 Each of the four descriptions below correspond with a DOK level. For example, “Recall” corresponds to DOK 1, “Basic Application” to DOK 2, “Strategic Thinking” to DOK 3, and “Extended Thinking” to DOK 4.

Interpreting the DOK Levels

DOK level 1 items require a single cognitive process, with no extensions or connections. The items usually are answered by a literal interpretation of the stimulus materials or require a rote response through memorized algorithms. Items that require direct recall of information, whether it's a fact, term or procedure, and are generally labeled DOK 1.

DOK level 2 items go beyond literal interpretation. Items that require test-takers to apply skills, make estimations, interpretations, or connections within or among different ideas or pieces of information are generally labeled DOK 2.

DOK level 3 items require test-takers to use multiple cognitive processes across an entire stimulus or multiple stimuli. Items that require test-takers to use their own words in order to problem solve, express their thoughts, or synthesize information are generally labeled DOK 3.

DOK level 4 tasks require complex reasoning and investigation (e.g. skills required to successfully complete long-term research projects) and are better-suited for the classroom than for a time-constrained assessment like the GED® test. The GED® test does not include DOK level 4 items.

The following table provides more information about each DOK level, as well as examples.

English Language Arts ³

Level 1	Level 2	Level 3	Level 4
<p>Requires students to recall, observe, question, or represent facts or simple skills or abilities. Requires only surface understanding of text, often verbatim recall or slight paraphrasing. Use conventions of standard English.</p> <p>Examples:</p> <ul style="list-style-type: none"> • Support ideas by reference to specific details in text • Use dictionary to find meaning • Use punctuation marks correctly • Identify figurative language in passage • Identify correct spelling or meaning of words 	<p>Requires processing beyond recall and observation. Requires both comprehension and subsequent processing of text. Involves ordering, classifying text as well as identifying patterns, relationships and main points. Connect ideas using simple organizational structures. Requires some scrutiny of text.</p> <p>Examples:</p> <ul style="list-style-type: none"> • Use contextual clues to identify unfamiliar words • Predict logical outcome • Construct or edit compound or complex sentences • Identify and summarize main points • Apply knowledge of conventions of standard American English • Compose accurate summaries 	<p>Requires students to go beyond text. Requires students to explain, generalize, and connect ideas. Involves inferencing, prediction, elaboration, and summary. Requires students to support positions using prior knowledge and to manipulate themes across passages. Students develop compositions with multiple paragraphs.</p> <p>Examples:</p> <ul style="list-style-type: none"> • Determine effect of author’s purpose on text elements • Summarize information from multiple sources • Critically analyze literature • Edit writing to produce logical progression • Compose focused, organized, coherent, purposeful prose 	<p>Requires extended higher order processing. Typically requires extended time to complete task, but time spent not on repetitive tasks. Involves taking information from one text/passage and applying this information to a new task. May require generating hypotheses and performing complex analyses and connections among texts.</p> <p>Examples:</p> <ul style="list-style-type: none"> • Analyze and synthesize information from multiple sources • Examine and explain alternative perspectives across sources • Describe and illustrate common themes across a variety of texts • Create compositions that synthesize, analyze, and evaluate

³ The English Language Arts table is used with permission of Dr. Norman L. Webb from the University of Wisconsin Center for Educational Research.

Mathematics ⁴

Level 1	Level 2	Level 3	Level 4
<p>Requires students to recall or observe facts, definitions, or terms. Involves simple one-step procedures. Involves computing simple algorithms (e.g. sum, quotient).</p> <p>Examples:</p> <ul style="list-style-type: none"> Recall or recognize a fact, term or property Represent in words, pictures or symbols in a math object or relationship Perform routine procedure like measuring 	<p>Requires students to make decisions of how to approach a problem. Requires students to compare, classify, organize, estimate, or order data. Typically involves two- step procedures.</p> <p>Examples:</p> <ul style="list-style-type: none"> Specify and explain relationships between facts, terms, properties or operations Select procedure according to criteria and perform it Solve routine multiple- step problems 	<p>Requires reasoning, planning, or use of evidence to solve problem or algorithm. May involve activity with more than one possible answer. Requires conjecture or restructuring of problems. Involves drawing conclusions from observations, citing evidence, and developing logical arguments for concepts. Uses concepts to solve non-routine problems.</p> <p>Examples:</p> <ul style="list-style-type: none"> Analyze similarities and differences between procedures Formulate original problem given situation Formulate mathematical model for complex situation 	<p>Requires complex reasoning, planning, developing, and thinking. Typically requires extended time to complete problem, but time spent not on repetitive tasks. Requires students to make several connections and apply one approach among many to solve the problem. Involves complex restructuring of data, establishing and evaluating criteria to solve problems.</p> <p>Examples:</p> <ul style="list-style-type: none"> Apply mathematical model to illuminate a problem, situation Conduct a project that specifies a problem, identifies solution paths, solves the problem, and reports results Design a mathematical model to inform and solve a practical or abstract situation

⁴ The Mathematics table is used with permission of Dr. Norman L. Webb from the University of Wisconsin Center for Educational Research.

Science ⁵

Level 1: Recall & Reproduction	Level 2: Skills & Concepts	Level 3: Strategic Thinking	Level 4: Extended Thinking
<ul style="list-style-type: none"> a. Recall or recognize a fact, term, definition, simple procedure (such as one step), or property b. Demonstrate a rote response c. Use a well-known formula d. Represent in words or diagrams a scientific concept or relationship e. Provide or recognize a standard scientific representation for simple phenomenon f. Perform a routine procedure, such as measuring length g. Perform a simple science process or a set procedure (like a recipe) h. Perform a clearly defined set of steps i. Identify, calculate, or measure <p>NOTE: If the knowledge necessary to answer an item automatically provides the answer, it is a Level 1.</p>	<ul style="list-style-type: none"> a. Specify and explain the relationship between facts, terms, properties, or variables b. Describe and explain examples and non- examples of science concepts c. Select a procedure according to specified criteria and perform it d. Formulate a routine problem given data and conditions e. Organize, represent, and compare data f. Make a decision as to how to approach the problem g. Classify, organize, or estimate h. Compare data i. Make observations j. Interpret information from a simple graph k. Collect and display data <p>NOTE: If the knowledge necessary to answer an item does not automatically provide the answer, then the item is at least a Level 2. Most actions imply more than one step.</p> <p>NOTE: Level 3 is complex and abstract. If more than one response is possible, it is at least a Level 3 and calls for use of reasoning, justification, evidence, as support for the response.</p>	<ul style="list-style-type: none"> a. Interpret information from a complex graph (such as determining features of the graph or aggregating data in the graph) b. Use reasoning, planning, and evidence c. Explain thinking (beyond a simple explanation or using only a word or two to respond) d. Justify a response e. Identify research questions and design investigations for a scientific problem f. Use concepts to solve non-routine problems/more than one possible answer g. Develop a scientific model for a complex situation h. Form conclusions from experimental or observational data i. Complete a multi-step problem that involves planning and reasoning j. Provide an explanation of a principle k. Justify a response when more than one answer is possible l. Cite evidence and develop a logical argument for concepts m. Conduct a designed investigation n. Research and explain a scientific concept o. Explain phenomena in terms of concepts 	<ul style="list-style-type: none"> a. Select or devise approach among many alternatives to solve problem b. Based on provided data from a complex experiment that is novel to the student, deduce the fundamental relationship between several controlled variables c. Conduct an investigation, from specifying a problem to designing and carrying out an experiment, to analyzing its data and forming conclusions d. Relate ideas within the content area or among content areas e. Develop generalizations of the results obtained and the strategies used and apply them to new problem situations <p>NOTE: Level 4 activities often require an extended period of time for carrying out multiple steps; however, time alone is not a distinguishing factor if skills and concepts are simply repetitive over time.</p>

5 © Karin K. Hess, National Center of Assessment, Dover, NH. khess@nceia.org. Link: http://www.nceia.org/publications/DOKscience_KH11.pdf

Social Studies ⁶

Level 1: Recall of Information	Level 2: Basic Reasoning	Level 3: Complex Reasoning	Level 4: Extended Reasoning
<ul style="list-style-type: none"> a. Recall or recognition of: fact, term, concept, trend, generalization, event, or document b. Identify or describe features of places or people c. Identify key figures in a particular context meaning of words d. Describe or explain: who, what, where, when e. Identify specific information contained in maps, charts, tables, graphs, or drawings 	<ul style="list-style-type: none"> a. Describe cause-effect of particular events b. Describe or explain: how (relationships or results), why, points of view, processes, significance, or impact c. Identify patterns in events or behavior d. Categorize events or figures in history into meaningful groups e. Identify and summarize the major events, problem, solution, conflicts f. Distinguish between fact and opinion g. Organize information to show relationships h. Compare and contrast people, events, places, concepts i. Give examples and non-examples to illustrate an idea/ concept 	<ul style="list-style-type: none"> a. Explain, generalize, or connect ideas, using supporting evidence from a text/source b. Apply a concept in other contexts c. Make and support inferences about implied causes and effects d. Draw conclusion or form alternative conclusions e. Analyze how changes have affected people or places f. Use concepts to solve problems g. Analyze similarities and differences in issues or problems h. Propose and evaluate solutions i. Recognize and explain misconceptions related to concepts 	<ul style="list-style-type: none"> a. Analyze and explain multiple perspectives or issues within or across time periods, events, or cultures b. Gather, analyze, organize, and synthesize information from multiple (print and non print) sources c. Make predictions with evidence as support d. Plan and develop solutions to problems e. Given a situation/problem, research, define, and describe the situation/problem and provide alternative solutions f. Describe, define, and illustrate common social, historical, economic, or geographical themes and how they interrelate

⁶ © Karin K. Hess, National Center of Assessment, Dover, NH. khess@nciea.org. Link: http://www.nciea.org/publications/DOKsocialstudies_KH08.pdf

Determining DOK Levels on the GED Test Subjects

DOK level is determined by content experts and experienced educators, as opposed to item difficulty, which is measured empirically through test item statistics when the items are field-tested. Items with higher DOK levels tend to be more difficult than items with a lower DOK level, but that is not necessarily the case.

Content experts take many factors into consideration when determining DOK levels. The type of item and the type of response the test-taker needs to produce are considered. If the item contains a stimulus, the complexity of the stimulus is also a factor that must be considered.

Assessment **Guide** for **Educators**

Mathematical Reasoning

June 2016



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Assessment Targets

Assessment Targets for Mathematics

The GED® test has three main purposes — to provide candidates with

1. A path to a high school credential
2. Evidence of their readiness to enter workforce training programs or postsecondary education
3. Information about their strengths and weaknesses in key academic areas

The philosophy underlying the GED® test is that there is a core of academic skills and content knowledge that must be acquired in order for an adult to be prepared to enter a job, a training program, or an entry-level, credit-bearing postsecondary course. This core of knowledge and skills is reflected in the career- and college-readiness standards now adopted in some form by the majority of states.

Content of the GED® Mathematical Reasoning Test

The GED® Mathematical Reasoning test focuses on two major content areas: quantitative problem solving and algebraic problem solving.

Based on evidence used to inform the development of the career- and college-readiness standards, postsecondary education mathematics instructors value in-depth mastery of fundamental concepts over a shallow understanding of a broad range of topics. National remediation data supports this perspective, suggesting that students with a shallow grasp of a wide range of topics are not as well prepared to succeed in postsecondary education. Those

students are more likely to need remediation in mathematics as compared to those students who have a deeper understanding of more fundamental mathematical topics. As a result, the GED® Mathematical Reasoning test focuses on the fundamentals of mathematics in these two areas, striking a balance of (1) deeper conceptual understanding, (2) procedural skill and fluency, and (3) the ability to apply these fundamentals in realistic situations. A variety of item types are used in the test, including multiple choice, drag-and-drop, hot spot, and fill-in-the-blank.

The career- and college-readiness standards include *Standards for Mathematical Practice*, which describe the types of practices, or behaviors, in mathematics that are essential to the mastery of mathematical content. These standards form the basis of the GED® Mathematical Practice Standards. These standards assess important mathematical proficiencies, including modeling, constructing and critiquing reasoning, and procedural fluency.

The following specifications guide the GED® Mathematical Reasoning test:

1. Approximately 45 percent of the test focuses on quantitative problem solving and approximately 55 percent emphasizes algebraic problem solving
2. The test includes items that test procedural skill and fluency as well as problem solving
3. Both academic and workforce contexts are used for items that measure problem solving skills
4. Approximately 50 percent of the items are written to a Depth of Knowledge cognitive complexity level of 2
5. Approximately 30 percent of the items are aligned to a Mathematical Practice Standard in addition to a content indicator
6. Candidates are provided with an on-screen scientific calculator (the Texas Instruments TI-30XS Multiview scientific calculator) for use on most of the items on the GED® Mathematical Reasoning test. (For items allow a calculator, test-takers are also allowed the option to provide their own hand-held TI-30XS for use on the operational GED® test).

Mathematical Practices

In addition to the content-based indicators, the GED® Mathematical Reasoning test also focuses on reasoning skills. These skills are embodied by the GED® Mathematical Practices which are based on two sets of standards:

1. The Standards for Mathematical Practice found in career- and college-readiness standards for mathematics
2. The Process Standards found in the Principles and Standards for School Mathematics, published by the National Council of Teachers of Mathematics

The content indicators and mathematical practices found in the GED® Mathematical Reasoning Assessment Targets, though related, each cover different aspects of item content considerations.

See **Appendix B** for the reference for each code identified in the “References” column in the Mathematical Reasoning Assessment Targets.

- The **content indicators** focus on mathematical content, as typically seen in state standards frameworks and, to some extent, the career- and college-readiness standards for mathematics. The indicators describe very specific skills and abilities of which test takers are expected to demonstrate mastery.
- The **mathematical practices**, in contrast, focus on mathematical reasoning skills and modes of thinking mathematically. Most of these skills are not content-specific, meaning that a mathematical practice indicator could be applied to items that cover a range of content domains (e.g. algebra, data analysis, number sense). The measurement of these skills is very much in keeping with the Standards for Mathematical Practice, which were created in order to “describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.”¹ The mathematical practices provide specifications for assessing real-world problem-solving skills in a mathematical context rather than requiring students only to memorize, recognize and apply a long list of mathematical algorithms.

It is crucial to assess both content and reasoning, but it is unrealistic for each individual test item to address both types of skills. The GED® test does include some items, however, in which

¹ Common Core State Standards for Mathematics (2010), p.6

content and practice mesh well together. These items primarily assess the practices, with content serving as the context in which the practices are applied. Items of this type reflect the reasoning and problem-solving skills that are so critical to career and college readiness. Where this type of natural overlap between practice and content is not possible, other items assess the content indicators directly. This ensures that each test form covers the full range of mathematical content.

Common Core State Standards References ²		Quantitative Problem Solving Assessment Targets Content Indicators	Range of Depth of Knowledge (DOK) ³
	Q.1	Apply number sense concepts, including ordering rational numbers, absolute value, multiples, factors, and exponents	
4.NF.2; 6.NS.6; 6.NS.7	Q.1.a	Order fractions and decimals, including on a number line.	1-2
6.NS.4	Q.1.b	Apply number properties involving multiples and factors, such as using the least common multiple, greatest common factor, or distributive property to rewrite numeric expressions.	1-2
8.EE.1; N-RN.2	Q.1.c	Apply rules of exponents in numerical expressions with rational exponents to write equivalent expressions with rational exponents.	1-2
6.NS.7; 7.NS.1	Q.1.d	Identify absolute value or a rational number as its distance from 0 on the number line and determine the distance between two rational numbers on the number line, including using the absolute value of their difference.	1-2
	Q.2	Add, subtract, multiply, divide, and use exponents and roots of rational, fraction and decimal numbers	
7.NS.1; 7.NS.2	Q.2.a	Perform addition, subtraction, multiplication, and division on rational numbers.	1-2
8.EE.2; N-RN.2	Q.2.b	Perform computations and write numerical expressions with squares and square roots of positive, rational numbers.	1-2
8.EE.2; N-RN.2	Q.2.c	Perform computations and write numerical expressions with cubes and cube roots of rational numbers.	1-2
7.NS.2	Q.2.d	Determine when a numerical expression is undefined.	2
7.NS.3; 7.EE.3; 8.EE.4; N-Q.1	Q.2.e	Solve one-step or multi-step arithmetic, real world problems involving the four operations with rational numbers, including those involving scientific notation.	1-2
	Q.3	Calculate and use ratios, percents and scale factors	
6.RP.3; 7.RP.1; G-MG.2	Q.3.a	Compute unit rates. Examples include but are not limited to: unit pricing, constant speed, persons per square mile, BTUs per cubic foot.	1-2
7.G.1	Q.3.b	Use scale factors to determine the magnitude of a size change. Convert between actual drawings and scale drawings.	1-2
6.RP.3; 7.RP.1; 7.RP.2; 7.RP.3; N-Q.1	Q.3.c	Solve multistep, arithmetic, real-world problems using ratios or proportions including those that require converting units of measure.	2
7.RP.3	Q.3.d	Solve two-step, arithmetic, real world problems involving percents. Examples include but are not limited to: simple interest, tax, markups and markdowns, gratuities and commissions, percent increase and decrease.	1-2
	Q.4	Calculate dimensions, perimeter, circumference, and area of two-dimensional figures	
7.G.6	Q.4.a	Compute the area and perimeter of triangles and rectangles. Determine side lengths of triangles and rectangles when given area or perimeter.	1-2

Common Core State Standards References ²		Quantitative Problem Solving Assessment Targets Content Indicators	Range of Depth of Knowledge (DOK) ³
7.G.4	Q.4.b	Compute the area and circumference of circles. Determine the radius or diameter when given area or circumference	1-2
6.EE.2; 7.G.6	Q.4.c	Compute the perimeter of a polygon. Given a geometric formula, compute the area of a polygon. Determine side lengths of the figure when given the perimeter or area.	1-2
6.EE.2; 7.G.6; 8.G.9	Q.4.d	Compute perimeter and area of 2-D composite geometric figures, which could include circles, given geometric formulas as needed.	1-2
8.G.7	Q.4.e	Use the Pythagorean theorem to determine unknown side lengths in a right triangle.	1-2
	Q.5	Calculate dimensions, surface area, and volume of three-dimensional figures	
6.EE.2; 7.G.6; 8.G.9	Q.5.a	When given geometric formulas, compute volume and surface area of rectangular prisms. Solve for side lengths or height, when given volume or surface area.	1-2
6.EE.2; 7.G.6; 8.G.9	Q.5.b	When given geometric formulas, compute volume and surface area of cylinders. Solve for height, radius, or diameter when given volume or surface area.	1-2
6.EE.2; 7.G.6; 8.G.9	Q.5.c	When given geometric formulas, compute volume and surface area of right prisms. Solve for side lengths or height, when given volume or surface area.	1-2
6.EE.2; 7.G.6; 8.G.9	Q.5.d	When given geometric formulas, compute volume and surface area of right pyramids and cones. Solve for side lengths, height, radius, or diameter when given volume or surface area.	1-2
6.EE.2; 8.G.9	Q.5.e	When given geometric formulas, compute volume and surface area of spheres. Solve for radius or diameter when given the surface area.	1-2
6.EE.2; 8.G.9	Q.5.f	Compute surface area and volume of composite 3-D geometric figures, given geometric formulas as needed.	1-2
	Q.6	Interpret and create data displays	
7.RP.2; 3.MD.3	Q.6.a	Represent, display, and interpret categorical data in bar graphs or circle graphs.	1-2
S-ID.1	Q.6.b	Represent, display, and interpret data involving one variable plots on the real number line including dot plots, histograms, and box plots.	1-2
8.SP.1	Q.6.c	Represent, display, and interpret data involving two variables in tables and the coordinate plane including scatter plots and graphs.	1-2
	Q.7	Calculate and use mean, median, mode and weighted average	
6.SP.3; S-MD.2	Q.7.a	Calculate the mean, median, mode and range. Calculate a missing data value, given the average and all the missing data values but one, as well as calculating the average, given the frequency counts of all the data values, and calculating a weighted average.	1-2
	Q.8	Utilize counting techniques and determine probabilities	
S-CR.9	Q.8.a	Use counting techniques to solve problems and determine combinations and permutations.	1-2
7.SP.7; 7.SP.8; S-CR.1; S-CR.2	Q.8.b	Determine the probability of simple and compound events.	1-2

² See the Common Core State Standards for Mathematics at www.corestandards.org for more information on the reference codes listed in the column.

³ The Depth of Knowledge (DOK) levels correspond to Norman Webb's (University of Wisconsin) Depth of Knowledge model for cognitive complexity

Common Core State Standards References ⁴		Algebraic Problem Solving Assessment Targets Content Indicators	Range of Depth of Knowledge (DOK) ⁵
	A.1	Write, evaluate, and compute with expressions and polynomials	
7.EE.1	A.1.a	Add, subtract, factor, multiply and expand linear expressions with rational coefficients.	1-2
6.EE.2	A.1.b	Evaluate linear expressions by substituting integers for unknown quantities.	1-2
6.EE.2; 6.EE.6	A.1.c	Write linear expressions as part of word-to-symbol translations or to represent common settings.	1-2
A-APR.1	A.1.d	Add, subtract, multiply polynomials, including multiplying two binomials, or divide factorable polynomials.	1-2
6.EE.2	A.1.e	Evaluate polynomial expressions by substituting integers for unknown quantities.	1-2
A-SSE.2; A-SSE.3; A-SSE.4	A.1.f	Factor polynomial expressions.	1-2
6.EE.2; 6.EE.6	A.1.g	Write polynomial expressions as part of word-to-symbol translations or to represent common settings.	1-2
6.EE.3	A.1.h	Add, subtract, multiply and divide rational expressions.	1-2
6.EE.2	A.1.i	Evaluate rational expressions by substituting integers for unknown quantities.	1-2
6.EE.2; 6.EE.6	A.1.j	Write rational expressions as part of word-to-symbol translations or to represent common settings.	1-2
	A.2	Write, manipulate, and solve linear equations	
7.EE.4; 8.EE.7; A-REI.3	A.2.a	Solve one-variable linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms or equations with coefficients represented by letters.	1-2
7.EE.4; A-CED.1; A-CED.2	A.2.b	Solve real-world problems involving linear equations.	1-2
6.EE.6; A-CED.1; A-CED.2	A.2.c	Write one-variable and multi-variable linear equations to represent context.	1-2
8.EE.6; A-REI.6	A.2.d	Solve a system of two simultaneous linear equations by graphing, substitution, or linear combination. Solve real-world problems leading to a system of linear equations.	1-2
	A.3	Write, manipulate, solve, and graph linear inequalities	
A-REI.3	A.3.a	Solve linear inequalities in one variable with rational number coefficients.	1-2
6.EE.8; 7.EE.4	A.3.b	Identify or graph the solution to a one variable linear inequality on a number line.	1-2
7.EE.4; A-CED.1; A-CED.2	A.3.c	Solve real-world problems involving inequalities.	1-2
6.EE.2; A-CED.1; A-CED.2	A.3.d	Write linear inequalities in one variable to represent context.	1-2
	A.4	Write, manipulate, and solve quadratic equations	
A-REI.4	A.4.a	Solve quadratic equations in one variable with rational coefficients and real solutions, using appropriate methods. (e.g., quadratic formula, completing the square, factoring, inspection)	1-2
A-CED.1	A.4.b	Write one-variable quadratic equations to represent context .	1-2

Common Core State Standards References ⁴		Algebraic Problem Solving Assessment Targets Content Indicators	Range of Depth of Knowledge (DOK) ⁵
	A.5	Connect and interpret graphs and functions	
6.NS.6	A.5.a	Locate points in the coordinate plane.	1
8.F.4	A.5.b	Determine the slope of a line from a graph, equation, or table.	1-2
8.EE.5	A.5.c	Interpret unit rate as the slope in a proportional relationship.	2
A-CED.2; F-IF.7	A.5.d	Graph two-variable linear equations.	1-2
8.F.3; 8.F.5; F-IF.5	A.5.e	For a function that models a linear or nonlinear relationship between two quantities, interpret key features of graphs and tables in terms of quantities, and sketch graphs showing key features of graphs and tables in terms of quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior, and periodicity.	1-2
	A.6	Connect coordinates, lines, and equations	
A-CED.2	A.6.a	Write the equation of a line with a given slope through a given point.	1-2
A-CED.2	A.6.b	Write the equation of a line passing through two given distinct points.	2
G-GPE.5	A.6.c	Use slope to identify parallel and perpendicular lines and to solve geometric problems.	1-2
	A.7	Compare, represent, and evaluate functions	
8.EE.5	A.7.a	Compare two different proportional relationships represented in different ways. Examples include but are not limited to: compare a distance-time graph to a distance-time equation to determine which of two moving objects has a greater speed.	2
8.F.1; F-IF.1	A.7.b	Represent or identify a function in a table or graph as having exactly one output (one element in the range) for each input (each element in the domain).	1-2
F-IF.2	A.7.c	Evaluate linear and quadratic functions for values in their domain when represented using function notation.	1-2
8.F.2; F-IF.9	A.7.d	Compare properties of two linear or quadratic functions each represented in a different way (algebraically, numerically in tables, graphically or by verbal descriptions). Examples include but are not limited to: given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.	2

4 See the Common Core State Standards for Mathematics at www.corestandards.org for more information on the reference codes listed in the column.

5 The Depth of Knowledge (DOK) levels correspond to Norman Webb's (University of Wisconsin) Depth of Knowledge model for cognitive complexity.

References ⁶	Mathematical Practices	Range of Depth of Knowledge (DOK) ⁷
M1, M3, M4, M5 N2, N5, N6, N8	MP1 Building Solution Pathways and Lines of Reasoning a. Search for and recognize entry points for solving a problem. b. Plan a solution pathway or outline a line of reasoning. c. Select the best solution pathway, according to given criteria. d. Recognize and identify missing information that is required to solve a problem. e. Select the appropriate mathematical technique(s) to use in solving a problem or a line of reasoning.	1-2 1-3 2-3 1-2 1-3
M2, M4 N2, N3	MP2 Abstracting Problems a. Represent real world problems algebraically. b. Represent real world problems visually. c. Recognize the important and salient attributes of a problem.	1-2 1-2 2-3
M3 N7, N9	MP3 Furthering Lines of Reasoning a. Build steps of a line of reasoning or solution pathway, based on previous step or givens. b. Complete the lines of reasoning of others. c. Improve or correct a flawed line of reasoning.	1-3 1-3 2-3
M2, M4, M6 N1, N2, N9	MP4 Mathematical Fluency a. Manipulate and solve arithmetic expressions. b. Transform and solve algebraic expressions. c. Display data or algebraic expressions graphically.	1-2 1-2 1-2
M3 N7	MP5 Evaluating Reasoning and Solution Pathways a. Recognize flaws in others' reasoning. b. Recognize and use counterexamples. c. Identify the information required to evaluate a line of reasoning.	2-3 2-3 2-3

6 The GED Mathematics Practices (MP#) are derived from the Common Core State Standards Math Practices (M#) and National Council of Teachers of Mathematics' Principles and Standards for School Mathematics (N#).

7 The Depth of Knowledge (DOK) levels correspond to Norman Webb's (University of Wisconsin) Depth of Knowledge model of cognitive

GED® Test Mathematics Formula Sheet⁸

Area of a:

square	$A = s^2$
rectangle	$A = lw$
parallelogram	$A = bh$
triangle	$A = \frac{1}{2}bh$
trapezoid	$A = \frac{1}{2}h(b_1 + b_2)$
circle	$A = \pi r^2$

Perimeter of a:

square	$P = 4s$
rectangle	$P = 2l + 2w$
triangle	$P = s_1 + s_2 + s_3$
Circumference of a circle	$C = 2\pi r$ OR $C = \pi d$; $\pi \approx 3.14$

Surface area and volume of a:

rectangular prism	$SA = 2lw + 2lh + 2wh$	$V = lwh$
right prism	$SA = ph + 2B$	$V = Bh$
cylinder	$SA = 2\pi rh + 2\pi r^2$	$V = \pi r^2 h$
pyramid	$SA = \frac{1}{2}ps + B$	$V = \frac{1}{3}Bh$
cone	$SA = \pi rs + \pi r^2$	$V = \frac{1}{3}\pi r^2 h$
sphere	$SA = 4\pi r^2$	$V = \frac{4}{3}\pi r^3$

(p = perimeter of base with area B ; $\pi \approx 3.14$)

Data

mean	mean is equal to the total of the values of a data set, divided by the number of elements in the data set
median	median is the middle value in an odd number of ordered values of a data set, or the mean of the two middle values in an even number of ordered values in a data set

Algebra

slope of a line	$m = \frac{y_2 - y_1}{x_2 - x_1}$
slope-intercept form of the equation of a line	$y = mx + b$
point-slope form of the equation of a line	$y - y_1 = m(x - x_1)$
standard form of a quadratic equation	$y = ax^2 + bx + c$
quadratic formula	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
Pythagorean theorem	$a^2 + b^2 = c^2$
simple interest	$I = Prt$ (I = interest, P = principal, r = rate, t = time)
distance formula	$d = rt$
total cost	total cost = (number of units) × (price per unit)

8 Mathematics test. It will be available to test-takers during the entire Mathematics Test.

Item Types & Layouts

Item Types in Mathematics

The GED® test now uses a variety of item types, made possible through computer-based testing. The computer-based testing platform allows the opportunity to use interactive item types that are not possible on a pencil-and paper test.

Item Types in Mathematical Reasoning

The GED® Mathematical Reasoning test includes:

- Multiple choice items
- Fill-in-the-blank items (Technology-enhanced)
- Drop-down items (Technology-enhanced)
- Hot Spot items (Technology-enhanced)
- Drag-and-drop items (Technology-enhanced)

The items on the Mathematical Reasoning test assess the full depth and breadth of skills outlined in the GED® Mathematics Assessment Targets. Employing a wide variety of item types also allows us to assess the targeted content at a number of Depth of Knowledge (DOK) levels, as they each provide opportunities for test-takers to apply different cognitive strategies to demonstrate proficiency with mathematics content (See *Depth of Knowledge Summary* in the Introduction to the Assessment Guide for Educators for more information). Each item type on the Mathematical Reasoning test is presented either as a stand-alone item or as part of an item scenario in which two or three items pertain to a single stimulus. Stimulus materials may include brief text, graphs, tables, or other graphic representations of numeric, geometric, statistical, or algebraic concepts.

Technology-Enhanced Items

In Technology-enhanced items, test-takers interact with the content in a more authentic way than is possible in a standard multiple-choice test question. Test-takers may be asked to select blocks of text, select multiple answers from a list, drag an answer to a location, or manipulate symbols or other graphics.

Multiple choice (MC)

Multiple choice (MC) items consist of a question accompanied by several possible answer choices. This item type is used to assess every indicator listed in the GED® Mathematics Assessment Targets. Multiple choice items continue to be a reliable method for measuring skills and knowledge at a range of cognitive levels in a standardized manner. Each MC item on the GED® test has four answer options.

Fill-in-the-blank (FIB)

Fill-in-the-blank (FIB) items consist of a statement or problem with an empty field for test-taker responses. This allows test-takers the to type in the numerical answer to a problem or to enter an equation using the keyboard and the character selector.

Drop-down

Drop-down items are items with multiple response options embedded directly within a text. Items with drop-down menu functionality will be used to give test-takers opportunities to choose the correct math vocabulary or numerical value to complete statements. An advantage to this item type is that the test-taker is able to see the complete statements on screen in an authentic way. Drop-down items are frequently also used to make comparisons between two quantities.

Hot spot

Hot spot items consist of a graphic image with virtual “sensors” placed strategically within the image. This item type can be used to measure skills with regard to plotting points on coordinate grids, on number lines, or on scatter plots. Test-takers can also select numerical or algebraic expressions that identify parallel equations, parts of scale models, or multiple representations with the same numeric value. Hot spot items create a much more authentic experience for test-takers because they provide opportunities to demonstrate their proficiency with a variety of quantitative, algebraic, and geometric skills.

Drag-and-drop

Drag-and-drop items are interactive tasks that require test-takers to move small images, words, or numerical expressions (sometimes referred to as the “draggers”) to designated places on the computer screen (called “drop targets”). These types

of items can be used to create expressions, equations, and inequalities by dragging numbers, operators, and variables into boxes that form an equation. Drag-and-drop items can also be used to demonstrate classifying and sorting skills as they provide an opportunity for test-takers to organize data based on a set of characteristics. The test-taker can also order steps in a process or solution or match items from two sets.

Item Layouts in Mathematics

Item layouts are shown to highlight the structure of each item type described in the previous section. The content in the item layouts shown in this guide is not representative of the GED® test and is merely included to illustrate test item functionality rather than content.

Multiple Choice Item and a Passage

This layout will appear primarily on the RLA test. However, item scenarios in which two or three items pertain to a single, brief text or graphic stimulus will appear in a similar format on the Mathematical Reasoning test.

Social Studies - Candidate Name
Question 1 of 10

Answer Explanation
Flag for Review

page 1
page 2
page 3

The chart below describes the four methods used to amend the U.S. Constitution.

Four Methods of Amending the U.S. Constitution

	Step 1	Step 2
1.	A two-thirds vote in both houses of the U.S. Congress	Ratified by three-fourths of the state legislatures
2.	A two-thirds vote in both houses of the U.S. Congress	Ratified by ratification conventions in three-fourths of the states
3.	A national constitutional convention called by two-thirds of the state legislatures	Ratified by three-fourths of the state legislatures
4.	A national constitutional convention called by two-thirds of the state legislatures	Ratified by ratification conventions in three-fourths of the states

Which statement correctly describes an important way that the process of amending the U.S. Constitution is different from the process of creating federal laws?

- A. Only one government branch is involved in the amendment process.
- B. Only one legislative body can conclude the amendment process.
- C. Only state legislatures are involved in the amendment process.
- D. Only state governments can start the amendment process.

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Fill-in-the-blank Item

This item type (shown below using Social Studies content) requires test-takers to fill in a single blank.

Social Studies - Candidate Name Question 5 of 10

Answer Explanation Flag for Review

Women's Voting Rights

Since the 19th century, many people have worked for equal rights for women. Much of this effort focused on suffrage, which is the right to vote. One of the greatest victories for advocates of women's rights was ratification of the 19th Amendment to the U.S. Constitution in 1920. The 19th Amendment stated that "The right of citizens of the United States to vote shall not be denied or abridged by the United States or by any State on account of sex." However, the struggle for equality in other areas of society continued even after the 19th Amendment granted woman suffrage.

Number of Women in the U.S. House of Representatives, 1917-2011

Session of Congress	Number of Women Representatives
65	0
66	1
67	2
68	3
69	4
70	5
71	6
72	7
73	8
74	9
75	10
76	11
77	12
78	13
79	14
80	15
81	16
82	17
83	18
84	19
85	20
86	21
87	22
88	23
89	24
90	25
91	26
92	27
93	28
94	29
95	30
96	31
97	32
98	33
99	34
100	35
101	36
102	37
103	38
104	39
105	40
106	45
107	50
108	55
109	60
110	65
111	70

This data is taken from the public domain.

Type the appropriate session of Congress in the box.

The number of women representatives who served in the Congress was twice the number of women representatives who served in the 101st Congress.

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Drop-down Item

In this item type, test-takers will choose their answers from a drop-down menu that will appear embedded within text.

Mathematical Reasoning - Candidate Name Question 8 of 10

Answer Explanation Calculator Flag for Review

Formula Sheet Calculator Reference

The graph shows the level of ibuprofen, y units, in a patient's bloodstream x hours after the ibuprofen was taken.

Ibuprofen Level in Patient's Bloodstream

Time Since Ibuprofen Was Taken (hours)	Ibuprofen Level (units)
0	0
1	6
2	4
3	3
4	2
5	1
8	1

The level of ibuprofen in the patient's bloodstream increased from hours to hours.

Select...

0

$\frac{2}{3}$

$2\frac{1}{2}$

5

8

Hot Spot Item

This item layout shows a brief stimulus placed in a split screen with a number line graphic. The graphic contains one or more “sensor” regions, or hot spots, on which the test-takers can click in order to provide responses to the question. In this example, the green circles represent the test-taker’s answer to this item.

Mathematical Reasoning - Candidate Name
Question 5 of 10

Answer Explanation
 Calculator

 Flag for Review

A scientist is studying red maple tree growth in a state park. She measured the trunk diameters of a sample of trees in the same month every other year. The tables show the data for two of the trees.

Tree 1		Tree 2	
Year	Trunk Diameter (inches)	Year	Trunk Diameter (inches)
1	18.6	1	11.4
3	19.2	3	12.0
5	19.8	5	12.6
7	20.4	7	13.2
9	21.0	9	13.8
11	21.6	11	14.4
13	22.2	13	15.0

This is the final year in which she will collect data. When her data collection is complete, she will predict future red maple tree growth.

Formula Sheet
Calculator Reference

The scientist plots the data for tree 2 on a coordinate grid. She begins by plotting data for year 3 and year 11. What are the locations of the two points on the coordinate grid?

Click on the grid to plot the points.

(Note: To remove a point, place the arrow over the point and click the left mouse button.)

Diameter of Tree 2

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Drag-and-drop Item

This example using math content shows six elements of an equation (boxed numbers and boxed letter x), three of which would be selected and dragged to one of the drop targets in the equation boxes next to “y =.” In items that use this layout, the appearance and number of the drag tokens and the drop targets may vary, but all drag-and-drop items allow test-takers to interact with the material as they move objects around on the screen.

Mathematical Reasoning - Candidate Name
Question 6 of 10

Answer Explanation
 Calculator

 Flag for Review

A scientist is studying red maple tree growth in a state park. She measured the trunk diameters of a sample of trees in the same month every other year. The tables show the data for two of the trees.

Tree 1		Tree 2	
Year	Trunk Diameter (inches)	Year	Trunk Diameter (inches)
1	18.6	1	11.4
3	19.2	3	12.0
5	19.8	5	12.6
7	20.4	7	13.2
9	21.0	9	13.8
11	21.6	11	14.4
13	22.2	13	15.0

This is the final year in which she will collect data. When her data collection is complete, she will predict future red maple tree growth.

Formula Sheet
 Calculator Reference

The scientist creates an equation that models her data for each tree so that she can predict the diameter in the future. Complete a linear equation that fits the data for tree 1, where x is the year and y is the trunk diameter, in inches.

Click on the variables and numbers you want to select and drag them into the boxes.

Equation for Tree 1

$$y = \boxed{0.3} \boxed{} + \boxed{0.6}$$

-0.6

-0.3

18.0

18.3

18.6

x

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Performance Level Descriptors

Performance Level Descriptors

Performance Level Descriptors explain the skills a test-taker generally demonstrates in order to score into one of three performance levels on the GED® test and the skills they need to develop to advance their score.

The four performance levels for the GED® test are Below Passing, Pass/High School Equivalency, GED® College Ready, and GED® College Ready + Credit.

Below Passing Level

Test-takers who score at this level typically have a **limited but developing** proficiency in demonstrating skills in the following categories: number sense and computation, geometric measurement, data analysis and statistics, and algebraic expressions and functions.

Test-takers at the Below Passing level typically demonstrate the following skills:

Quantitative Problem Solving with Rational Numbers

- Apply number properties involving multiples and factors at a limited and inconsistent level
- Solve real-world problems using rational numbers at a limited and inconsistent level
- Compute unit rates at a limited and inconsistent level

Quantitative Problem Solving in Measurement

- Compute the area and perimeter of triangles and rectangles at a limited and inconsistent level
- Determine side lengths of triangles and rectangles when given area or perimeter at a limited and inconsistent level
- Represent, display, and interpret categorical data in circle and bar graphs
- Represent, display, and interpret categorical data in tables and scatter plots

Algebraic Problem Solving with Expressions and Equations

- Evaluate linear expressions
- Write linear expressions to represent context at a limited and inconsistent level
- Evaluate polynomial expressions at a limited and inconsistent level
- Write rational expressions to represent context at a limited and inconsistent level
- Solve real-world problems involving linear equations at a limited and inconsistent level

- Solve algebraic and real-world problems involving systems of equations

Algebraic Problem Solving with Graphs and Functions

- Locate and plot points in the coordinate plane
- Interpret unit rate as the slope in a proportional relationship at a limited and inconsistent level
- For a linear or nonlinear relationship, sketch graphs and interpret key features of graphs and tables in terms of quantities
- Compare two different proportional relationships, each represented in different ways, at a limited and inconsistent level
- Represent or identify a function in a table or graph as having exactly one output for each input at a limited and inconsistent level
- Evaluate linear and quadratic functions at a limited and inconsistent level

In order to progress to the **Pass/High School Equivalency** level, test-takers need to:

1. continue to **strengthen** the skills listed in the Below Pass level, including:
 - Apply number properties involving multiples and factors
 - Solve real-world problems using rational numbers
 - Compute unit rates
 - Compute the area and perimeter of triangles and rectangles
 - Determine side lengths of triangles and rectangles when given area or perimeter
 - Write linear expressions to represent context
 - Evaluate polynomial expressions
 - Write rational expressions to represent context
 - Solve real-world problems involving linear equations
 - Interpret unit rate as the slope in a proportional relationship
 - Compare two different proportional relationships, each represented in different ways
 - Represent or identify a function in a table or graph as having exactly one output for each input
 - Evaluate linear and quadratic functions

and

2. develop the following additional skills:
 - Order fractions and decimals, including on a number line
 - Simplify numerical expressions with rational exponents
 - Identify absolute value of a rational number as its distance from 0 on the number line and determine the distance between two rational numbers on the number line
 - Perform computations with rational numbers
 - Compute numerical expressions with squares and square roots of positive, rational numbers
 - Compute numerical expressions with cubes and cube roots of positive, rational numbers
 - Determine when a numerical expression is undefined
 - Use scale factors to determine the magnitude of a size change, and convert between actual drawings and scale drawings
 - Solve arithmetic and real-world problems involving ratios and proportions a satisfactory level
 - Solve multi-step arithmetic and real-world problems involving percents
 - Compute the area and circumference of circles
 - Determine the radius and diameter of circles when given area or circumference
 - Compute the area and perimeter of polygons
 - Determine side lengths of polygons when given area or perimeter
 - Compute the area and perimeter of composite figures
 - Use the Pythagorean theorem to determine unknown side lengths in a right triangle
 - Compute volume and surface area of rectangular prisms

2. *develop the following additional skills (continued):*

- Determine side lengths and height of rectangular prisms when given volume or surface area
- Compute volume and surface area of cylinders
- Determine radius, diameter, and height of cylinders, when given volume or surface area
- Compute volume and surface area of right prisms
- Determine side lengths and height of right prisms when given volume or surface area
- Determine side lengths and height of right pyramids and cones when given volume or surface area
- Compute volume and surface area of spheres
- Determine radius and diameter of spheres when given volume or surface area
- Compute volume and surface area of composite figures
- Represent, display, and interpret categorical data in dot plots, histograms, and box plots
- Calculate the median, mode, and weighted average, and calculate a missing data value, given the average and all the missing data values but one
- Use counting techniques to solve problems and determine combinations and permutations
- Compute with linear expressions
- Write linear expressions to represent context
- Evaluate linear expressions
- Compute with polynomials
- Factor polynomial expressions
- Write polynomial expressions to represent context
- Evaluate rational expressions
- Solve linear equations in one variable
- Write linear equations to represent context
- Solve linear inequalities in one variable
- Identify or graph the solution to a one variable linear inequality on a number line
- Solve real-world problems involving inequalities
- Write linear equations to represent context
- Solve quadratic equations in one variable
- Write quadratic equations to represent context
- Determine the slope of a line from a graph, equation, or table
- Graph two-variable linear equations
- Write the equation of a line with a given slope through a given point
- Write the equation of a line passing through two given distinct points
- Use slope to identify parallel and perpendicular lines and to solve geometric problems
- Compare two different linear or quadratic functions, each represented in different ways

Pass/High School Equivalency

Test-takers who score at this level typically have a **satisfactory** proficiency in demonstrating skills in the following categories: number sense and computation, geometric measurement, data analysis and statistics, and algebraic expressions and functions.

Test-takers are generally able to demonstrate knowledge of and ability with the skills identified in the Below Passing level at a satisfactory level as well as the following skills:

Quantitative Problem Solving with Rational Numbers

- Order fractions and decimals, including on a number line
- Apply number properties involving multiples and factors at a satisfactory level
- Simplify numerical expressions with rational exponents at a satisfactory level
- Identify absolute value of a rational number as its distance from 0 on the number line and determine the distance between two rational numbers on the number line, at a satisfactory level
- Perform computations with rational numbers
- Compute numerical expressions with squares and square roots of positive, rational numbers at a satisfactory level
- Compute numerical expressions with cubes and cube roots of positive, rational numbers
- Determine when a numerical expression is undefined at a satisfactory level
- Solve real-world problems using rational numbers at a satisfactory level
- Compute unit rates at a satisfactory level
- Use scale factors to determine the magnitude of a size change, and convert between actual drawings and scale drawings
- Solve arithmetic and real-world problems involving ratios and proportions a satisfactory level
- Solve multi-step arithmetic and real-world problems involving percents

Quantitative Problem Solving in Measurement

- Compute the area and perimeter of triangles and rectangles at a satisfactory level
- Determine side lengths of triangles and rectangles when given area or perimeter at a satisfactory level
- Compute the area and circumference of circles
- Determine the radius and diameter of circles when given area or circumference
- Compute the area and perimeter of polygons
- Determine side lengths of polygons when given area or perimeter
- Compute the area and perimeter of composite figures
- Use the Pythagorean theorem to determine unknown side lengths in a right triangle at a satisfactory level
- Compute volume and surface area of rectangular prisms
- Determine side lengths and height of rectangular prisms when given volume or surface area
- Compute volume and surface area of cylinders at a satisfactory level
- Determine radius, diameter, and height of cylinders, when given volume or surface area, at a satisfactory level
- Compute volume and surface area of right prisms
- Determine side lengths and height of right prisms when given volume or surface area
- Compute volume and surface area of right pyramids and cones
- Determine side lengths, radius, diameter, and height of right pyramids and cones when given volume or surface area
- Compute volume and surface area of spheres
- Determine radius and diameter of spheres when given volume or surface area
- Compute volume and surface area of composite figures at a satisfactory level

- Represent, display, and interpret categorical data in dot plots, histograms, and box plots
- Calculate the median, mode, and weighted average, and calculate a missing data value, given the average and all the missing data values but one
- Use counting techniques to solve problems and determine combinations and permutations at a satisfactory level

Algebraic Problem Solving with Expressions and Equations

- Compute with linear expressions
- Write linear expressions to represent context at a satisfactory level
- Compute with polynomials at a satisfactory level
- Evaluate polynomial expressions at a satisfactory level
- Factor polynomial expressions at a satisfactory level
- Write polynomial expressions to represent context
- Evaluate rational expressions
- Write rational expressions to represent context at a satisfactory level
- Solve linear equations in one variable
- Solve real-world problems involving linear equations at a satisfactory level
- Write linear equations to represent context
- Solve linear inequalities in one variable at a satisfactory level
- Identify or graph the solution to a one variable linear inequality on a number line
- Solve real-world problems involving inequalities at a satisfactory level
- Write linear equations to represent context at a satisfactory level
- Solve quadratic equations in one variable at a satisfactory level
- Write quadratic equations to represent context

Algebraic Problem Solving with Graphs and Functions

- Determine the slope of a line from a graph, equation, or table at a satisfactory level
- Interpret unit rate as the slope in a proportional relationship at a satisfactory level
- Graph two-variable linear equations at a satisfactory level
- Write the equation of a line with a given slope through a given point at a satisfactory level
- Write the equation of a line passing through two given distinct points
- Use slope to identify parallel and perpendicular lines and to solve geometric problems at a satisfactory level
- Compare two different proportional relationships, each represented in different ways, at a satisfactory level
- Represent or identify a function in a table or graph as having exactly one output for each input at a satisfactory level
- Evaluate linear and quadratic functions at a satisfactory level
- Compare two different linear or quadratic functions, each represented in different ways, at a satisfactory level

In order to progress to the **GED® College Ready** level, test-takers need to:

1. continue to **strengthen** the skills listed in the Below Pass and the Pass/High School Equivalency levels, including:
 - Simplify numerical expressions with rational exponents
 - Identify absolute value of a rational number as its distance from 0 on the number line and determine the distance between two rational numbers on the number line
 - Compute numerical expressions with squares and square roots of positive, rational numbers
 - Determine when a numerical expression is undefined
 - Solve real-world problems using rational numbers
 - Solve arithmetic and real-world problems involving ratios and proportions
 - Use the Pythagorean theorem to determine unknown side lengths in a right triangle
 - Compute volume and surface area of cylinders
 - Determine radius, diameter, and height of cylinders, when given volume or surface area Compute volume and surface area of composite figures
 - Use counting techniques to solve problems and determine combinations and permutations
 - Compute with polynomials
 - Factor polynomial expressions
 - Solve linear inequalities in one variable
 - Solve real-world problems involving inequalities
 - Write linear inequalities to represent context
 - Solve quadratic equations in one variable
 - Determine the slope of a line from a graph, equation, or table
 - Graph two-variable linear equations
 - Write the equation of a line with a given slope through a given point
 - Use slope to identify parallel and perpendicular lines and to solve geometric problems
 - Compare two different linear or quadratic functions, each represented in different ways
- and
2. develop the following skills:
 - Use counting techniques to solve problems and determine combinations and permutations
 - Compute with rational expressions

GED® College Ready

Test-takers who score at this level typically have a **strong** proficiency in demonstrating skills in the following categories: number sense and computation, geometric measurement, data analysis and statistics, and algebraic expressions and functions.

Test-takers are generally able to demonstrate knowledge of and ability with the skills identified in the Below Passing level and the Pass/High School Equivalency level, as well as the following skills:

Quantitative Problem Solving with Rational Numbers

- Simplify numerical expressions with rational exponents at a strong level
- Identify absolute value of a rational number as its distance from 0 on the number line and determine the distance between two rational numbers on the number line, at a strong level
- Compute numerical expressions with squares and square roots of positive, rational numbers at a strong level
- Determine when a numerical expression is undefined at a strong level
- Solve arithmetic and real-world problems involving ratios and proportions at a strong level

Quantitative Problem Solving in Measurement

- Use the Pythagorean theorem to determine unknown side lengths in a right triangle at a strong level
- Compute volume and surface area of cylinders at a strong level
- Determine radius, diameter, and height of cylinders, when given volume or surface area, at a strong level
- Compute volume and surface area of composite figures at a strong level
- Use counting techniques to solve problems and determine combinations and permutations at a strong level
- Determine the probability of simple and compound events at a strong level

Algebraic Problem Solving with Expressions and Equations

- Compute with polynomials at a strong level
- Factor polynomial expressions at a strong level
- Compute with rational expressions
- Solve linear inequalities in one variable at a strong level
- Solve real-world problems involving inequalities at a strong level
- Write linear inequalities to represent context at a strong level
- Solve quadratic equations in one variable at a strong level

Algebraic Problem Solving with Graphs and Functions

- Determine the slope of a line from a graph, equation, or table at a strong level
- Graph two-variable linear equations at a strong level
- Write the equation of a line with a given slope through a given point at a strong level
- Use slope to identify parallel and perpendicular lines and to solve geometric problems at a strong level
- Compare two different linear or quadratic functions, each represented in different ways, at a strong level

In order to progress to **GED® College Ready + Credit** level, test-takers need to continue to strengthen the skills listed in the GED® College Ready level, including:

- Compute volume and surface area of composite figures
- Use counting techniques to solve problems and determine combinations and permutations
- Write linear inequalities to represent context
- Solve quadratic equations in one variable
- Graph two-variable linear equations
- Use slope to identify parallel and perpendicular lines and to solve geometric problems
- Compare two different linear or quadratic functions, each represented in different ways

GED® College Ready + Credit

Test-takers who score at this level typically have an **outstanding** proficiency in demonstrating skills in the following categories: number sense and computation, geometric measurement, data analysis and statistics, and algebraic expressions and functions.

Test-takers are generally able to demonstrate knowledge of and ability with the skills identified in the previous levels as well as the following skills:

Quantitative Problem Solving in Measurement

- Compute volume and surface area of composite figures at an outstanding level
- Use counting techniques to solve problems and determine combinations and permutations at an outstanding level
- Determine the probability of simple and compound events at an outstanding level

Algebraic Problem Solving with Expressions and Equations

- Write linear inequalities to represent context at an outstanding level
- Solve quadratic equations in one variable at an outstanding level

Algebraic Problem Solving with Graphs and Functions

- Graph two-variable linear equations at an outstanding level
- Use slope to identify parallel and perpendicular lines and to solve geometric problems at an outstanding level
- Compare two different linear or quadratic functions, each represented in different ways, at an outstanding level

Appendix

A

The GED® Test - Mathematical Reasoning: A Content Comparison Between the 2002 test and the Current test

Note: Codes in the Current Test column refer to the Current GED® Assessment Targets and Indicators as outlined in Chapter 1. The codes may not appear in numerical order, as the goal of the table below is to show areas of correspondence between the 2002 content and the current test content.

Mathematical Reasoning: Content Specifications	
2002	Current Test
Represent and use numbers in a variety of equivalent forms (integer, fraction, decimal, percent, exponential, and scientific) in real-world and mathematical problem situations.	<p>Q.1.a Order fractions and decimals, including on a number line.</p> <p>Q.1.c Apply rules of exponents in numerical expressions with rational exponents to write equivalent expressions with rational exponents.</p> <p>Q.3.d Solve two-step, arithmetic, real world problems involving percents. Examples include but are not limited to: simple interest, tax, markups and markdowns, gratuities and commissions, percent increase and decrease.</p>
Represent, analyze, and apply whole numbers, decimals, fractions, percents, ratios, proportions, exponents, roots, and scientific notation in a wide variety of situations.	<p>Q.1.a Order fractions and decimals, including on a number line.</p> <p>Q.1.b Apply number properties involving multiples and factors, such as using the least common multiple, greatest common factor, or distributive property to rewrite numeric expressions.</p> <p>Q.2.a Perform addition, subtraction, multiplication, and division on rational numbers.</p> <p>Q.2.b Perform computations and write numerical expressions with squares and square roots of positive, rational numbers.</p> <p>Q.2.c Perform computations and write numerical expressions with cubes and cube roots of positive, rational numbers.</p> <p>Q.2.e Solve one-step or multi-step arithmetic, real world problems involving the four operations with rational numbers, including those involving scientific notation.</p> <p>Q.3.c Solve multistep, arithmetic, real-world problems using ratios or proportions including those that require converting units of measure.</p> <p>Q.3.d Solve two-step, arithmetic, real world problems involving percents. Examples include but are not limited to: simple interest, tax, markups and markdowns, gratuities and commissions, percent increase and decrease.</p>
Recognize equivalencies and order relations for whole numbers, fractions, decimals, integers, and rational numbers.	Q.1.a Order fractions and decimals, including on a number line.
Select the appropriate operations to solve problems (for example, When should I divide?).	[Not assessed on the current test]
Relate basic arithmetic operations to one another.	[Not assessed on the current test]
Calculate mentally, with pencil and paper, and with a scientific calculator using whole numbers, fractions, decimals, and integers.	Q.2.a Perform addition, subtraction, multiplication, and division on rational numbers.
Use estimation to solve problems and assess the reasonableness of an answer.	[Not assessed on the current test]
Model and solve problems using the concepts of perpendicularity, parallelism, congruence, and similarity of geometric figures.	[Not assessed on the Current test]
Use spatial visualization skills to describe and analyze geometric figures and translations/rotations/dilations of geometric figures.	[Not assessed on the Current test]
Use the Pythagorean theorem to model and solve problems.	Q.4.e Use the Pythagorean theorem to determine unknown side lengths in a right triangle.

Mathematical Reasoning: Content Specifications	
2002	Current Test
Find, use, and interpret the slope of a line, the y-intercept of a line, and the intersection of two lines.	<p>A.5.b Determine the slope of a line from a graph, equation, or table.</p> <p>A.5.c Interpret unit rate as the slope in a proportional relationship. A.5.d Graph two-variable linear equations.</p> <p>A.5.e For a function that models a linear or nonlinear relationship between two quantities, interpret key features of graphs and tables in terms of quantities, and sketch graphs showing key features of graphs and tables in terms of quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior, and periodicity.</p>
Find, use, and interpret the slope of a line, the y-intercept of a line, and the intersection of two lines (continued from previous page).	<p>A.6.a Write the equation of a line with a given slope through a given point.</p> <p>A.6.c Use slope to identify parallel and perpendicular lines and to solve geometric problems.</p>
Use coordinates to design and describe geometric figures.	A.5.a Locate points in the coordinate plane.
Identify and select appropriate units of metric and customary measures.	[Not assessed on the current test]
Convert and estimate units of metric and customary measure (all conversions within systems).	<p>Q.3.c Solve multistep, arithmetic, real-world problems using ratios or proportions including those that require converting units of measure.</p> <p>Q.4.a Compute the area and perimeter of triangles and rectangles. Determine side lengths of triangles and rectangles when given area or perimeter.</p> <p>Q.4.b Compute the area and circumference of circles. Determine the radius or diameter when given area or circumference.</p> <p>Q.4.c Compute the perimeter of a polygon. Given a geometric formula, compute the area of a polygon. Determine side lengths of the figure when given the perimeter or area.</p> <p>Q.4.d Compute perimeter and area of 2-D composite geometric figures, which could include circles, given geometric formulas as needed.</p> <p>Q.5.a When given geometric formulas, compute volume and surface area of rectangular prisms. Solve for side lengths or height, when given volume or surface area.</p> <p>Q.5.b When given geometric formulas, compute volume and surface area of cylinders. Solve for height, radius, or diameter when given volume or surface area.</p> <p>Q.5.c When given geometric formulas, compute volume and surface area of right prisms. Solve for side lengths or height, when given volume or surface area.</p> <p>Q.5.d When given geometric formulas, compute volume and surface area of right pyramids and cones. Solve for side lengths, height, radius, or diameter when given volume or surface area.</p> <p>Q.5.e When given geometric formulas, compute volume and surface area of spheres. Solve for radius or diameter when given the surface area.</p>

Mathematical Reasoning: Content Specifications	
2002	Current Test
Solve and estimate solutions to problems involving length, perimeter, area, surface area, volume, angle measurement, capacity, weight, and mass.	Q.5.f Compute surface area and volume of composite 3-D geometric figures, given geometric formulas as needed.
Use uniform rates (e.g., miles per hour, bushels per acre) in problem situations.	Q.2.e Solve one-step or multi-step arithmetic, real world problems involving the four operations with rational numbers, including those involving scientific notation. Q.3.a Compute unit rates. Examples include but are not limited to: unit pricing, constant speed, persons per square mile, BTUs per cubic foot. Q.3.b Use scale factors to determine the magnitude of a size change. Convert between actual drawings and scale drawings. Q.3.c Solve multistep, arithmetic, real-world problems using ratios or proportions including those that require converting units of measure.
Read and interpret scales, meters, and gauges	[Not assessed on the current test]
Predict the impact of changes in linear dimension on the perimeter, area, and volume of figures.	[Not assessed on the current test]
Construct, interpret, and draw inferences from tables, charts, and graphs. Make inferences and convincing arguments based on data analysis. Represent data graphically in ways that make sense and are appropriate to the context. Use an informal line of best fit to make predictions from data.	Q.6.a Represent, display, and interpret categorical data in bar graphs or circle graphs. Q.6.b Represent, display, and interpret data involving one variable plots on the real number line including dot plots, histograms, and box plots. Q.6.c Represent, display, and interpret data involving two variables in tables and the coordinate plane including scatter plots and graphs.
Evaluate arguments based on data analysis, including distinguishing between correlation and causation.	[Not assessed on the current test]
Apply measures of central tendency (mean, median, mode) and analyze the effect of changes in data on these measures.	Q.7.a Calculate the mean, median, mode and range. Calculate a missing data value, given the average and all the missing data values but one, as well as calculating the average, given the frequency counts of all the data values, and calculating a weighted average.
Apply and recognize sampling and bias in statistical claims.	[Not assessed on the current test]
Make predictions based on experimental or theoretical probabilities, including listing possible outcomes.	Q.8.a Use counting techniques to solve problems and determine combinations and permutations. Q.8.b Determine the probability of simple and compound events.
Compare and contrast different sets of data on the basis of measures of central tendency and dispersion (range, standard deviation).	[Not assessed on the current test]

Mathematical Reasoning: Content Specifications	
2002	Current Test
Analyze and represent situations involving variable quantities with tables, graphs, verbal descriptions, and equations.	<p>A.2.b Solve real-world problems involving linear equations.</p> <p>A.5.d Graph two-variable linear equations.</p> <p>A.5.e For a function that models a linear or nonlinear relationship between two quantities, interpret key features of graphs and tables in terms of quantities, and sketch graphs showing key features of graphs and tables in terms of quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior, and periodicity.</p> <p>A.7.a Compare two different proportional relationships represented in different ways. Examples include but are not limited to: compare a distance-time graph to a distance-time equation to determine which of two moving objects has a greater speed.</p> <p>A.7.d Compare properties of two linear or quadratic functions each represented in a different way (algebraically, numerically in tables, graphically or by verbal descriptions). Examples include but are not limited to: given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.</p>
Recognize that a variety of problem situations may be modeled by the same function or type of function (e.g., $y = mx + b$, $y = ax^2$, $y = ax$, $y = 1/x$).	<p>A.2.c Write one-variable and multi-variable linear equations to represent context.</p> <p>A.4.b Write one-variable quadratic equations to represent context.</p>
Convert between different representations, such as tables, graphs, verbal descriptions, and equations.	<p>A.2.c Write one-variable and multi-variable linear equations to represent context.</p> <p>A.4.b Write one-variable quadratic equations to represent context.</p> <p>A.5.d Graph two-variable linear equations.</p>

Mathematical Reasoning: Content Specifications	
2002	Current Test
Create and use algebraic expressions and equations to model situations and solve problems.	<p>A.1.a Add, subtract, factor, multiply and expand linear expressions with rational coefficients.</p> <p>A.1.c Write linear expressions as part of word-to-symbol translations or to represent common settings.</p> <p>A.1.d Add, subtract, multiply polynomials, including multiplying two binomials, or divide factorable polynomials.</p> <p>A.1.g Write polynomial expressions as part of word-to-symbol translations or to represent common settings.</p> <p>A.1.h Add, subtract, multiply and divide rational expressions.</p> <p>A.1.j Write rational expressions as part of word-to-symbol translations or to represent common settings.</p> <p>A.2.b Solve real-world problems involving linear equations.</p> <p>A.2.c Write one-variable and multi-variable linear equations to represent context.</p> <p>A.2.d Solve a system of two simultaneous linear equations by graphing, substitution, or linear combination. Solve real-world problems leading to a system of linear equations.</p> <p>A.4.a Solve quadratic equations in one variable with rational coefficients and real solutions, using appropriate methods. (e.g., quadratic formula, completing the square, factoring, inspection).</p> <p>A.4.b Write one-variable quadratic equations to represent context.</p>
Convert between different representations, such as tables, graphs, verbal descriptions, and equations.	<p>A.2.c Write one-variable and multi-variable linear equations to represent context.</p> <p>A.4.b Write one-variable quadratic equations to represent context.</p> <p>A.5.d Graph two-variable linear equations.</p>
Evaluate formulas.	<p>A.1.b Evaluate linear expressions by substituting integers for unknown quantities.</p> <p>A.1.e Evaluate polynomial expressions by substituting integers for unknown quantities.</p> <p>A.1.i Evaluate rational expressions by substituting integers for unknown quantities.</p> <p>A.7.c Evaluate linear and quadratic functions for values in their domain when represented using function notation.</p>

Mathematical Reasoning: Content Specifications	
2002	Current Test
Solve equations, including first degree, quadratic, power, and systems of linear equations.	<p>A.2.a Solve one-variable linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms or equations with coefficients represented by letters.</p> <p>A.2.b Solve real-world problems involving linear equations.</p> <p>A.2.d Solve a system of two simultaneous linear equations by graphing, substitution, or linear combination. Solve real-world problems leading to a system of linear equations.</p> <p>A.4.a Solve quadratic equations in one variable with rational coefficients and real solutions, using appropriate methods. (e.g., quadratic formula, completing the square, factoring, inspection).</p> <p>A.4.b Write one-variable quadratic equations to represent context.</p>
Recognize and use direct and indirect variation.	[Not assessed on the current test]
Analyze tables and graphs to identify and generalize patterns and relationships.	<p>A.2.b Solve real-world problems involving linear equations.</p> <p>A.5.d Graph two-variable linear equations.</p>
Analyze and use functional relationships to explain how a change in one quantity results in a change in another quantity, including linear, quadratic, and exponential functions.	[Not assessed on the current test]

What’s different on the Mathematical Reasoning Test?

As shown in the tables above, one of the major differences between the content of the 2002 Series Mathematics Test and the Current Mathematical Reasoning Test is the clarity with which each skill is articulated. Breaking each of these skills down into greater detail than the 2002 Series content framework provided is intended to give greater guidance and specificity to test developers, instructional materials developers, and educators.

Note that there are **some skills tested on the 2002 Series GED® Test that will not appear on the current test.** The elimination of certain skills is generally **NOT** due to the fact that those skills are no longer important, but, rather, it is sometimes because those skills are foundational to other skills that are being assessed on the current test. In other instances, because of the current test’s focus on deep mastery of core foundational skills, some more advanced mathematics have been moved out of the scope of the test. In addition, in the particular case of many statistics-based skills, those skills appear on the current test in the Science and Social Studies tests, as opposed to the Mathematical Reasoning test.

In addition to all the skills that align with what has been previously measured, the current test includes items that test the following skills:

- **Q.1.d** Identify absolute value of a rational number as its distance from 0 on the number line and determine the distance between two rational numbers on the number line, including using the absolute value of their difference
- **Q.2.d** Determine when a numerical expression is undefined
- **A.1.f** Factor polynomial expressions
- **A.3.a** Solve linear inequalities in one variable with rational number coefficients
- **A.3.b** Identify or graph the solution to a one variable linear inequality on a number line
- **A.3.c** Solve real-world problems involving inequalities
- **A.3.d** Write linear inequalities in one variable to represent context
- **A.7.b** Represent or identify a function in a table or graph as having exactly one output (one element in the range) for each input (each element in the domain)

This more granular approach to describing the mathematical content is not the only improvement upon the 2002 Series test. In addition, the current test includes items that measure the Mathematical Practices. These practices are skills that are drawn both from career- and college-readiness standards for Mathematical Practice and from the Principles and Standards for School Mathematics developed by the National Council of Teachers of Mathematics.

The content indicators and Mathematical Practices found in the GED® Mathematical Reasoning Assessment Targets, though related, cover different aspects of item content considerations. The content indicators focus on mathematical content and they describe very specific knowledge and skills. In contrast, the mathematical practices focus more on mathematical reasoning skills and modes of thinking mathematically. Most of the Mathematical Practices are not specific to any one particular area of mathematics content, meaning that a mathematical practice indicator could be applied to

test items that cover a variety of content domains (e.g., algebra, data analysis, number sense).

The Mathematical Practices provide specifications for assessing real-world problem-solving skills in a mathematical context rather than requiring students only to memorize, recognize and apply a long list of mathematical algorithms. Each practice falls into one of the five following categories.

- MP.1 Building Solution Pathways and Lines of Reasoning
- MP.2 Abstracting Problems
- MP.3 Furthering Lines of Reasoning
- MP.4 Mathematical Fluency
- MP.5 Evaluating Reasoning and Solution Pathways

For more information on the mathematical practices, see the Mathematical Reasoning Assessment Targets in Chapter 1.

Appendix

B

Reference Codes for Mathematical Reasoning Assessment Targets

Appendix B gives the reference for each code identified in the “References” column in the Mathematical Reasoning Assessment Targets.

Numerical/Letter Symbol	Mathematics Standards Document Reference
These domains come from the K-8 section of the Common Core State Standards for Mathematics. The numbers in parentheses represent the grade levels of that domain that served as the basis for creating GED® mathematical reasoning indicators.	
EE (6, 7, 8)	Common Core State Standards for Mathematics Expressions and Equations
F (8)	Common Core State Standards for Mathematics Functions
G (7, 8)	Common Core State Standards for Mathematics Geometry
MD (3)	Common Core State Standards for Mathematics Measurement and Data
NF (4)	Common Core State Standards for Mathematics Numbers and Operations—Fractions
NS (6, 7)	Common Core State Standards for Mathematics The Number System
RP (6, 7)	Common Core State Standards for Mathematics Ratios and Proportional Relationships
SP (6, 7, 8)	Common Core State Standards for Mathematics Statistics and Probability
These domains come from the High School section of the Common Core State Standards for Mathematics. The letter before the hyphen represents the conceptual category, while the letter(s) after the hyphen represent(s) the domain.	
N-RN	Common Core State Standards for Mathematics Number and Quantity The Real Number System
N-Q	Common Core State Standards for Mathematics Number and Quantity Quantities
A-SSE	Common Core State Standards for Mathematics Algebra Seeing Structure in Expressions
A-APR	Common Core State Standards for Mathematics Algebra Arithmetic with Polynomials and Rational Numbers
A-CED	Common Core State Standards for Mathematics Algebra Creating Equations
A-REI	Common Core State Standards for Mathematics Algebra Reasoning with Equations and Inequalities

Numerical/Letter Symbol	Mathematics Standards Document Reference
F-IF	Common Core State Standards for Mathematics Functions Interpreting Functions
G-GPE	Common Core State Standards for Mathematics Geometry Expressing Geometric Properties with Equations
G-MG	Common Core State Standards for Mathematics Geometry Modeling with Geometry
S-ID	Common Core State Standards for Mathematics Statistics and Probability Interpreting Categorical and Quantitative Data
S-CP	Common Core State Standards for Mathematics Statistics and Probability Conditional Probability and the Rules of Probability
S-MD	Common Core State Standards for Mathematics Statistics and Probability Using Probability to Make Decisions
<p>The GED® mathematical practices are based on two publications: the Standards for Mathematical Practice found in the Common Core State Standards for Mathematics, and the Principles and Standards for School Mathematics published by the National Council of Teachers of Mathematics</p>	
M1, M2, M3, M4, M5, M6	Common Core State Standards for Mathematics Standards for Mathematical Practice
N1, N2, N3, N5, N6, N7, N8, N9	Principles and Standards for School Mathematics

Appendix

C

Mathematical Reasoning Reporting Categories

Reporting Category 1: Quantitative problems in rational numbers

Examples of skills measured Mathematics Reporting

Category 1:

- Demonstrating fluency with operations using rational numbers
- Using rational numbers to formulate solutions to problems set within real-world contexts
- Solving problems with rational numbers that involve proportionality

Reporting Category 2: Quantitative problems in measurement

Examples of skills measured in Mathematics Reporting

Category 2:

- Engaging with geometric figures in a variety of graphic presentations
- Engaging with descriptive statistics in a variety of graphic presentations
- Using formulas or decomposition to calculate perimeter, area, surface area, and volume of figures
- Using descriptive statistics to summarize and compare data sets and understand concepts relating to basic theoretical probability

Reporting Category 3: Linear equations and expressions

Examples of skills measured in Mathematics Reporting

Category 3:

- Writing linear mathematical expressions and equations that correspond to given situations
- Evaluating the expressions for specific values of the variable
- Solving linear equations, inequalities, and systems of linear equations and find the equation of a line with varying criteria
- Interpreting slope of a line as rate of change or unit rate

Reporting Category 4: Function concepts and nonlinear expressions and equations

Examples of skills measured in Mathematics Reporting

Category 4:

- Understanding and applying the concept of a function
- Using function notation
- Translating a variety of representations of a function, including tables and equations
- Solving quadratic equations
- Interpreting key features of both linear and nonlinear functions

Important note regarding the Mathematical Reasoning reporting categories:

Although the Mathematical Practices are an important aspect of what is assessed on the Mathematical Reasoning test module, you may note that the practices are not directly reflected in the reporting categories as described above. This is due to the fact that the Mathematical Practices are integrated only into some, but not all, items on the Mathematical Reasoning test. Test-takers, however, will be receiving much more detailed information both on the skills they possess and on those they need to develop than ever before. With this additional information, adult educators will be in a position to focus their work with test-takers on critical skill development needs.

The reporting information provided by the GED® test is one of the most important elements of the new assessment system. Gaining

a firm understanding of the reporting categories on the GED® test will help adult educators in planning how they can best help adult learners to gain the skills they will need to be successful both on the test and in the future pathway they ultimately pursue.

Reporting Category 1 - Quantitative problem solving with rational numbers		25%
Q.1 .a	Order fractions and decimals, including on a number line.	
Q.1.b	Apply number properties involving multiples and factors, such as using the least common multiple, greatest common factor, or distributive property to rewrite numeric expressions.	
Q.1.c	Apply rules of exponents in numerical expressions with rational exponents to write equivalent expressions with rational exponents.	
Q.1.d	Identify absolute value or a rational number as its distance from 0 on the number line and determine the distance between two rational numbers on the number line, including using the absolute value of their difference.	
Q.2 .a	Perform addition, subtraction, multiplication, and division on rational numbers.	
Q.2.b	Perform computations and write numerical expressions with squares and square roots of positive, rational numbers.	
Q.2.c	Perform computations and write numerical expressions with cubes and cube roots of rational numbers.	
Q.2.d	Determine when a numerical expression is undefined.	
Q.2 .e	Solve one-step or multi-step arithmetic, real world problems involving the four operations with rational numbers, including those involving scientific notation.	
Q.3 .a	Compute unit rates. Examples include but are not limited to: unit pricing, constant speed, and persons per square mile, BTUs per cubic foot.	
Q.3.b	Use scale factors to determine the magnitude of a size change. Convert between actual drawings and scale drawings.	
Q.3.c	Solve multistep, arithmetic, real-world problems using ratios or proportions including those that require converting units of measure.	
Q.3.d	Solve two-step, arithmetic, real world problems involving percents. Examples include but are not limited to: simple interest, tax, markups and markdowns, gratuities and commissions, percent increase and decrease.	

Reporting Category 2 - Quantitative problem solving in measurement		20%
Q.4 .a	Compute the area and perimeter of triangles and rectangles. Determine side lengths of triangles and rectangles when given area or perimeter.	
Q.4.b	Compute the area and circumference of circles. Determine the radius or diameter when given area or circumference	
Q.4.c	Compute the perimeter of a polygon. Given a geometric formula, compute the area of a polygon. Determine side lengths of the figure when given the perimeter or area.	
Q.4.d	Compute perimeter and area of 2-D composite geometric figures, which could include circles, given geometric formulas as needed.	
Q.4.e	Use the Pythagorean theorem to determine unknown side lengths in a right triangle.	
Q.5 .a	When given geometric formulas, compute volume and surface area of rectangular prisms. Solve for side lengths or height, when given volume or surface area.	
Q.5.b	When given geometric formulas, compute volume and surface area of cylinders. Solve for height, radius, or diameter when given volume or surface area.	
Q.5.c	When given geometric formulas, compute volume and surface area of right prisms. Solve for side lengths or height, when given volume or surface area.	
Q.5.d	When given geometric formulas, compute volume and surface area of right pyramids and cones. Solve for side lengths, height, radius, or diameter when given volume or surface area.	
Q.5.e	When given geometric formulas, compute volume and surface area of spheres. Solve for radius or diameter when given the surface area.	
Q.5.f	Compute surface area and volume of composite 3-D geometric figures, given geometric formulas as needed.	
Q.6 .a	Represent, display, and interpret categorical data in bar graphs or circle graphs.	
Q.6.b	Represent, display, and interpret data involving one variable plots on the real number line including dot plots, histograms, and box plots.	
Q.6.c	Represent, display, and interpret data involving two variables in tables and the coordinate plane including scatter plots and graphs.	
Q.7 .a	Calculate the mean, median, mode and range. Calculate a missing data value, given the average and all the missing data values but one, as well as calculating the average, given the frequency counts of all the data values, and calculating a weighted average.	
Q.8 .a	Use counting techniques to solve problems and determine combinations and permutations.	
Q.8.b	Determine the probability of simple and compound events.	

Reporting Category 3 - Algebraic problem solving with expressions and equations		30%
A.1 .a	Add, subtract, factor, multiply and expand linear expressions with rational coefficients.	
A.1.b	Evaluate linear expressions by substituting integers for unknown quantities.	
A.1.c	Write linear expressions as part of word-to-symbol translations or to represent common settings.	
A.1.d	Add, subtract, multiply polynomials, including multiplying two binomials, or divide factorable polynomials.	
A.1.e	Evaluate polynomial expressions by substituting integers for unknown quantities.	
A.1.f	Factor polynomial expressions.	
A.1.g	Write polynomial expressions as part of word-to-symbol translations or to represent common settings.	
A.1.h	Add, subtract, multiply and divide rational expressions.	
A.1.i	Evaluate rational expressions by substituting integers for unknown quantities.	
A.1.j	Write rational expressions as part of word-to-symbol translations or to represent common settings.	
A.2 .a	Solve one-variable linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms or equations with coefficients represented by letters.	
A.2.b	Solve real-world problems involving linear equations.	
A.2.c	Write one-variable and multi-variable linear equations to represent context.	
A.2.d	Solve a system of two simultaneous linear equations by graphing, substitution, or linear combination. Solve real-world problems leading to a system of linear equations.	
A.3 .a	Solve linear inequalities in one variable with rational number coefficients.	
A.3.b	Identify or graph the solution to a one variable linear inequality on a number line.	
A.3.c	Solve real-world problems involving inequalities.	
A.3.d	Write linear inequalities in one variable to represent context.	
A.4 .a	Solve quadratic equations in one variable with rational coefficients and real solutions, using appropriate methods. (e.g., quadratic formula, completing the square, factoring, inspection)	
A.4.b	Write one-variable quadratic equations to represent context.	

Reporting Category 4 - Algebraic problem solving with graphs and functions		25%
A.5.a	Locate points in the coordinate plane.	
A.5.b	Determine the slope of a line from a graph, equation, or table.	
A.5.c	Interpret unit rate as the slope in a proportional relationship.	
A.5.d	Graph two-variable linear equations.	
A.5.e	For a function that models a linear or nonlinear relationship between two quantities, interpret key features of graphs and tables in terms of quantities, and sketch graphs showing key features of graphs and tables in terms of quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior, and periodicity.	
A.6.a	Write the equation of a line with a given slope through a given point.	
A.6.b	Write the equation of a line passing through two given distinct points.	
A.6.c	Use slope to identify parallel and perpendicular lines and to solve geometric problems.	
A.7.a	Compare two different proportional relationships represented in different ways. Examples include but are not limited to: compare a distance-time graph to a distance-time equation to determine which of two moving objects has a greater speed.	
A.7.b	Represent or identify a function in a table or graph as having exactly one output (one element in the range) for each input (each element in the domain).	
A.7.c	Evaluate linear and quadratic functions for values in their domain when represented using function notation.	
A.7.d	Compare properties of two linear or quadratic functions each represented in a different way (algebraically, numerically in tables, graphically or by verbal descriptions). Examples include but are not limited to: given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.	

Appendix

D

Glossary of Key Terms for the Mathematical Reasoning Test

Absolute value: the distance between a number and zero on a number line; always represented as a positive number or zero

Analysis/analyze (do not substitute *infer, summarize*): to examine critically in order to determine meaning and to understand the essential elements of [a text or other stimulus]

Application/apply (do not substitute *interpret, infer, summarize, conclude, calculate, solve, predict*): to use or employ an already established skill or piece of information in a new situation

Argument (do not substitute *claim, stance, argumentation*): a process or line of reasoning. For our purposes, arguments can be made either persuasively (i.e., to convince an audience of something) or rhetorically (i.e., to lay out a logical progression of ideas in support of a central stance)

Argumentation (do not substitute *argument, claim, stance, point of view*): the presentation of a line (or lines) of reasoning (i.e., the way in which something is argued, not the line of reasoning itself)

Assumption (do not substitute *premise, conclusion*): something taken for granted; a supposition

Circumference (do not substitute *polygon*): the distance around a circle (See **perimeter**—these concepts are closely related)

Claim (do not substitute *stance, argument author's purpose, author's point of view, hypothesis, position, perspective*): an assertion of something as fact

Combination (do not substitute *permutation*): an arrangement of objects in which order does not matter

Compute/computation/calculate/calculation: to determine by mathematical methods (for our purposes, arithmetically or algebraically)

Create (do not substitute *apply, analyze, synthesize*): to originate or invent (e.g., an original line of reasoning)

Data (do not substitute *information*): individual facts, statistics, or pieces of information (can be qualitative or quantitative). See **information** for disambiguation.

Detail (do not substitute *idea*): a small part than can be considered individually

Evaluate: to substitute one or more numerical values into an algebraic expression

Evidence (do not substitute *detail, reasoning*): that which tends to prove or disprove something; grounds for belief

Expression: (do not substitute *function, polynomial, linear equation, quadratic equation*): some combination of constants and/or variables; may be a solitary number or variable, or may be comprised of multiple numbers and/or variables (See **polynomial**—these concepts are closely related)

Finding (do not substitute *conclusion, evidence, assumption*): that which is discovered through research or study (See **conclusion** for disambiguation—these concepts are closely related)

Format (do not substitute *genre*): general appearance, style, arrangement (e.g., of a text)

Function (do not substitute *expression, polynomial, linear equation, quadratic equation*): a mathematical rule that assigns an output value to each unique input value

Generalization (do not substitute *summary, conclusion, hypothesis*): a principle, theory, or idea that can be applied in many instances

Histogram: a display that expresses frequencies of data in numerical intervals or ranges; similar to a bar graph

Hypotenuse: the longest side of a right triangle, located opposite the right angle

Hypothesis (do not substitute *generalization, conclusion, claim, stance, position, assumption, inference*): a proposition or set of propositions set forth as an explanation for a group of facts or phenomena; conjecture that is a guide for investigation

Idea (do not substitute *theme, detail*): any conception resulting from mental understanding, awareness, or activity

Inference/infer (do not substitute *interpret, summarize, analyze, hypothesize*): to conclude by reasoning from evidence that which is *not* explicitly stated

Information (do not substitute *data*): knowledge gained through experience or study. More abstract and general than “data.”

Interpret (do not substitute *infer, summarize, analyze*): to provide the meaning of, or explain, that which is explicitly stated or displayed graphically or symbolically

Justify (do not substitute *support*): to show a claim or statement to be writing, especially using evidence

Linear equation (do not substitute *expression, function, quadratic equation*): an equation containing one or two variables of the first degree (that is, no exponents); when graphed on the coordinate plane, a linear equation presents as a straight line

Modeling: the process of using mathematical concepts, language, symbols, and/or diagrams to represent situations in mathematical terms

Perimeter (do not substitute *circumference*): the distance around a two-dimensional figure, such as a rectangle or other polygon (See **circumference**—these concepts are closely related)

Permutation (do not substitute *combination*): a uniquely ordered arrangement of objects

Polynomial (do not substitute *expression, function*): some combination of constants and/or variables, comprised of multiple terms (See **expression**—these concepts are closely related)

Premise (do not substitute *conclusion, assumption, hypothesis*): a basis, stated or assumed, on which reasoning proceeds

Prediction (do not substitute *conclusion, assumption, reasoning, premise, hypothesis*): A statement of something in advance of occurrence, especially on a reasoned or evidentiary basis

Proportion/proportional (do not substitute *ratio*): the relationship of two equivalent ratios or a description of the relationship between two mathematically-related categories

Pythagorean theorem: a mathematical formula that describes the relationship between the sides of a right triangle, $a^2 + b^2 = c^2$, where a and b represent the sides adjacent to the right angle, and c represents the hypotenuse (See **hypotenuse**)

Quadratic equation (do not substitute *expression, function, linear equation*): an equation of the form $ax^2 + bx + c = 0$; when graphed on the coordinate plane, a quadratic equation presents as a parabola (U-shape)

Ratio (do not substitute *proportion, rational*): the relationship between two categories expressed mathematically; ratios may use numbers and/or variables

Rational number: any number that can be represented as a fraction where the numerator and denominator are both integers (denominator may not be zero)

Reasoning (do not substitute *evidence, meaning, conclusion*): the process of forming conclusions, judgments, or inferences from evidence

Scientific notation: a method for expressing very large or very small numbers, consisting of a number (often a decimal) between 1 and 10, which is then multiplied by a power of 10

Slope: a representation of the direction and steepness of a straight line graphed on the coordinate plane, expressed as a positive or negative number, or zero

Solution/solve (do not substitute *calculation, computation*): the process of determining the answer to a mathematical problem (more general than calculation and computation, which refer to a specific technique)

Stance (do not substitute *claim, argument, argumentation*): the position on which an author bases an argument (e.g., pro or con)

Support (do not substitute *justify*): to establish by providing appropriate facts and evidence (either quantitative or textual).

Synthesis/synthesize (do not substitute *apply, summarize, analyze*): to combine elements or ideas from multiple materials into a unified, if complex, whole

Theory (do not substitute *scientific presentation, scientific model*)
A set of principles that explain or predict phenomena

Assessment Guide for Educators

Reasoning Through Language Arts (RLA)

June 2016



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Note on the March 2016 Edition

GED Testing Service has published the March 2016 Edition of the Assessment Guide for Educators to include the following:

1. Updated performance level information to reflect the new performance levels: Below Passing, Pass/High School Equivalency, GED® College Ready, and GED® College Ready + Credit
2. Updated information on the Social Studies test to reflect the elimination of the Social Studies Extended Response question
3. Streamlining and simplification of the guide, based on adult educator feedback, to make the guide more user-friendly and to eliminate redundancies

Assessment Targets

Assessment Targets for Reasoning Through Language Arts (RLA)

The GED® test has three main purposes—to provide candidates with

1. A path to a high school credential
2. Evidence of their readiness to enter workforce training programs or postsecondary education
3. Information about their strengths and weaknesses in key academic areas

The philosophy underlying the GED® test is that there is a core of academic skills and content knowledge that must be acquired in order for an adult to be prepared to enter a job, a training program, or an entry-level, credit-bearing postsecondary course. This core of knowledge and skills is reflected in the career- and college-readiness standards now adopted in some form by the majority of states.

Content of the GED® RLA Test

The GED® RLA test focuses on three essential skills:

- Close reading
- Clear writing
- Editing and understanding the use of standard written English in context

Because the strongest predictor of career and college readiness is the ability to read and comprehend complex texts, especially

nonfiction, the RLA test includes texts from both academic and workplace contexts. The texts' ideas, syntax, and style reflect a range of complexity levels. The writing tasks, or extended response (ER) items, require test-takers to analyze given source texts and use evidence drawn from the texts to support their answers.

The following specifications guide the GED® RLA test:

1. Seventy-five percent of the texts in the exam are informational texts (including nonfiction drawn from science and social studies as well as a range of texts from workplace contexts); 25 percent are literary texts
2. The texts included in the test cover a range of text complexity, including texts at the career-and college-readiness level
3. Texts emphasize vocabulary that has multiple meanings dependent on subject area or context, rather than focusing on discipline-specific terms
4. U.S. founding documents and “the Great American Conversation” that followed are required texts for study and assessment
5. The length of the texts included in the reading comprehension component of the test varies between 400 and 900 words
6. The items are written to a Depth of Knowledge cognitive complexity level 1, 2, or 3

“The Great American Conversation” refers to texts like the founding documents (e.g. The Bill of Rights) or other sources, including more contemporary ones, that reflect important ideas about American citizenship and modern liberties.

Reading Comprehension on the GED® RLA Test

The reading comprehension component of the GED® RLA test measures two overarching reading standards that reflect current research about career-and-college-readiness skills:

- Determine the details of what is explicitly stated and make logical inferences or valid claims based on textual evidence
- Read and respond to questions from a range of texts that are from the upper levels of complexity, including texts at the career- and college-ready level

Each target and indicator in the RLA assessment targets correspond to one or more Anchor Standards from the Common Core State Standards for English Language Arts. For example, R.2 refers to Reading Anchor Standard 2. Similarly, W and L refer to Writing Anchor Standards and Language Anchor Standards, respectively.

Assessment targets

The assessment targets for all four content areas provide a complete description of the skills and knowledge that are measured on the GED® test. Evidence strongly indicates that proficiency with the core skills identified in the assessment targets is predictive of success in a wide range of career and college pathways.

Passage selection and test question development for the reading comprehension component of the GED® RLA test reflect these two high-level standards. The texts span a range of complexity, including texts at the career- and college-readiness level.

The targets and indicators in the following tables are derived from nationally recognized career- and college-readiness curricular standards.

Reading Assessment Targets ¹	Range of Depth of Knowledge (DOK) Levels ²
Common Core Connection: R.29	
Determine central ideas or themes of texts and analyze their development; summarize the key supporting details and ideas.	
R.2.1 Comprehend explicit details and main ideas in text.	1-2
R.2.2 Summarize details and ideas in text.	2
R.2.3 Make sentence level inferences about details that support main ideas.	2-3
R.2.4 Infer implied main ideas in paragraphs or whole texts.	2-3
R.2.5 Determine which detail(s) support(s) a main idea.	1-3
R.2.6 Identify a theme, or identify which element(s) in a text support a theme.	1-3
R.2.7 Make evidence based generalizations or hypotheses based on details in text, including clarifications, extensions, or applications of main ideas to new situations.	2-3
R.2.8 Draw conclusions or make generalizations that require synthesis of multiple main ideas in text.	2-3
Common Core Connection: R.3	
Analyze how individuals, events, and ideas develop and interact over the course of a text.	
R.3.1 Order sequences of events in texts.	1-2
R.3.2 Make inferences about plot/sequence of events, characters/people, settings, or ideas in texts.	2
R.3.3 Analyze relationships within texts, including how events are important in relation to plot or conflict; how people, ideas, or events are connected, developed, or distinguished; how events contribute to theme or relate to key ideas; or how a setting or context shapes structure and meaning.	2-3
R.3.4 Infer relationships between ideas in a text (e.g., an implicit cause and effect, parallel, or contrasting relationship).	2-3
R.3.5 Analyze the roles that details play in complex literary or informational texts.	2-3

Reading Assessment Targets ¹	Range of Depth of Knowledge (DOK) Levels ²
Common Core Connection: R.4.2; L.4.2	
Interpret words and phrases that appear frequently in texts from a wide variety of disciplines, including determining connotative and figurative meanings from context and analyzing how specific word choices shape meaning or tone.	
R.4.1/L.4.1 Determine the meaning of words and phrases as they are used in a text, including determining connotative and figurative meanings from context.	1-3
R.4.2/L.4.2 Analyze how meaning or tone is affected when one word is replaced with another.	2
R.4.3/L.4.3 Analyze the impact of specific words, phrases, or figurative language in text, with a focus on an author’s intent to convey information or construct an argument.	2-3
Common Core Connection: R.5.9	
Analyze the structure of texts, including how specific sentences or paragraphs relate to each other and the whole.	
R.5.1 Analyze how a particular sentence, paragraph, chapter, or section fits into the overall structure of a text and contributes to the development of the ideas.	2-3
R.5.2 Analyze the structural relationship between adjacent sections of text (e.g., how one paragraph develops or refines a key concept or how one idea is distinguished from another).	2-3
R.5.3 Analyze transitional language or signal words (words that indicate structural relationships, such as consequently, nevertheless, otherwise) and determine how they refine meaning, emphasize certain ideas, or reinforce an author’s purpose.	2
R.5.4 Analyze how the structure of a paragraph, section, or passage shapes meaning, emphasizes key ideas, or supports an author’s purpose.	2-3
Common Core Connection: R.6	
Determine an author’s purpose or point of view in a text and explain how it is conveyed and shapes the content and style of a text.	
R.6.1 Determine an author’s point of view or purpose of a text.	1-2
R.6.2 Analyze how the author distinguishes his or her position from that of others or how an author acknowledges and responds to conflicting evidence or viewpoints.	2-3
R.6.3 Infer an author’s implicit as well as explicit purposes based on details in text.	2
R.6.4 Analyze how an author uses rhetorical techniques to advance his or her point of view or achieve a specific purpose (e.g., analogies, enumerations, repetition and parallelism, juxtaposition of opposites, qualifying statements).	2-3
Common Core Connection: R.8	
Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.	
R.8.1 Delineate the specific steps of an argument the author puts forward, including how the argument’s claims build on one another.	2-3
R.8.2 Identify specific pieces of evidence an author uses in support of claims or conclusions.	1-3
R.8.3 Evaluate the relevance and sufficiency of evidence offered in support of a claim.	2-3
R.8.4 Distinguish claims that are supported by reasons and evidence from claims that are not.	2-3
R.8.5 Assess whether the reasoning is valid; identify fallacious reasoning in an argument and evaluate its impact.	2-3
R.8.6 Identify an underlying premise or assumption in an argument and evaluate the logical support and evidence provided.	2-3

Reading Assessment Targets ¹	Range of Depth of Knowledge (DOK) Levels ²
Common Core Connection: R.7 & R.909	
Analyze how two or more texts address similar themes or topics	
R.9.1/R. 7.1 Draw specific comparisons between two texts that address similar themes or topics or between information presented in different formats (e.g., between information presented in text and information or data summarized in a table or timeline).	2-3
R.9.2 Compare two passages in similar or closely related genre that share ideas or themes, focusing on similarities and/or differences in perspective, tone, style, structure, purpose, or overall impact.	2-3
R.9.3 Compare two argumentative passages on the same topic that present opposing claims (either main or supporting claims) and analyze how each text emphasizes different evidence or advances a different interpretation of facts.	2-3
R.7.2 Analyze how data or quantitative and/or visual information extends, clarifies, or contradicts information in text, or determine how data supports an author’s argument.	2-3
R.7.3 Compare two passages that present related ideas or themes in different genre or formats (e.g., a feature article and an online FAQ or fact sheet) in order to evaluate differences in scope, purpose, emphasis, intended audience, or overall impact when comparing.	2-3
R.7.4 Compare two passages that present related ideas or themes in different genre or formats in order to synthesize details, draw conclusions, or apply information to new situations.	2-3

1 See the [Common Core State Standards for English Language Arts and Literacy at www.corestandards.org](http://www.corestandards.org) for more information on the reference codes listed at the beginning of each Reading Assessment Target.

2 The Depth of Knowledge (DOK) levels correspond with Norman Webb’s (University of Wisconsin) Depth of Knowledge model of cognitive complexity.

Writing on the GED® Test - RLA

The writing component of the GED® RLA test integrates reading and writing in tasks that require candidates to support their written analysis with evidence drawn from given source texts. Given the growing demand and use of technology in all levels of postsecondary education and careers, the GED® test is administered by computer. As a result, the following two high-level standards, which correspond with national career- and college-readiness standards, broadly govern the writing tasks.

1. Draw relevant and sufficient evidence from a literary or informational text to support analysis and reflection
2. Use technology to produce writing, demonstrating sufficient command of keyboarding skills

Candidate responses will be scored by a multi-dimensional rubric that focuses on three core elements (“traits”):

- **Trait 1:** Creation of Arguments and Use of Evidence
- **Trait 2:** Development of Ideas and Organizational Structure
- **Trait 3:** Clarity and Command of Standard English Conventions

More information about the rubrics can be found in Chapter 3.

About the assessment

Content specifications govern the proportions of content that appear on the test forms and ensure item distribution across the assessment targets.

Writing Assessment Targets ³	Range of Depth of Knowledge (DOK) Levels ⁴
Common Core Connections: R.112	
W.1 Determine the details of what is explicitly stated and make logical inferences or valid claim that square with textual evidence.	1-3
Common Core Connection: W.1, W.2 and W.4	
W.2 Produce an extended analytic response in which the writer introduces the idea(s) or claim(s) clearly; creates an organization that logically sequences information; develops the idea(s) or claim(s) thoroughly with well-chosen examples, facts, or details from the text; and maintains a coherent focus.	2-3
Common Core Connection: W.5 and L.1, L.2. and L.3	
W.3 Write clearly and demonstrate sufficient command of standard English conventions. ⁵	1-2

³ See the Common Core State Standards for English Language Arts and Literacy at www.corestandards.org for more information on the reference codes listed at the beginning of each Writing Assessment Target.

⁴ The Depth of Knowledge (DOK) levels correspond with Norman Webb’s (University of Wisconsin) Depth of Knowledge model of cognitive complexity.

⁵ “Sufficient command of standard English conventions” is meant to signal that the assessment would seek “mostly correct use” by students, not “total correctness.” See RLA Extended Response Scoring Rubric, Trait 3 (page 3.10) for more information.

In the career- and college-readiness standards, writing skills are deeply integrated with reading skills. Therefore, extended response items on the RLA test require test-takers to apply skills described in Reading Anchor Standards 1 and 10 (see GED® RLA Assessment Targets) as they analyze source texts in their own writing.

Language Conventions and Usage on the GED® RLA Test

The language component of the GED® RLA test measures a candidate's ability to demonstrate command of a foundational set of conventions of standard English that have been identified as most important for career and college readiness by higher education instructors of post-secondary entry-level, credit-bearing composition courses. This core set of skills includes essential components of grammar, usage, capitalization, and punctuation.

The GED® RLA test assesses these skills in an authentic context. Test-takers are asked to edit phrases or sentences to demonstrate their knowledge of this core set of skills. In these "editing" items, highlighted words or phrases appear in dropdown menus offering alternatives, which will include a clear best choice alongside common errors or misconceptions.

Language Assessment Targets ⁶	Range of Depth of Knowledge (DOK) Levels ⁷
Common Core Connection: L.1	
Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.	
L.1.1 Edit to correct errors involving frequently confused words and homonyms, including contractions (passed, past; two, too, to; there, their, they're; knew, new; it's its).	1-2
L.1.2 Edit to correct errors in straightforward subject-verb agreement.	1-2
L.1.3 Edit to correct errors in pronoun usage, including pronoun-antecedent agreement, unclear pronoun references, and pronoun case.	1-2
L.1.4 Edit to eliminate non-standard or informal usage (e.g., correctly use try to win the game instead of try and win the game).	1-2
L.1.5 Edit to eliminate dangling or misplaced modifiers or illogical word order (e.g., correctly use to meet almost all requirements instead of to almost meet all requirements.)	1-2
L.1.6 Edit to ensure parallelism and proper subordination and coordination.	1-2
L.1.7 Edit to correct errors in subject-verb or pronoun antecedent agreement in more complicated situations (e.g., with compound subjects, interceding phrases, or collective nouns).	1-2
L.1.8 Edit to eliminate wordiness or awkward sentence construction.	1-2
L.1.9 Edit to ensure effective use of transitional words, conjunctive adverbs, and other words and phrases that support logic and clarity.	1-2
Common Core Connection: L.2	
Demonstrate command of the conventions of standard English capitalization and punctuation when writing.	1-2
L.2.1 Edit to ensure correct use of capitalization (e.g., proper nouns, titles, and beginnings of sentences).	1-2
L.2.2 Edit to eliminate run-on sentences, fused sentences, or sentence fragments.	1-2
L.2.3 Edit to ensure correct use of apostrophes with possessive nouns.	1-2
L.2.4 Edit to ensure correct use of punctuation (e.g., commas in a series or in appositives and other non-essential elements, end marks, and appropriate punctuation for clause separation).	1-2

⁶ See the Common Core State Standards for English Language Arts and Literacy at www.corestandards.org for more information on the reference codes listed at the beginning of each Language Assessment Target.

⁷ The Depth of Knowledge (DOK) levels correspond with Norman Webb's (University of Wisconsin) Depth of Knowledge model of cognitive complexity

Item Types & Layouts

Item Types in Reasoning Through Language Arts

The GED® test uses a variety of item types, made possible through computer-based testing. The computer-based testing platform offers the opportunity to use interactive item types that are not possible on a pencil-and-paper test. The item types are listed below.

The GED® RLA test is composed of several passage sets. Each passage set includes texts ranging from 400-900 words and six to eight associated test questions (See Chapter Three: Passage Requirements and Exemplars for more detailed information on RLA passages). All items on the GED® RLA test are based on a source text or multiple source texts. There are no stand-alone items on the RLA test.

The RLA test includes:

- Multiple choice items
- Drag-and-drop items (Technology-enhanced)
- Drop-down items embedded in passages (Technology-enhanced)
- One 45-minute extended response item

These items assess the full depth and breadth of skills outlined in the GED® RLA Assessment Targets. Test-takers can apply different cognitive strategies with the wide variety of item types, demonstrating proficiency with the RLA content. This allows GED Testing Service to assess the targeted content at a number of Depth of Knowledge (DOK) levels.

Technology-Enhanced Items

In technology-enhanced (TE) items, test-takers interact with the content in an authentic way. Test-takers may be asked to select blocks of text, select multiple answers from a list, drag an answer to a location, or manipulate symbols or other graphics.

Multiple choice (MC)

Multiple choice (MC) items consist of a question accompanied by several possible answer choices. This item type is used to assess every indicator listed in the GED® RLA Assessment Targets. Multiple choice items are a reliable method for measuring skills and knowledge at a range of cognitive levels in a standardized manner. MC items on the GED® test have four answer options and all MC items are associated with a reading (stimulus) passage.

Drag-and-drop items

Drag-and-drop items require test-takers to move small images, words, or short phrases to designated drop targets on a computer screen. They are often used to assess a test-taker's ability to classify or sequence information. For example, a drag-and-drop task might require test-takers to order events in a passage on the basis of chronology or of cause and effect. They may also provide opportunities for test-takers to analyze an author's arguments by classifying the evidence provided as sufficient or insufficient. These items may use a variety of different graphic representations, including Venn diagrams, timelines, and other organizers.

Drop-down

Drop-down items are items with multiple response options embedded directly within a text. On the RLA test, this item type is used primarily to assess the language skills, such as conventions of Edited American English, standard usage, and punctuation, outlined in the GED® RLA Assessment Targets. These items are designed to mimic the editing process as authentically as possible. Variations of a target phrase will appear as options in drop-down menus within the text. Once the test-taker selects an option, the answer will show on the screen as part of the text.

Extended response (ER)

Extended response (ER) items on the RLA test are 45-minute tasks that require test-takers to analyze two source texts in order to produce a writing sample. The source texts do not exceed 650 words total. The ER prompts are designed to elicit analytical writing that uses evidence from the source texts. These ERs are scored on three traits as outlined in the Extended Response Multi-dimensional Scoring Rubric (found in Chapter Three).

The three traits on the rubric pertain to how well test-takers:

1. analyze arguments and gather evidence found in source texts to support their positions
2. develop and organize their writing
3. demonstrate fluency with conventions of Edited American English

Each of these three traits are scored on a 0-1-2 scale. For more information on how the ERs are scored, see the Chapter Four: Extended Response Scoring Rubrics.

Item Layouts in Reasoning Through Language Arts

Item layouts are shown to highlight the structure of each item type described in the previous section. The content in the item layouts shown in this guide is not representative of the GED® test and is merely included to show test item functionality rather than content.

Multiple Choice Item and a Passage

This layout allows test-takers to see the text and item simultaneously.

Social Studies - Candidate Name
Question 1 of 10

Answer Explanation
Flag for Review

page 1
page 2
page 3

The chart below describes the four methods used to amend the U.S. Constitution.

Four Methods of Amending the U.S. Constitution

	Step 1	Step 2
1.	A two-thirds vote in both houses of the U.S. Congress	Ratified by three-fourths of the state legislatures
2.	A two-thirds vote in both houses of the U.S. Congress	Ratified by ratification conventions in three-fourths of the states
3.	A national constitutional convention called by two-thirds of the state legislatures	Ratified by three-fourths of the state legislatures
4.	A national constitutional convention called by two-thirds of the state legislatures	Ratified by ratification conventions in three-fourths of the states

Which statement correctly describes an important way that the process of amending the U.S. Constitution is different from the process of creating federal laws?

- A. Only one government branch is involved in the amendment process.
- B. Only one legislative body can conclude the amendment process.
- C. Only state legislatures are involved in the amendment process.
- D. Only state governments can start the amendment process.

← Previous
Next →

Drag-and-drop Item

This example using math content shows six elements of an equation (boxed numbers and boxed letter x), three of which would be selected and dragged to one of the drop targets in the equation boxes next to “y =.” In items that use this layout, the appearance and number of the drag tokens and the drop targets may vary, but all drag-and-drop items allow test-takers to interact with the material as they move objects around on the screen.

Mathematical Reasoning - Candidate Name
Question 6 of 10

Answer
 Explanation
 Calculator

 Flag for Review

A scientist is studying red maple tree growth in a state park. She measured the trunk diameters of a sample of trees in the same month every other year. The tables show the data for two of the trees.

Tree 1		Tree 2	
Year	Trunk Diameter (inches)	Year	Trunk Diameter (inches)
1	18.6	1	11.4
3	19.2	3	12.0
5	19.8	5	12.6
7	20.4	7	13.2
9	21.0	9	13.8
11	21.6	11	14.4
13	22.2	13	15.0

This is the final year in which she will collect data. When her data collection is complete, she will predict future red maple tree growth.

Formula Sheet
Calculator Reference

The scientist creates an equation that models her data for each tree so that she can predict the diameter in the future. Complete a linear equation that fits the data for tree 1, where x is the year and y is the trunk diameter, in inches.

Click on the variables and numbers you want to select and drag them into the boxes.

Equation for Tree 1

$$y = \boxed{0.3} \boxed{} + \boxed{0.6}$$

-0.6

-0.3

18.0

18.3

18.6

x

← Previous
Next →

Drop-down Item

In this item type, showing example content from science, test-takers will select their answers from a drop-down menu that appears embedded within the text. This item layout is used in editing items on the RLA test.

Mathematical Reasoning - Candidate Name
Question 8 of 10

Answer Explanation Calculator
 Flag for Review

Formula Sheet
 Calculator Reference

The graph shows the level of ibuprofen, y units, in a patient's bloodstream x hours after the ibuprofen was taken.

Time Since Ibuprofen Was Taken (hours)	Ibuprofen Level (units)
0	0
1	6
2	4
3	3
4	2
5	1
6	0.5
7	0.5
8	0.5

The level of ibuprofen in the patient's bloodstream increased from hours to hours.

Select...
Select...
0
2/3
2 1/2
5
8

← Previous
Next →

Passage and Response Box

This item layout is used to display extended response (ER) items. Pages in passages will be tabbed so that test-takers can easily navigate through longer texts. Also, the question or prompt and instructions are visible to test-takers as they read the passage.

The screenshot displays a digital assessment interface. At the top, it shows 'RLA - Candidate Name' on the left and 'Question 10 of 10' on the right. Below this, there are tabs for 'Answer' and 'Explanation', with 'Answer' selected. A 'Flag for Review' button is also present. The main content area is divided into two columns. The left column contains a passage titled 'An Analysis of Daylight Saving Time' with three numbered paragraphs. The right column contains instructions for the response, a text input box with a toolbar (Cut, Copy, Paste, Undo, Redo), and a 'Previous' button. The bottom of the interface has 'Previous' and 'Next' navigation buttons.

RLA - Candidate Name Question 10 of 10

Answer Explanation

page 1 | page 2 | page 3 | page 4

An Analysis of Daylight Saving Time

- 1 Twice a year, most Americans adjust their clocks before bedtime to prepare for Daylight Saving Time (DST). Every spring, clocks are moved ahead one hour. In the fall, they are moved back one hour, and all to maximize the benefits of the sun. DST was first implemented in the United States in 1918 to conserve resources for the war effort, though proponents encouraged its adoption long before then. Benjamin Franklin, for example, touted the idea of DST to citizens of France way back in 1784!

DST in America

- 2 For years following DST's U.S. debut, cities could choose if and when they wanted to participate. However, by the 1960s, the open choice resulted in various cities throughout the United States using different times. These varying times created confusion, particularly for entertainment and transportation schedules. Imagine traveling across several states, each adhering to its own little time zone!
- 3 In order to remedy the confusing situation, Congress established a start and stop date for DST when it passed the Uniform Time Act of 1966. Although this act helped clarify when DST went into effect around the country, cities were not required to use DST. To this day, parts of Arizona and all of Hawaii, for example, do not use DST.

The article presents arguments from both supporters and critics of Daylight Saving Time who disagree about the practice's impact on energy consumption and safety.

In your response, analyze both positions presented in the article to determine which one is best supported. Use relevant and specific evidence from the article to support your response.

Type your response in the box below. You should expect to spend up to 45 minutes in planning, drafting, and editing your response.

Extended Response

Extended Response Scoring Rubrics

The Reasoning Through Language Arts (RLA) test includes one extended response (ER) item that requires test-takers to analyze source texts and use evidence to support their arguments. The ER is scored through reference to a three-trait, multi-dimensional rubric that identifies the qualities of a test-taker's writing that will be evaluated. For example, the development of an organizational structure is an important quality of writing that is included in Trait 2 (see below).

In the RLA rubric, these three traits are adapted from career- and college-readiness standards in English Language Arts. The rubric focuses on three key elements of writing:

- Trait 1: Creation of Arguments and Use of Evidence
- Trait 2: Development of Ideas and Organizational Structure
- Trait 3: Clarity and Command of Standard English Conventions

On the RLA test, test-takers are given 45 minutes in a separately-timed section to read two source texts, compose a response, and review and edit what they have written. These responses are scored on a 6-point scale with each trait being worth up to two points. The final raw score on the ER item is then double-weighted so that it represents up to 12 raw score points on the overall RLA test.

For each ER item, committees of subject matter experts have reviewed a selection of test-taker responses taken from field testing. These experts have determined the range of responses that represent each score point in the ER scoring rubric. Representative

responses from the rangefinding pool comprise sets of exemplars that were used to train scorers.

Holistic Scoring vs. Analytic Scoring

Holistic scoring is a method through which scorers evaluate a test-taker's writing as a whole, based on the overall impression that the writing leaves on the reader, considering a number of criteria (e.g., how well the test-taker develops ideas, how well he or she maintains focus on a main idea throughout the writing sample, etc.).

Analytic scoring, on the other hand, is a method through which test-taker responses are evaluated on several dimensions separately. In analytic scoring, points are usually added for each dimension present or subtracted for each dimension missing. This is unlike holistic scoring, in which points are awarded at the end of an evaluation for the response's overall impression on the reader.

The GED® test extended response (ER) items are scored using a hybrid approach. As mentioned, the RLA ER multi-dimensional rubric breaks down the evaluation criteria into three overall categories, each category encompassing several dimensions:

- Trait 1: Creation of Arguments and Use of Evidence
- Trait 2: Development of Ideas and Organizational Structure
- Trait 3: Clarity and Command of Standard English Conventions

Each of the dimensions are weighted equally when readers are assigning scores to individual responses. Each of the three traits have multiple aspects or "dimensions" that are described in the rubric as bullets underneath each trait. Each bullet in each trait of the rubric represents a distinct **dimension or quality of writing**. Each score point describes the same dimensions, but at varying levels of mastery. For instance, in Trait 1 of the RLA rubric, there are three main qualities that involve the creation of arguments and use of evidence in test-takers' writing samples reflecting how well the test-taker:

1. establishes an argument and uses information from given source texts to support a stance
2. analyzes the issue and/or the validity of argument presented in the source texts

3. integrates evidence from the source text with his or her own ideas about the topic

Each of these three dimensions are taken together to determine a score for Trait 1 on a 0 to 2 scale.

It is important to note that no two responses are the same. Some responses may be stronger in one dimension, while others have strengths in another. However, the dimensions can compensate for each other to some degree such that, on balance, responses that demonstrate similar levels of overall proficiency will be given similar scores.

Similarly, Traits 2 and 3 have multiple dimensions that readers must weigh together in order to determine scores on those traits. In other words, each trait constitutes a holistic rubric in itself. However, because we have divided scores into three traits, and scores from all three traits are added together to determine an individual test-taker's score on the ER, the multi-trait rubric can also be considered partially analytic.

Test-takers can earn up to 2 points on each trait, or up to 6 points overall, though the final score is then double-weighted to represent the importance of writing skills in the test-taker's overall score on the RLA test. This scoring model, which brings together the added precision of analytic scoring with the compensatory, balanced approach of holistic scoring, allows for scores that most accurately reflect test-takers' abilities to write arguments.

Breaking down the ER Scoring Rubric

See Appendix C for a detailed discussion about the dimensions in each of the three traits.

Score	Description
Trait 1: Creation of Arguments and Use of Evidence	
2	<ul style="list-style-type: none"> generates text-based argument(s) and establishes a purpose that is connected to the prompt cites relevant and specific evidence from source text(s) to support argument (may include few irrelevant pieces of evidence or unsupported claims) analyzes the issue and/or evaluates the validity of the argumentation within the source texts (e.g., distinguishes between supported and unsupported claims, makes reasonable inferences about underlying premises or assumptions, identifies fallacious reasoning, evaluates the credibility of sources, etc.)
1	<ul style="list-style-type: none"> generates an argument and demonstrates some connection to the prompt cites some evidence from source text(s) to support argument (may include a mix of relevant and irrelevant citations or a mix of textual and non-textual references) partially analyzes the issue and/or evaluates the validity of the argumentation within the source texts; may be simplistic, limited, or inaccurate
0	<ul style="list-style-type: none"> may attempt to create an argument OR lacks purpose or connection to the prompt OR does neither cites minimal or no evidence from source text(s) (sections of text may be copied from source) minimally analyzes the issue and/or evaluates the validity of the argumentation within the source texts; may completely lack analysis or demonstrate minimal or no understanding of the given argument(s)
Trait 2: Development of Ideas and Organizational Structure	
2	<ul style="list-style-type: none"> contains ideas that are well developed and generally logical; most ideas are elaborated upon contains a sensible progression of ideas with clear connections between details and main points establishes an organizational structure that conveys the message and purpose of the response; applies transitional devices appropriately establishes and maintains a formal style and appropriate tone that demonstrate awareness of the audience and purpose of the task chooses specific words to express ideas clearly
1	<ul style="list-style-type: none"> contains ideas that are inconsistently developed and/or may reflect simplistic or vague reasoning; some ideas are elaborated upon demonstrates some evidence of a progression of ideas, but details may be disjointed or lacking connection to main ideas establishes an organization structure that may inconsistently group ideas or is partially effective at conveying the message of the task; uses transitional devices inconsistently may inconsistently maintain a formal style and appropriate tone to demonstrate an awareness of the audience and purpose of the task may occasionally misuse words and/or choose words that express ideas in vague terms
0	<ul style="list-style-type: none"> contains ideas that are insufficiently or illogically developed, with minimal or no elaboration on main ideas contains an unclear or no progression of ideas; details may be absent or irrelevant to the main ideas establishes an ineffective or no discernable organizational structure; does not apply transitional devices, or does so inappropriately uses an informal style and/or inappropriate tone that demonstrates limited or no awareness of audience and purpose may frequently misuse words, overuse slang or express ideas in a vague or repetitious manner

Score	Description
Trait 3: Clarity and Command of Standard English Conventions	
2	<ul style="list-style-type: none"> • demonstrates largely correct sentence structure and a general fluency that enhances clarity with specific regard to the following skills: <ol style="list-style-type: none"> 1) varied sentence structure within a paragraph or paragraphs 2) correct subordination, coordination and parallelism 3) avoidance of wordiness and awkward sentence structures 4) usage of transitional words, conjunctive adverbs and other words that support logic and clarity 5) avoidance of run-on sentences, fused sentences, or sentence fragments • demonstrates competent application of conventions with specific regard to the following skills: <ol style="list-style-type: none"> 1) frequently confused words and homonyms, including contractions 2) subject-verb agreement 3) pronoun usage, including pronoun antecedent agreement, unclear pronoun references, and pronoun case 4) placement of modifiers and correct word order 5) capitalization (e.g., proper nouns, titles, and beginnings of sentences) 6) use of apostrophes with possessive nouns 7) use of punctuation (e.g., commas in a series or in appositives and other non-essential elements, end marks, and appropriate punctuation for clause separation) • may contain some errors in mechanics and conventions, but they do not interfere with comprehension; overall, standard usage is at a level appropriate for on-demand draft writing.
1	<ul style="list-style-type: none"> • demonstrates inconsistent sentence structure; may contain some repetitive, choppy, rambling, or awkward sentences that may detract from clarity; demonstrates inconsistent control over skills 1-5 as listed in the first bullet under Trait 3, Score Point 2 above • demonstrates inconsistent control of basic conventions with specific regard to skills 1-7 as listed in the second bullet under Trait 3, Score Point 2 above • may contain frequent errors in mechanics and conventions that occasionally interfere with comprehension; standard usage is at a minimally acceptable level of appropriateness for on demand draft writing.
0	<ul style="list-style-type: none"> • demonstrates consistently flawed sentence structure such that meaning may be obscured; demonstrates minimal control over skills 1-5 as listed in the first bullet under Trait 3, Score Point 2 above • demonstrates minimal control of basic conventions with specific regard to skills 1-7 as listed in the second bullet under Trait 3, Score Point 2 above • contains severe and frequent errors in mechanics and conventions that interfere with comprehension; overall, standard usage is at an unacceptable level for on-demand draft writing. <p>OR</p> <ul style="list-style-type: none"> • response is insufficient to demonstrate level of mastery over conventions and usage

Non-scorable Responses (Score of 0/Condition Codes)

- Response exclusively contains text copied from source text(s) or prompt Response shows no evidence that test-taker has read the prompt or is off-topic Response is incomprehensible
- Response is not in English
- Response has not been attempted (blank)

Passage Requirements and Exemplars

Passages selected for inclusion on the GED® RLA test reflect a number of guidelines with regard to both length and content.

- Stimulus passages for reading comprehension items range from 400 to 900 words in length
- Drop-down item editing passages range from 350 to 450 words
- Extended response passages range from 550 to 650 words

Literary Passages (25% of RLA Stimulus Passages):

These passages feature the conventions of good storytelling, such as characterization, thematic elements, and plot lines. Literary elements (metaphor, imagery, etc.) and rich use of language are also helpful, though the test questions themselves focus minimally on these elements.

Excerpts exhibit some sense of “completeness,” even if they are not composed of a discrete text with a beginning, middle, and end. The entire pool of fiction passages contains a variety of texts in order to provide natural opportunities to assess test-taker understanding of the full range of RLA Assessment Targets.

Informational Passages (75% of RLA Stimulus Passages):

These passages are selected to be of high interest for a wide range of GED® test-takers. They contain a variety of topics focused around three main categories: science, social studies, and workplace documents. Informational passages reflect real-world situations and experiences. Categories of informational texts are listed below.

- **Informational science**

Passages in this category focus on a broad interpretation of two main themes:

1. Human health and living systems (e.g. nutrition, genetics, etc.)
2. Energy and related systems (e.g. conservation, modes of energy production, photosynthesis, etc.)

Some passages are more academic in approach, while others are directed toward a more general audience, but all science passages are intended to be interesting and engaging. Useful diagrams or graphics may occasionally

accompany these passages in order to provide an opportunity for creative items and increased reader interest.

- **Informational social studies**

Passages in this category are excerpts or articles pertaining to the theme of “the Great American Conversation.” They may include excerpts from documents such as the Bill of Rights and the preamble to the U.S. Constitution (excluding the Declaration of Independence and the U.S. Constitution, as the reading levels of those documents exceed the high school-level target of the GED® test) They may also draw from any number of public speeches, U.S. Supreme Court decisions, and other writings that express important concepts about American civics. For instance, a letter from folk icon Woody Guthrie to a librarian at the National Archives about maintaining an archive of folk music lyrics and recordings is an example of an ideal passage. A letter from Teddy Roosevelt on the importance of preserving public land as national space would also be part of “the Great American Conversation.” These documents could consist of correspondence, articles, speeches, journal entries, or other important primary or secondary documents relating to American civics.

- **Informational workplace**

Passages in this category may include workplace letters, resume cover letters, letters to customer service departments, memos, flyers for company-sponsored events, explanations of initiatives, procedural documents, descriptions of activities, or changes in policies. They also include community-related documents like public postings or letters to the editor.

Again, these documents reflect real-world situations and are intended to be engaging to a broad range of readers.

Passages used for “editing” item sets

The subject matter for these passages is drawn primarily from workplace and community documents, like the informational workplace passages described above. They are similar to the types of texts that test-takers might encounter or produce in their daily

lives. They are written clearly and simply, but they also provide variety in sentence structure and grammatical constructions so that the range of elements of conventions defined in the Language Conventions and Usage targets can be measured. These passages do not exceed 450 words.

Source texts for extended response prompts:

These passages may be drawn from the same categories as the informational passages: social studies, science, and workplace. Passages feature paired texts, where each text focuses on different aspects of a particular issue. These texts include empirical support that is paraphrased from authentic sources. The source texts for ER prompts do not exceed 650 words.

The prompts associated with these passages require test-takers to analyze arguments found within the source texts and use evidence directly from the texts themselves to support their responses. The GED® RLA test extended response (ER) prompts are written with the intent to elicit responses that draw from the skills specified in the extended response scoring rubric.

Passage Text Complexity

Passages on the GED® test also have a varying range of complexity levels. The reading level range is similar to the range of those encountered in typical high school-level courses in English language arts, science, and social studies.

The following series of excerpts are from Common Core State Standards Appendix B. They are similar to the types of texts that appear on the GED® RLA Test and are provided for illustrative purposes only.

Passage Exemplars

Churchill, Winston. "Blood, Toil, Tears and Sweat: Address to Parliament on May 13th, 1940." Lend Me Your Ears: Great Speeches in History, 3rd Edition. Edited by William Safire. New York: W. W. Norton, 2004. (1940)

From "Winston Churchill Braces Britons to Their Task"

I say to the House as I said to ministers who have joined this government, I have nothing to offer but blood, toil, tears, and sweat. We have before us an ordeal of the most grievous kind. We have before us many, many months of struggle and suffering.

You ask, what is our policy? I say it is to wage war by land, sea, and air. War with all our might and with all the strength God has given us, and to wage war against a monstrous tyranny never surpassed in the dark and lamentable catalogue of human crime. That is our policy.

You ask, what is our aim? I can answer in one word. It is victory. Victory at all costs - Victory in spite of all terrors - Victory, however long and hard the road may be, for without victory there is no survival.

I take up my task in buoyancy and hope. I feel sure that our cause will not be suffered to fail among men. I feel entitled at this juncture, at this time, to claim the aid of all and to say, "Come then, let us go forward together with our united strength."

United States. Preamble and First Amendment to the United States Constitution. (1787, 1791)

Preamble

We, the People of the United States, in Order to form a more perfect Union, establish Justice, insure domestic Tranquility, provide for the common defence, promote the general Welfare, and secure the Blessings of Liberty to ourselves and our Posterity, do ordain and establish this Constitution of the United States of America.

Amendment I

Congress shall make no law respecting the establishment of religion, or prohibiting the free exercise thereof; or abridging the freedom of speech, or of the press; or the right of people peaceably to assemble, and to petition the Government for a redress of grievances.

Petroski, Henry. "The Evolution of the Grocery Bag." American**Scholar 72.4 (Autumn 2003). (2003)**

That much-reviled bottleneck known as the American supermarket checkout lane would be an even greater exercise in frustration were it not for several technological advances. The Universal Product Code and the decoding laser scanner, introduced in 1974, tally a shopper's groceries far more quickly and accurately than the old method of inputting each purchase manually into a cash register. But beeping a large order past the scanner would have led only to a faster pileup of cans and boxes down the line, where the bagger works, had it not been for the introduction, more than a century earlier, of an even greater technological masterpiece: the square-bottomed paper bag.

The geometry of paper bags continues to hold a magical appeal for those of us who are fascinated by how ordinary things are designed and made. Originally, grocery bags were created on demand by storekeepers, who cut, folded, and pasted sheets of paper, making versatile containers into which purchases could be loaded for carrying home. The first paper bags manufactured commercially are said to have been made in Bristol, England, in the 1840s. In 1852, a "Machine for Making Bags of Paper" was patented in America by Francis Wolle, of Bethlehem, Pennsylvania. According to Wolle's own description of the machine's operation, "pieces of paper of suitable length are given out from a roll of the required width, cut off from the roll and otherwise suitably cut to the required shape, folded, their edges pasted and lapped, and formed into complete and

perfect bags.” The “perfect bags” produced at the rate of eighteen hundred per hour by Wolle’s machine were, of course, not perfect, nor was his machine. The history of design has yet to see the development of a perfect object, though it has seen many satisfactory ones and many substantially improved ones. The concept of comparative improvement is embedded in the paradigm for invention, the better mousetrap. No one is ever likely to lay claim to a “best” mousetrap, for that would preclude the inventor himself from coming up with a still better mousetrap without suffering the embarrassment of having previously declared the search complete. As with the mousetrap, so with the bag.

“Space Probe.” *Astronomy & Space: From the Big Bang to the Big Crunch*. Edited by Phillis Engelbert. Farmington Hills, Mich.: Gale Cengage Learning, 2009. (2009)

A space probe is an unpiloted spacecraft that leaves Earth’s orbit to explore the Moon, planets, asteroids, comets, or other objects in outer space as directed by onboard computers and/or instructions send from Earth. The purpose of such missions is to make scientific observations, such as taking pictures, measuring atmospheric conditions, and collecting soil samples, and to bring or report the data back to Earth.

Numerous space probes have been launched since the former Soviet Union first fired Luna 1 toward the Moon in 1959. Probes have now visited each of the eight planets in the solar system.

In fact, two probes—Voyager 1 and Voyager 2—are approaching the edge of the solar system, for their eventual trip into the interstellar medium. By January 2008 Voyager 1 was about 9.4 billion miles (15.2 billion kilometers) from the Sun and in May 2008 it entered the heliosheath (the boundary where the solar wind is thought to end), which is the area that roughly divides the solar system from interstellar space. Voyager 2 is not quite as far as its sister probe. Voyager 1 is expected

to be the first human space probe to leave the solar system. Both Voyager probes are still transmitting signals back to Earth. They are expected to help gather further information as to the true boundary of the solar system.

The earliest probes traveled to the closest extraterrestrial target, the Moon. The former Soviet Union launched a series of Luna probes that provided humans with first pictures of the far side of the Moon. In 1966, Luna 9 made the first successful landing on the Moon and sent back television footage from the Moon's surface.

The National Aeronautics and Space Administration (NASA) initially made several unsuccessful attempts to send a probe to the Moon. Not until 1964 did a Ranger probe reach its mark and send back thousands of pictures. Then, a few months after Luna 9, NASA landed Surveyor on the Moon.

In the meantime, NASA was moving ahead with the first series of planetary probes, called Mariner. Mariner 2 first reached the planet Venus in 1962. Later Mariner spacecrafts flew by Mars in 1964 and 1969, providing detailed images of that planet. In 1971, Mariner 9 became the first spacecraft to orbit Mars. During its year in orbit, Mariner 9's two television cameras transmitted footage of an intense Martian dust storm, as well as images of 90 percent of the planet's surface and the two Martian natural satellites (moons).

Encounters were also made with Mars in 1976 by the U.S. probes Viking 1 and Viking 2. Each Viking spacecraft consisted of both an orbiter and a lander. Viking 1 made the first successful soft landing on Mars on July 20, 1976. Soon after, Viking 2 landed on the opposite side of the planet. The Viking orbiters made reports on the Martian weather and photographed almost the entire surface of the planet.

Henry, O. "The Gift of the Magi." *The Best Short Stories of O. Henry*. New York: Modern Library, 1994. (1906)

White fingers and nimble tore at the string and paper. And then an ecstatic scream of joy; and then, alas! a quick feminine change to hysterical tears and wails, necessitating the immediate employment of all the comforting powers of the lord of the flat.

For there lay The Combs—the set of combs, side and back, that Della had worshipped long in a Broadway window. Beautiful combs, pure tortoise shell, with jewelled rims—just the shade to wear in the beautiful vanished hair. They were expensive combs, she knew, and her heart had simply craved and yearned over them without the least hope of possession. And now, they were hers, but the tresses that should have adorned the coveted adornments were gone.

But she hugged them to her bosom, and at length she was able to look up with dim eyes and a smile and say: "My hair grows so fast, Jim!"

And then Della leaped up like a little singed cat and cried, "Oh, oh!"

Jim had not yet seen his beautiful present. She held it out to him eagerly upon her open palm. The dull precious metal seemed to flash with a reflection of her bright and ardent spirit.

"Isn't it a dandy, Jim? I hunted all over town to find it. You'll have to look at the time a hundred times a day now. Give me your watch. I want to see how it looks on it."

Instead of obeying, Jim tumbled down on the couch and put his hands under the back of his head and smiled.

"Dell," said he, "let's put our Christmas presents away and keep 'em a while. They're too nice to use just at present. I sold the watch to get the money to buy your combs. And now suppose you put the chops on."

The magi, as you know, were wise men—wonderfully wise men—who brought gifts to the Babe in the manger. They invented the art of giving Christmas presents.

Being wise, their gifts were no doubt wise ones, possibly bearing the privilege of exchange in case of duplication. And here I have lamely related to you the uneventful chronicle of two foolish children in a flat who most unwisely sacrificed for each other the greatest treasures of their house. But in a last word to the wise of these days let it be said that of all who give gifts these two were the wisest. Of all who give and receive gifts, such as they are wisest. Everywhere they are wisest. They are the magi.

Twain, Mark. *The Adventures of Tom Sawyer*. New York: Modern Library, 2001. (1876)

From Chapter 2: “The Glorious Whitewasher”

But Tom’s energy did not last. He began to think of the fun he had planned for this day, and his sorrows multiplied. Soon the free boys would come tripping along on all sorts of delicious expeditions, and they would make a world of fun of him for having to work—the very thought of it burnt him like fire. He got out his worldly wealth and examined it—bits of toys, marbles, and trash; enough to buy an exchange of WORK, maybe, but not half enough to buy so much as half an hour of pure freedom. So he returned his straitened means to his pocket, and gave up the idea of trying to buy the boys. At this dark and hopeless moment an inspiration burst upon him! Nothing less than a great, magnificent inspiration.

He took up his brush and went tranquilly to work. Ben Rogers hove in sight presently—the very boy, of all boys, whose ridicule he had been dreading. Ben’s gait was the hop-skip-and-jump—proof enough that his heart was light and his anticipations high. He was eating an apple, and giving a long, melodious whoop, at intervals, followed by a deeptoned ding-dong-dong, ding-dong-dong, for he was personating a steamboat. As he drew near, he slackened speed, took the middle of the street, leaned far over to starboard and rounded to ponderously and with laborious pomp and circumstance—for he was personating the Big Missouri, and considered himself to

be drawing nine feet of water. He was boat and captain and engine-bells combined, so he had to imagine himself standing on his own hurricane-deck giving the orders and executing them:

"Stop her, sir! Ting-a-ling-ling!" The headway ran almost out, and he drew up slowly toward the sidewalk.

"Ship up to back! Ting-a-ling-ling!" His arms straightened and stiffened down his sides.

"Set her back on the stabboard! Ting-a-ling-ling! Chow! ch- chow-wow! Chow!" His right hand, meantime, describing stately circles—for it was representing a forty-foot wheel.

"Let her go back on the labboard! Ting-a-lingling! Chow-ch- chow-chow!" The left hand began to describe circles.

"Stop the stabboard! Ting-a-ling-ling! Stop the labboard! Come ahead on the stabboard! Stop her! Let your outside turn over slow! Ting-a-ling-ling! Chow-ow-ow! Get out that head-line! LIVELY now! Come—out with your spring-line— what're you about there! Take a turn round that stump with the bight of it! Stand by that stage, now—let her go! Done with the engines, sir! Ting-a-ling-ling! SH'T! S'H'T! SH'T!" (trying the gauge-cocks)."

Tom went on whitewashing—paid no attention to the steamboat. Ben stared a moment and then said: "Hi-YI! YOU'RE up a stump, ain't you!"

No answer. Tom surveyed his last touch with the eye of an artist, then he gave his brush another gentle sweep and surveyed the result, as before. Ben ranged up alongside of him. Tom's mouth watered for the apple, but he stuck to his work. Ben said:

"Hello, old chap, you got to work, hey?" Tom wheeled suddenly and said:

"Why, it's you, Ben! I warn't noticing."

"Say—I'm going in a-swimming, I am. Don't you wish you could? But of course you'd druther WORK—wouldn't you? Course you would!"

Tom contemplated the boy a bit, and said: "What do you call work?"

"Why, ain't THAT work?"

Tom resumed his whitewashing, and answered carelessly: "Well, maybe it is, and maybe it ain't. All I know, is, it suits Tom Sawyer."

"Oh come, now, you don't mean to let on that you LIKE it?" The brush continued to move.

"Like it? Well, I don't see why I oughtn't to like it. Does a boy get a chance to whitewash a fence every day?"

That put the thing in a new light. Ben stopped nibbling his apple. Tom swept his brush daintily back and forth—stepped back to note the effect—added a touch here and there—criticised the effect again—Ben watching every move and getting more and more interested, more and more absorbed. Presently he said:

"Say, Tom, let ME whitewash a little."

Tom considered, was about to consent; but he altered his mind:

"No—no—I reckon it wouldn't hardly do, Ben. You see, Aunt Polly's awful particular about this fence—right here on the street, you know—but if it was the back fence I wouldn't mind and SHE wouldn't. Yes, she's awful particular about this fence; it's got to be done very careful; I reckon there ain't one boy in a thousand, maybe two thousand, that can do it the way it's got to be done."

"No—is that so? Oh come, now—lemme just try. Only just a little—I'd let YOU, if you was me, Tom."

Performance Level Descriptors

Performance Level Descriptors

Performance Level Descriptors explain the skills a test-taker generally demonstrates in order to score into one of four performance levels on the GED® test and the skills they need to develop to advance their score.

In the RLA content area, the performance levels are driven by the level of complexity of the texts about which test-takers must answer questions. That is, test-takers are asked to perform similar skills with texts that vary from simple to complex. Therefore, each level description contains references to example texts that are typical of what test-takers can comprehend and analyze at each level. In addition, the performance levels represent a progression of skills, from most basic to most sophisticated, with each performance level building on the skills developed at the lower levels.

The three performance levels for the GED® RLA test are Performance Level 1 - Below Passing, Performance Level 2 - Pass/High School Equivalency, Performance Level 3 - GED® College Ready, and Performance Level 4 - GED® College Ready + Credit.

RLA - Below Passing Level

Test-takers who score at this level are typically able to comprehend and analyze simple passages similar to those found in L.M. Montgomery's *Anne of Green Gables*, Joy Hakim's *A History of US*, and Colin A. Ronan's "Telescopes," and generally demonstrate **limited but developing** proficiency with the following skills:

- **Analyzing and Creating Text Features and Technique**
 - Make inferences about plot/sequence of events, characters/people, settings, or ideas in texts at a limited and/or inconsistent level
 - Analyze relationships within texts, including how events are important in relation to plot or conflict; how people, ideas, or events are connected, developed, or distinguished; how events contribute to theme or relate to key ideas; or how a setting or context shapes structure and meaning, at a limited and/or inconsistent level
 - Analyze the roles that details play in texts at a limited and/or inconsistent level
 - Analyze how meaning or tone is affected when one word is replaced with another at a limited and/or inconsistent level
 - Analyze the structural relationship between adjacent sections of text at a limited and/or inconsistent level
 - Analyze transitional language and determine how it functions in a text at a limited and/or inconsistent level
- **Using Evidence to Understand, Analyze, and Create Arguments**
 - Comprehend explicit details and main ideas in a text at a limited and/or inconsistent level
 - Summarize details and ideas in a text at a limited and/or inconsistent level
 - Make sentence-level inferences about details that support main ideas at a limited and/or inconsistent level
 - Determine which details support a main idea at a limited and/or inconsistent level

- Identify a theme, or identify which element(s) in a text support a theme at a limited and/or inconsistent level
- **Applying Knowledge of English Language Conventions and Usage**
 - Edit to correct errors involving frequently confused words at a limited and/or inconsistent level
 - Edit to correct errors in straightforward subject-verb agreement at a limited and/or inconsistent level
 - Edit to eliminate run-on sentences, fused sentences, or sentence fragments at a limited and/or inconsistent level
 - Edit to ensure correct use of punctuation at a limited and/or inconsistent level

In order to progress to the **Pass/High School Equivalency** level, test-takers need to:

1. **strengthen** the skills listed in the **Below Passing** level and apply them to texts at a **more challenging** level of complexity, such as Sandra Cisneros' "Eleven," John Steinbeck's *Travels With Charley: In Search of America*, and Donald Mackay's *The Building of Manhattan*, with a particular focus on improving the following skills:
 - Make inferences about plot/sequence of events, characters/people, settings, or ideas in texts
 - Analyze the roles that details play in complex literary or informational texts
 - Analyze the structural relationship between adjacent sections of text
 - Comprehend explicit details and main ideas in a text
 - Determine which details support a main idea
 - Edit to ensure correct use of punctuation

and

2. **develop** the following additional skills:
 - Order sequences of events in texts
 - Determine the meaning of words or phrases as they are used in a text, including determining connotative and figurative meanings from context
 - Analyze the impact of specific words, phrases, or figurative language in text, with a focus on an author's intent to convey information or construct an argument
 - Analyze how a particular sentence, paragraph, chapter, or section fits into the overall structure of a text and contributes to the development of ideas
 - Determine an author's point of view or purpose of a text
 - Infer an author's implicit as well as explicit purposes based on details in a text
 - Analyze how an author uses rhetorical techniques to advance his or her point of view or achieve a specific purpose
 - Infer implied main ideas in paragraphs and whole texts
 - Draw conclusions or make generalizations that require synthesis of multiple main ideas in text
 - Edit to eliminate dangling or misplaced modifiers or illogical word order
 - Edit to correct errors in subject-verb or pronoun-antecedent agreement in more complicated situations
 - Edit to ensure effective use of transitional words, conjunctive adverbs, and other words and phrases that support logic and clarity
 - Edit to ensure correct use of capitalization

RLA - GED® Pass / High School Equivalency Level

Test-takers who score at this level are typically able to demonstrate **satisfactory proficiency** with the skills identified in the Below Passing level as well as to comprehend and analyze challenging passages similar to Sandra Cisneros' "Eleven," John Steinbeck's *Travels With Charley: In Search of America*, and Donald Mackay's *The Building of Manhattan*. Test-takers who score in this performance level are typically able to demonstrate the following skills:

- **Analyzing and Creating Text Features and Technique**
 - Order sequences of events in texts at a satisfactory level
 - Make inferences about plot/sequence of events, characters/people, settings, or ideas in texts at a satisfactory level
 - Analyze relationships within texts, including how events are important in relation to plot or conflict; how people, ideas, or events are connected, developed, or distinguished; how events contribute to theme or relate to key idea; or how a setting or context shapes structure and meaning
 - Analyze the roles that details play in complex literary or informational texts at a satisfactory level
 - Determine the meaning of words and phrases as they are used in a text, including determining connotative and figurative meanings from context
 - Analyze how meaning or tone is affected when one word is replaced with another, at a satisfactory level
 - Analyze the impact of specific words, phrases, or figurative language in text, with a focus on an author's intent to convey information or construct an argument
 - Analyze how a particular sentence, paragraph, chapter, or section fits into the overall structure of a text and contributes to the development of ideas
 - Analyze the structural relationship between adjacent sections of text at a satisfactory level
 - Analyze transitional language or signal words and determine how they refine meaning, emphasize certain

- ideas, or reinforce an author's purpose, at a satisfactory level
- Analyze how the structure of a paragraph, section, or passage shapes meaning, emphasizes key ideas, or supports an author's purpose
- Determine an author's point of view or purpose in texts, at a satisfactory level
- Infer an author's implicit as well as explicit purposes based on details in a text, at a satisfactory level
- Analyze how an author uses rhetorical techniques to advance his or her point of view or achieve a specific purpose
- **Using Evidence to Understand, Analyze, and Create Arguments**
 - Comprehend explicit details and main ideas in a text at a satisfactory level
 - Summarize details and ideas in text at a satisfactory level
 - Make sentence-level inferences about details that support main ideas at a satisfactory level
 - Infer implied main ideas in paragraphs and whole texts at a satisfactory level
 - Determine which details support a main idea at a satisfactory level
 - Identify a theme, or identify which element(s) in a text support a theme at a satisfactory level
 - Make evidence-based generalizations or hypotheses based on details in text, including clarifications, extensions, or applications of main ideas to new situations, at a satisfactory level
 - Draw conclusions or make generalizations that require synthesis of multiple main ideas at a satisfactory level
 - Identify specific pieces of evidence an author uses in support of claims or conclusions at a satisfactory level
 - Evaluate the relevance and sufficiency of evidence offered in support of a claim at a satisfactory level

- **Applying Knowledge of English Language Conventions and Usage**
 - Edit to correct errors involving frequently confused words at a satisfactory level
 - Edit to correct errors in pronoun usage at a satisfactory level
 - Edit to eliminate dangling or misplaced modifiers or illogical word order at a satisfactory level
 - Edit to correct errors in subject-verb or pronoun-antecedent agreement in more complicated situations at a satisfactory level
 - Edit to eliminate wordiness or awkward sentence construction at a satisfactory level
 - Edit to ensure effective use of transitional words, conjunctive adverbs, and other words and phrases that support logic and clarity, at a satisfactory level
 - Edit to ensure correct use of capitalization at a satisfactory level
 - Edit to eliminate run-on sentences, fused sentences, or sentence fragments at a satisfactory level
 - Edit to ensure correct use of apostrophes with possessive nouns at a satisfactory level
 - Edit to ensure correct use of punctuation at a satisfactory level

In order to progress to the **GED® College Ready** level, test-takers need to:

1. continue to **strengthen** the skills listed in the Below Passing and Pass/High School Equivalency levels and apply them to **complex** texts, such as Chinua Achebe's *Things Fall Apart*, Martin Luther King Jr.'s "Letter from Birmingham Jail," and Euclid's *Elements*, with a particular focus on improving the following skills:
 - Infer relationships between ideas in a text
 - Analyze how the structure of a paragraph, section, or passage shapes meaning, emphasizes key ideas, or supports an author's purpose
 - Identify specific pieces of evidence an author uses in support of claims or conclusions
 - Evaluate the relevance and sufficiency of evidence offered in support of a claim
 - Edit to eliminate wordiness or awkward sentence construction

and

2. **develop** the following additional skills:
 - Analyze how an author distinguishes his or her position or responds to conflicting viewpoints
 - Compare two passages that present related ideas or themes in different genres or formats in order to evaluate differences in scope, purpose, emphasis, intended audience, or overall impact
 - Delineate the specific steps of an argument the author puts forward, including how the argument's claims build on one another
 - Distinguish claims that are supported by reasons and evidence from claims that are not
 - Assess whether the reasoning is valid; identify fallacious reasoning in an argument and evaluate its impact
 - Identify an underlying premise or assumption in an argument and evaluate the logical support and evidence provided
 - Edit to eliminate non-standard or informal usage
 - Edit to ensure parallelism and proper subordination and coordination

RLA - GED® College Ready Level

Test-takers who score at this performance level are typically able to analyze complex passages similar to Chinua Achebe's *Things Fall Apart*, Martin Luther King Jr.'s "Letter from Birmingham Jail," and Euclid's *Elements*, as well as demonstrating strong abilities in the skills identified in the Pass/High School Equivalency level, including the following:

- **Analyzing and Creating Text Features and Technique**
 - Analyze the impact of specific words, phrases, or figurative language in texts, with a focus on an author's intent to convey information or construct an argument, at a strong level
 - Analyze how the structure of a paragraph, section, or passage shapes meaning, emphasizes key ideas, or supports an author's purpose, at a strong level
 - Determine an author's point of view or purpose in texts, at a strong level
 - Analyze how the author distinguishes his or her position from that of others or how an author acknowledges and responds to conflicting evidence or viewpoints, at a strong level
 - Draw specific comparisons between two texts that address similar themes or topics or between information presented in different formats, at a strong level
- **Using Evidence to Understand, Analyze, and Create Arguments**
 - Make evidence-based generalizations or hypotheses based on details in text, including clarifications, extensions, or applications of main ideas to new situations, at a strong level
 - Delineate the specific steps of an argument the author puts forward, including how the argument's claims build on one another, at a strong level
 - Compare two passages that present related ideas or themes in different genres or formats in order to evaluate differences in scope, purpose, emphasis, intended audience, or overall impact, at a strong level

- Identify specific pieces of evidence an author uses in support of claims or conclusions, at a strong level
- Evaluate the relevance and sufficiency of evidence offered in support of a claim, at a strong level
- Distinguish claims that are supported by reasons and evidence from claims that are not, at a strong level
- Assess whether reasoning is valid; identify fallacious reasoning in an argument and evaluate its impact, at a strong level
- Identify an underlying premise or assumption in an argument and evaluate the support, at a strong level
- **Applying Knowledge of English Language Conventions and Usage**
 - Edit to eliminate non-standard or informal usage, at a strong level
 - Edit to ensure parallelism and proper subordination and coordination, at a strong level
 - Edit to eliminate wordiness or awkward sentence construction, at a strong level
 - Edit to ensure correct use of apostrophes with possessive nouns, at a strong level

In order to progress to the **GED® College Ready + Credit** Level, test-takers need to:

1. **continue to develop** the skills listed in the previous performance levels and apply them to even more complex texts, such as Toni Morrison's *The Bluest Eye*, Thomas Jefferson's *The Declaration of Independence*, and Malcolm Gladwell's *The Tipping Point: How Little Things Can Make a Big Difference*, with a particular focus on strengthening the following skills:
 - Infer relationships between ideas in a text (e.g., an implicit cause and effect, parallel, or contrasting relationship)
 - Analyze how data or quantitative and/or visual information extends, clarifies, or contradicts information in text, or determine how data supports an author's argument
 - Compare two argumentative passages on the same topic that present opposing claims (either main or supporting claims) and analyze how each text emphasizes different evidence or advances a different interpretation of facts

RLA - GED® College Ready + Credit Level

Test-takers who score at this level are typically able to comprehend and analyze complex passages similar to that of Toni Morrison's *The Bluest Eye*, Thomas Jefferson's *The Declaration of Independence*, and Malcolm Gladwell's *The Tipping Point: How Little Things Can Make a Big Difference* and generally demonstrate outstanding proficiency with the skills identified in the previous performance levels, including the following:

- **Analyzing and Creating Text Features and Technique**
 - Infer relationships between ideas in a text (e.g., an implicit cause and effect, parallel, or contrasting relationship) at an outstanding level
 - Infer an author's implicit as well as explicit purposes based on details in text at an outstanding level
 - Draw specific comparisons between two texts that address similar themes or topics or between information presented in different formats at an outstanding level
 - Compare two passages in similar or closely related genres that share ideas or themes, focusing on similarities and/or differences in perspective, tone, style, structure, purpose, or impact at an outstanding level
- **Using Evidence to Understand, Analyze, and Create Arguments**
 - Infer implied main ideas in paragraphs or whole texts at an outstanding level
 - Analyze how data or quantitative and/or visual information extends, clarifies, or contradicts information in text, or determine how data supports an author's argument, at an outstanding level
 - Identify an underlying premise or assumption in an argument and evaluate the logical support and evidence provided, at an outstanding level
 - Compare two argumentative passages on the same topic that present opposing claims (either main or supporting claims) and analyze how each text emphasizes different evidence or advances a different interpretation of facts, at an outstanding level

- **Applying Knowledge of English Language Conventions and Usage**
 - Edit to correct errors in subject-verb or pronoun antecedent agreement in more complicated situations (e.g., with compound subjects, interceding phrases, or collective nouns) at an outstanding level
 - Edit to eliminate wordiness or awkward sentence construction at an outstanding level

Appendix

The GED® Test - RLA: A Content Comparison Between 2002 and the Current Test

Appendix A gives a breakdown of the similarities between the 2002 Series GED® Test and the current GED® test as well as a summary of the changes. Each content area's section contains a table showing the content specifications that are comparable across both tests, followed by a "What's different?" section that identifies specific innovations or improvements that we implemented in the Current test's content.

Reasoning Through Language Arts (RLA) – Reading: Similarities between the 2002 Test and Current Test.

Note: *Codes in the Current test column refer to the current GED® test Targets and Indicators as outlined in Chapter 1. The codes may not appear in numerical order, as the goal of the table below is to show areas of correspondence between the 2002 content and the current test content.*

RLA – Reading: Content Specifications	
2002	Current test
• Restate or paraphrase information.	R.2.1 Comprehend explicit details and main ideas in a text.
• Summarize main ideas.	R.2.2 Summarize details and ideas in text.
• Explain the primary implications of the text.	R.2.4 Infer implied main ideas in paragraphs or whole texts.
• Transfer concepts and principles from reading to a new context.	R.2.7 Make evidence-based generalizations or hypotheses based on details in text, including clarifications, extensions, or applications of main ideas to new situations.
• Draw conclusions and understand consequences.	R.2.8 Draw conclusions or make generalizations that require synthesis of multiple main ideas in text.
• Make inferences and recognize unstated assumptions	R.2.3 Make sentence-level inferences about details that support main ideas.
• Identify elements of style and structure and interpret the organizational structure or pattern in a text.	R.5.4 Analyze how the structure of a paragraph, section, or passage shapes meaning, emphasizes key ideas, or supports an author's purpose.
• Identify tone, word usage, characterization, use of detail and example, and figurative language.	R.4.3/L.4.3 Analyze the impact of specific words, phrases, or figurative language in text, with a focus on an author's intent to convey information or construct an argument. R.3.1 Make inferences about plot/sequence of events, characters/people, settings, or ideas in texts.
• Identify cause and effect relationships.	R.3.4 Infer relationships between ideas in a text (e.g. an implicit cause and effect, parallel, or contrasting relationship).
• Distinguish conclusions from supporting statements.	R.2.5 Determine which detail(s) supports a main idea.
• Interpret tone, point of view, style or purpose of a work.	R.6.1 Determine an author's point of view or purpose of a text.
• Make connections among parts of a text and integrate information from outside a passage with elements within the passage.	[Not assessed on 2014 test. Refer to R.5, R.7, and R.9 on the following page for how the 2014 test assesses related content]

What’s different on the RLA test in the Reading content domain?

In addition to continuing to measure test-takers’ knowledge and abilities with regard to key comprehension skills, the Reasoning Through Language Arts test will be assessing a selection of reasoning skills that allow them to evaluate complex argumentative text and analyze information. While these skills infuse all of the RLA Reading targets and indicators, they are described in some detail in the following Reading Targets and their corresponding Indicators, which represent an expansion upon the skills measured on the 2002 Series GED® Test.

- R.3 Analyze how individuals, events, and ideas develop and interact over the course of a text
- R.5 Analyze the structure of texts, including how specific sentences or paragraphs relate to each other and the whole

- R.6 Determine an author’s purpose or point of view in a text and explain how it is conveyed and shapes the content and style of a text
- R.8 Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence
- R.7 and R.9 Analyze how two or more texts address similar themes or topics

For more information on each of the Reading Targets, see the Reasoning Through Language Arts Assessment Targets in Chapter 1.

RLA – Language: Similarities between the 2002 test and Current Test

Note: Codes in the current column refer to the GED® Assessment Targets and Indicators as outlined Chapter 1. The codes may not appear in numerical order, as the goal of the table below is to show areas of correspondence between the 2002 content and the Current Test content.

RLA – Language: Content Specifications	
2002	Current test
<ul style="list-style-type: none"> • Create effective text divisions (within or among paragraphs). • Combine paragraphs to form a more effective document. • Form new paragraphs within multi-paragraph documents. • Create topic sentences. 	L.1.9 Edit to ensure effective use of transitional words, conjunctive adverbs, and other words and phrases that support logic and clarity. <i>[Note: Paragraph development and organizational skills are measured through Trait 2 of the Extended Response Scoring Rubric and will not appear in editing tasks on the 2014 RLA test.]</i>
<ul style="list-style-type: none"> • Edit to eliminate sentence fragments, run-on sentences, and comma splices. 	L.2.2 Edit to eliminate run-on sentences, fused sentences, or sentence fragments.
<ul style="list-style-type: none"> • Edit to eliminate improper coordination and subordination, modification, and parallelism. 	L.1.5 Edit to eliminate dangling or misplaced modifiers or illogical word order (e.g., correctly use to meet almost all requirements instead of to almost meet all requirements). L.1.6 Edit to ensure parallelism and proper subordination and coordination.
<ul style="list-style-type: none"> • Edit to eliminate subject-verb agreement (including agreement in number, interrupting phrases, and inverted structure). 	L.1.2 Edit to correct errors in straightforward subject-verb agreement. L.1.7 Edit to correct errors in subject-verb or pronoun antecedent agreement in more complicated situations (e.g., with compound subjects, interceding phrases, or collective nouns).

RLA – Language: Content Specifications	
2002	Current test
<ul style="list-style-type: none"> Edit to eliminate verb tense errors (including sequence of tenses, word clues to tense in sentences, word clues to tense in paragraphs, and verb form). 	L.1.2 Edit to correct errors in straightforward subject-verb agreement. L.1.7 Edit to correct errors in subject-verb or pronoun antecedent agreement in more complicated situations (e.g., with compound subjects, interceding phrases, or collective nouns).
<ul style="list-style-type: none"> Edit to eliminate pronoun reference errors (including incorrect relative pronouns, pronoun shift, vague or ambiguous references, and agreement with antecedents). 	<i>[Note: This skill is assessed on the 2014 test via Extended Response Scoring Rubric Trait 3 only.]</i>
<ul style="list-style-type: none"> Edit to eliminate pronoun reference errors (including incorrect relative pronouns, pronoun shift, vague or ambiguous references, and agreement with antecedents). 	L.1.3 Edit to correct errors in pronoun usage, including pronoun-antecedent agreement, unclear pronoun references, and pronoun case. L.1.7 Edit to correct errors in subject-verb or pronoun antecedent agreement in more complicated situations (e.g., with compound subjects, interceding phrases, or collective nouns).
<ul style="list-style-type: none"> Edit to eliminate errors in capitalization (including proper names and adjectives, titles, and months/ seasons). 	L.2.1 Edit to ensure correct use of capitalization (e.g., proper nouns, titles, and beginnings of sentences).
<ul style="list-style-type: none"> Edit to eliminate errors in punctuation (including commas in a series, commas between independent clauses joined by a conjunction, introductory elements, appositives, and the overuse of commas). 	L.2.4 Edit to ensure correct use of punctuation (e.g., commas in a series or in appositives and other non-essential elements, end marks, and appropriate punctuation for clause separation).
<ul style="list-style-type: none"> Edit to eliminate errors in spelling (restricted to errors related to possessives, contractions, and homophones). 	L.1.1 Edit to correct errors involving frequently confused words and homonyms, including contractions (passed, past; two, too, to; there, their, they're; knew, new; it's its). L.2.3 Edit to ensure correct use of apostrophes with possessive nouns.
<i>[Not assessed on the 2002 Series test.]</i>	L.1.4 Edit to eliminate non-standard or informal usage (e.g., correctly use try to win the game instead of try and win the game)

What’s different on the RLA test in the Language content domain?

While virtually all of the language conventions and usage skills that are measured on the 2002 Series Writing Test will continue to be measured in the RLA editing tasks, one of the biggest innovations that appear in this content area is in how these tasks are presented. On the 2002 Series, editing items appear in multiple-choice format in which sentences or phrases that contain errors are excerpted from a passage. On the RLA test, however, test-takers will find passages with embedded drop-down menus within them. These drop-down style items simulate real-life editing tasks because, once the test-taker has chosen the appropriate phrase selection from the menu, the phrase selection appears right in the passage so that the test-taker can see the selection in the context of the sentence and overall passage.

For more information on each of the Language Targets, see Reasoning Through Language Arts Assessment Targets in Chapter 1.

RLA – Extended Response (Essay): Similarities between the 2002 test and Current Test

Trait 2 of the Extended Response (ER) Scoring Rubric has extensive overlap with the 2002 Series Holistic Scoring Rubric.

Dimensions of the 2002 Essay Rubric	Dimensions of the RLA ER Trait 2 Rubric
<ul style="list-style-type: none"> Presents a clearly focused main idea that addresses the prompt. 	<ul style="list-style-type: none"> Contains ideas that are thoroughly and logically developed, with full elaboration of main ideas
<ul style="list-style-type: none"> Establishes a clear and logical organization. 	<ul style="list-style-type: none"> Establishes an effective organizational structure that is well-suited to the message and purpose of the response as a whole; applies transitional devices strategically and effectively
<ul style="list-style-type: none"> Achieves coherent development with specific and relevant details and examples. 	<ul style="list-style-type: none"> Contains purposeful, logical progression of ideas with details closely tied to their main points
<ul style="list-style-type: none"> Consistently controls sentence structure and the conventions of EAE. 	<p><i>[Note: This 2002 content is measured on Trait 3 of the Extended Response Scoring Rubric.]</i></p>
<ul style="list-style-type: none"> Exhibits varied and precise word choice 	<ul style="list-style-type: none"> Chooses words purposefully and carefully to express ideas with clarity and logic; consistently and strategically applies advanced vocabulary.
<p><i>[Note: The Current test column lists a new dimension that was not assessed on the 2002 Series test.]</i></p>	<ul style="list-style-type: none"> Strategically applies awareness of audience and purpose of the task to enhance meaning throughout the response.

What’s different about the RLA test extended response (essay)?

The extended response (ER) task is designed to present a real-world opportunity for test-takers to demonstrate their ability to develop an argument and support their ideas with text-based evidence. Unlike the 2002 Series Essay prompts, which were presented outside of any context and which posed somewhat abstract questions to test-takers, the ERs provide a brief pair of engaging passages describing opposing perspectives on a similar topic. Test-takers must read these passages and evaluate which position is better supported. As noted in the table above, the Trait 2 Rubric also adds an assessment of the test-takers awareness of both the audience and the purpose of the writing task.

In addition to the stylistic and organizational skills that are outlined in Trait 2 of the Scoring Rubric, test-takers’ responses to the ER tasks will be evaluated on how well they use two other important sets of skills.

1. Creating Arguments and Using Evidence (Trait 1)
2. Clarity and Command of Standard English Conventions (Trait 3)

Trait 1 is designed to help scorers focus on not just the presentation of the test-takers' ideas, but also the content of what they say in their essays. In particular, we are interested in how well test-takers can develop an argument in which they use evidence directly from the passages they are given in order to support their assertions.

Trait 3, on the other hand, which was incorporated into the 2002 Series Holistic rubric, specifically delineates a clear and limited number of key conventions and usage skills (outlined in the Language specifications above). The reason for separating these skills into a distinct trait on this rubric is that it is essential for test-takers to demonstrate their command of these skills in writing of their own, in addition to being able to apply them to the writing of another, as the editing tasks described above require.

For more information about Traits 1, 2, and 3, see the RLA Extended Response Scoring Rubric in Chapter 3.

Appendix

B

Reasoning Through Language Arts Reporting Categories

The following table illustrates which Reasoning Through Language Arts (RLA) indicators support each reporting category.

Reporting Category 1- Analyzing and creating text features and technique		35%
R.3.1	Order sequences of events in texts	
R.3.2	Make inferences about plot/sequence of events, characters/people, settings, or ideas in texts	
R.3.3	Analyze relationships within texts, including how events are important in relation to plot or conflict; how people, ideas, or events are connected, developed, or distinguished; how events contribute to theme or relate to key ideas; or how a setting or context shapes structure and meaning	
R.3.4	Infer relationships between ideas in a text (e.g. an implicit cause and effect, parallel, or contrasting relationship)	
R.3.5	Analyze the roles that details play in complex literary or informational texts	
R.6.1	Determine an author's point of view or purpose of a text	
R.6.2	Analyze how the author distinguishes his or her position from that of others or how an author acknowledges and responds to conflicting evidence or viewpoints	
R.6.3	Infer an author's implicit as well as explicit purposes based on details in text	
R.6.4	Analyze how an author uses rhetorical techniques to advance his or her point of view or achieve a specific purpose (e.g., analogies, enumerations, repetition and parallelism, juxtaposition of opposites, qualifying statements)	
R.4.1 / L.4.1	Determine the meaning of words and phrases as they are used in a text, including determining connotative and figurative meanings from context	
R.4.2 / L.4.2	Analyze how meaning or tone is affected when one word is replaced with another.	
R.4.3 / L.4.3	Analyze the impact of specific words, phrases, or figurative language in text, with a focus on an author's intent to convey information or construct an argument	
R.5.1	Analyze how a particular sentence, paragraph, chapter, or section fits into the overall structure of a text and contributes to the development of the ideas.	
R.5.2	Analyze the structural relationship between adjacent sections of text (e.g., how one paragraph develops or refines a key concept or how one idea is distinguished from another).	

Reporting Category 1- Analyzing and creating text features and technique		35%
R.5.3	Analyze transitional language or signal words (words that indicate structural relationships, such as consequently, nevertheless, otherwise) and determine how they refine meaning, emphasize certain ideas, or reinforce an author's purpose	
R.5.4	Analyze how the structure of a paragraph, section, or passage shapes meaning, emphasizes key ideas, or supports an author's purpose	
R.9.1 / 7.1	Draw specific comparisons between two texts that address similar themes or topics or between information presented in different formats (e.g., between information presented in text and information or data summarized in a table or timeline)	
R.7.3	Compare two documents that present related ideas or themes in different genre or formats (e.g., a feature article and an online FAQ or fact sheet) in order to evaluate differences in scope, purpose, emphasis, intended audience, or overall impact when comparing.	
R.9.2	Compare two passages in similar or closely related genre that share ideas or themes, focusing on similarities and/or differences in perspective, tone, style, structure, purpose, or overall impact	
W.2	Produce an extended analytic response in which the writer introduces the idea(s) or claim(s) clearly; creates an organization that logically sequences information; develops the idea(s) or claim(s) thoroughly with well-chosen examples, facts, or details from the text; and maintains a coherent focus.	

Reporting Category 2- Using evidence to understand, analyze and create arguments		45%
R.2.1	Comprehend explicit details and main ideas in text	
R.2.2	Summarize details and ideas in text	
R.2.3	Make sentence level inferences about details that support main ideas	
R.2.4	Infer implied main ideas in paragraphs or whole texts	
R.2.5	Determine which detail(s) support(s) a main idea	
R.2.6	Identify a theme, or identify which element(s) in a text support a theme	
R.2.7	Make evidence based generalizations or hypotheses based on details in text, including clarifications, extensions, or applications of main ideas to new situations	
R.2.8	Draw conclusions or make generalizations that require synthesis of multiple main ideas in text	
R.8.1	Delineate the specific steps of an argument the author puts forward, including how the argument's claims build on one another.	
R.8.2	Identify specific pieces of evidence an author uses in support of claims or conclusions	
R.8.3	Evaluate the relevance and sufficiency of evidence offered in support of a claim	
R.8.4	Distinguish claims that are supported by reasons and evidence from claims that are not	
R.8.5	Assess whether the reasoning is valid; identify fallacious reasoning in an argument and evaluate its impact	
R.8.6	Identify an underlying premise or assumption in an argument and evaluate the logical support and evidence provided	
R.9.3	Compare two argumentative passages on the same topic that present opposing claims (either main or supporting claims) and analyze how each text emphasizes different evidence or advances a different interpretations of facts	
R.7.2	Analyze how data or quantitative and/or visual information extends, clarifies, or contradicts information in text, or determine how data supports an author's argument	
R.7.4	Compare two passages that present related ideas or themes in different genre or formats in order to synthesize details, draw conclusions, or apply information to new situations	
W.1	Determine the details of what is explicitly stated and make logical inferences or valid claim that square with textual evidence.	

Reporting Category 3- Applying knowledge of English language conventions and usage		20%
W.3	Write clearly and demonstrate sufficient command of standard English conventions	
L.1.1	Edit to correct errors involving frequently confused words and homonyms, including contractions (passed, past; two, too, to; there, their, they're; knew, new; it's its)	
L.1.2	Edit to correct errors in straightforward subject-verb agreement	
L.1.3	Edit to correct errors in pronoun usage, including pronoun antecedent agreement, unclear pronoun references, and pronoun case	
L.1.4	Edit to eliminate non-standard or informal usage (e.g., correctly use try to win the game instead of try and win the game)	
L.1.5	Edit to eliminate dangling or misplaced modifiers or illogical word order (e.g., correctly use to meet almost all requirements instead of to almost meet all requirements)	
L.1.6	Edit to ensure parallelism and proper subordination and coordination	
L.1.7	Edit to correct errors in subject-verb or pronoun antecedent agreement in more complicated situations (e.g., with compound subjects, interceding phrases, or collective nouns)	
L.1.8	Edit to eliminate wordiness or awkward sentence construction	
L.1.9	Edit to ensure effective use of transitional words, conjunctive adverbs, and other words and phrases that support logic and clarity	
L.2.1	Edit to ensure correct use of capitalization (e.g., proper nouns, titles, and beginnings of sentences)	
L.2.2	Edit to eliminate run-on sentences, fused sentences, or sentence fragments	
L.2.3	Edit to ensure correct use of apostrophes with possessive nouns	
L.2.4	Edit to ensure correct use of punctuation (e.g., commas in a series or in appositives and other non-essential elements, end marks, and appropriate punctuation for clause separation)	

Appendix

C

RLA Extended Response (ER) Rubric Breakdown

The tables below provide more information about how a test-taker can receive full credit for each trait. The dimensions for a score point of two, which are represented by each bullet point in the rubric, are included in the tables for each trait.

Trait 1: Creation of Arguments and Use of Evidence

For Trait 1, responses are scored according to the criteria outlined in all three bullets. When a response shows mixed evidence of proficiency levels, it will receive a score that reflects a balanced consideration of each quality, with no one dimension weighted more than the others. For instance, a response may contain a logical text-based argument and sufficient support (a 2-point response), but the integration of claims might be simplistic (a 0-point response).

Breakdown of Trait 1 Dimensions for Score Point 2

Dimension or Quality of Writing	Explanation
<ul style="list-style-type: none"> generates text-based argument(s) and establishes a purpose that is connected to the prompt 	<p>The first dimension relates to making claims or assertions. At higher score points, arguments will be focused on close reading and analysis of the source texts. As responses ascend the scale in this dimension, they will become more focused on making arguments.</p>
<ul style="list-style-type: none"> cites relevant and specific evidence from source text(s) to support argument (may include few irrelevant pieces of evidence or unsupported claims) 	<p>The second dimension focuses test-takers abilities to use information from the source texts to support their claims or assertions. As responses ascend the scale in this dimension, they will use evidence that is progressively more tied to the text. Responses that establish criteria for the evaluation of the source texts and then apply these criteria to specific text-based evidence are most likely to score highest in this dimension. At lower score points, the test-taker may rely more heavily on evidence drawn from personal experience with the topic rather than from text-based evidence.</p>
<ul style="list-style-type: none"> analyzes the issue and/or evaluates the validity of the argumentation within the source texts (e.g., distinguishes between supported and unsupported claims, makes reasonable inferences about underlying premises or assumptions, identifies fallacious) 	<p>The third dimension focuses on a test-taker's ability to critically evaluate the rhetorical strategies and argumentation demonstrated by the authors of the source texts. Test-takers who focus more specifically on the task outlined in the prompt, will be more likely to score highly on this dimension. More specifically, responses that establish criteria for the evaluation of the source texts and then apply these criteria to specific text-based evidence are most likely to score highest in this dimension. Responses that rely heavily on the test-taker's own opinion are indicative of lower score points.</p>

Trait 2: Development of Ideas and Organizational Structure

The five bullets, or dimensions, in Trait 2 must be considered together to determine the score of any individual response. No one dimension is weighted more than any other. Each score point describes the same dimensions, but at varying levels of mastery.

Breakdown of Trait 2 Dimensions for Score Point 2	
Dimension or Quality of Writing	Explanation
<ul style="list-style-type: none"> contains ideas that are well developed and generally logical; most ideas are elaborated upon 	<p>The first dimension relates to the depth and breadth of explanation exhibited in the response. While support for ideas should come from the source texts (like in Trait 1) fully developed ideas are often extended with additional evidence that builds upon central assertions. High-scoring responses will tend to contain multiple ideas that are fully elaborated upon and help articulate a central thesis. Responses that develop ideas insufficiently, unevenly, or illogically fall into the lower score ranges with regard to this dimension.</p>
<ul style="list-style-type: none"> contains a sensible progression of ideas with clear connections between details and main points 	<p>The second dimension focuses on how effectively the response builds from one idea to the next as well as the degree in which details and central ideas are linked. High-scoring responses will maintain coherence and a sense of progression that help convey the writer’s central thesis. Responses at lower score points demonstrate an increasingly disjointed or unclear progression of ideas. Details are increasingly unrelated to central ideas, or even absent.</p>
<ul style="list-style-type: none"> establishes an organizational structure that conveys the message and purpose of the response; applies transitional devices appropriately 	<p>The third dimension relates to how well the response is organized. Though using paragraphs may lend structure to many responses, it is possible for a well-organized, logical, non-paragraphed response to receive a high score. However, responses that contain circular, list-like, or scattered organizational structure, as well as those that do not fully integrate effective transitions between ideas, are often indicative of lower score points.</p>
<ul style="list-style-type: none"> establishes and maintains a formal style and appropriate tone that demonstrate awareness of the audience and purpose of the task 	<p>The fourth dimension is associated with how well the response demonstrates an understanding of audience and purpose. Responses that score highly in this dimension will establish and maintain a formal style and objective tone while attending to the norms and conventions of argumentative writing. Responses at lower score points may contain informal tone and/or the perspective may be inappropriate for the audience.</p>
<ul style="list-style-type: none"> chooses specific words to express ideas clearly 	<p>The fifth dimension focuses on word choice. Effective word choice does not necessarily suggest that test-takers must employ a great deal of advanced vocabulary. Advanced vocabulary used correctly is often associated with a higher score on Trait 2, but responses that reflect precision in word choice are just as likely to score well in this dimension. At lower score points, imprecise, vague and/or misused words are more prevalent.</p>

Trait 3: Clarity and Command of Standard English Conventions

As in the previous two traits, each of the three dimensions of Trait 3 must be weighed together to determine the score. Each score point describes the same dimensions, but at varying levels of mastery.

Breakdown of Trait 3 Dimensions for Score Point 2	
Dimension or Quality of Writing	Explanation
<ul style="list-style-type: none"> • demonstrates largely correct sentence structure and a general fluency that enhances clarity with specific regard to the following skills: <ol style="list-style-type: none"> 1) varied sentence structure within a paragraph or paragraphs 2) correct subordination, coordination, and parallelism 3) avoidance of wordiness and awkward sentence structures 4) usage of transitional words, conjunctive adverbs and other words that support logic and clarity 5) avoidance of run-on sentences, fused sentences, or sentence fragments 	<p>This dimension relates to sentence structure and variety. Scoring will focus only on these skills essential to the development of sentence structure. High-scoring responses mix simple and compound sentences and purposefully incorporate a variety of clauses to enhance overall fluidity. Repetitive, choppy, rambling, and/or awkward sentence constructions are indicative of responses at the lower score points.</p>
<ul style="list-style-type: none"> • demonstrates competent application of conventions with specific regard to the following skills: <ol style="list-style-type: none"> 1) frequently confused words and homonyms, including contractions 2) subject-verb agreement 3) pronoun usage, including pronoun-antecedent agreement, unclear pronoun references, and pronoun case 4) placement of modifiers and correct word order 5) capitalization (e.g., proper nouns, titles, and beginnings of sentences) 6) use of apostrophes with possessive nouns 7) use of punctuation (e.g., commas in a series or in appositives and other non-essential elements, end marks, and appropriate punctuation for clause separation) 	<p>The second dimension focuses on how well the response maintains specific conventions of standard English. Responses will be scored on the basis of a test-taker’s demonstrated mastery over the particular language skills listed in this dimension. Though there are many other conventions that come into play in a test-taker’s writing, these essential skills are the ones on which they will be scored. Further, the longer the response, the greater tolerance for errors. For example, 10 errors in a 10-line response will likely receive a lower score than a response that contains 20 errors but is 60 lines long.</p>
<ul style="list-style-type: none"> • may contain some errors in mechanics and conventions, but they do not interfere with comprehension; overall, standard usage is at a level appropriate for on-demand draft writing. 	<p>The third dimension pertains to overall fluency with conventions and mechanics. In order to receive a score higher than 1, test-takers must sustain their writing long enough to demonstrate their level of proficiency with all the skills listed in the two previous dimensions. Then, writing samples are evaluated for level of grammatical and syntactical fluency appropriate for on-demand, draft writing.</p>

Appendix

D

Glossary of Key Terms for the RLA Test

Analysis/analyze (do not substitute *infer, summarize*): to examine critically in order to determine meaning and to understand the essential elements of [a text or other stimulus]

Application/apply (do not substitute *interpret, infer, summarize, conclude, calculate, solve, predict*): to use or employ an already established skill or piece of information in a new situation

Argument (do not substitute *claim, stance, argumentation*): a process or line of reasoning. For our purposes, arguments can be made either persuasively (i.e., to convince an audience of something) or rhetorically (i.e., to lay out a logical progression of ideas in support of a central stance)

Argumentation (do not substitute *argument, claim, stance, point of view*): the presentation of a line (or lines) of reasoning (i.e., the way in which something is argued, not the line of reasoning itself)

Assumption (do not substitute *premise, conclusion*): something taken for granted; a supposition

Author (do not substitute *narrator, speaker*): the person who wrote a text or other document

Author's credibility (do not substitute *author's point of view, meaning, bias, propaganda*): the degree to which an author can be believed or trusted

Author's point of view (do not substitute *author's purpose, meaning, author's credibility*): the author's attitude or outlook with which information, events, etc. are presented

Author's purpose/intent (do not substitute *meaning, summary, author's point of view, perspective*): the reason an author composes a text or other document (e.g., to convince an audience to use reusable bags rather than paper, to explain Lincoln's stance on abolition of slavery)

Bias (do not substitute *propaganda, author's credibility*): a particular tendency (of an author or a group), especially ones that prevents unprejudiced consideration

Assessment Guide for Educators

Science

October 2020



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Note on the March 2016 Edition

GED Testing Service has published the March 2016 Edition of the Assessment Guide for Educators to include the following:

1. Updated performance level information to reflect the new performance levels: Below Passing, Pass/High School Equivalency, GED® College Ready, and GED® College Ready + Credit
2. Updated information on the Social Studies test to reflect the elimination of the Social Studies Extended Response question
3. Streamlining and simplification of the guide, based on adult educator feedback, to make the guide more user-friendly and to eliminate redundancies

Note on the October 2020 Edition

GED Testing Service has enhanced the Science Practices to include subskills.

Assessment Targets

Assessment Targets for Science

The GED® test has three main purposes—to provide candidates with

1. A path to a high school credential
2. Evidence of their readiness to enter workforce training programs or postsecondary education
3. Information about their strengths and weaknesses in key academic areas

The philosophy underlying the GED® test is that there is a core of academic skills and content knowledge that must be acquired in order for an adult to be prepared to enter a job, a training program, or an entry-level, credit-bearing postsecondary course. This core of knowledge and skills is reflected in the career- and college-readiness standards now adopted in some form by the majority of states.

Content Specifications for the GED® Science Test

The GED® Science test focuses on the fundamentals of scientific reasoning, balancing (1) deeper conceptual understanding, (2) procedural skill and fluency, and (3) the application of these fundamentals in realistic situations. In order to stay true to this intention, each item on the Science test aligns with one *Science Practice* and one *Content Topic*.

The Science Practices are skills that are key to scientific reasoning in both textual and quantitative contexts. The science practices are derived from both the career- and college-readiness standards as well as in the National Research Council’s Framework for K-12 Science Education.

The Science test focuses on three major content domains: (1) life science, (2) physical science, and (3) Earth and space science. The science content topics are drawn from these three domains. They provide context for measuring a test-taker's abilities to apply the reasoning skills described in the practices. The content topics focus on science that reflects both what is taught in many high school-level science courses and what is most relevant and useful to an adult population. To measure this content at a range of levels of complexity, the following item types are used in the test: multiple choice, short answer, drag-and-drop, hot spot, and fill-in-the-blank.

The following specifications guide the GED® Science test:

1. Approximately 40 percent of the test focuses on life science, 40 percent on physical science, and 20 percent on Earth and space science
2. The test includes items that test textual analysis and understanding, data representation and inference skills, as well as problem solving with science content
3. Each item on the Science test aligns with both one Science Practice and one Content Topic
4. Each item also reflects one Depth of Knowledge level of cognitive complexity, based on the appropriate alignment to a science practice
5. Approximately 60 percent of the items reflect a Depth of Knowledge level of 2 or 3
6. The contexts within which problem solving skills are measured are taken from both academic and workforce contexts
7. Approximately 50 percent of the items are in scenarios, in which two to three items are based on a single stimulus (textual, graphic, or a combination of both), and 50 percent are standalone items

The Science Assessment Targets are divided into two sections: the practices and the content topics. The science practices describe skills necessary for reasoning in a scientific context, while the content topics describe a body of knowledge typical of what is taught in American high schools. Each item on the GED® Science test aligns with one Science Practice and one Content Topic.

Each science practice in the Science Assessment Targets correspond with standards from Common Core State Standards (CCSS) for Literacy in Science & Technical Subjects, and mathematics and/or practices from *A Framework for K-12 Science Education*. For example, R.1 corresponds with CCSS Reading Anchor Standard 1m and 8.SP refers to skills introduced in the CCSS Grade 8 Statistics and Probability mathematics domain. Practices 1-8, however, are drawn from the scientific practices in *A Framework for K-12 Science Education*.

Scientific Practices in A Framework for K-12 Science Education

References to Common Core State Standards and Framework for K-12 Science Education ¹	Science Practices	Range of Depth of Knowledge (DOK) levels ²
SP.1 Comprehending Scientific Presentations		
R2, R8, P8, M2, M6	SP.1.a Understand and explain textual scientific presentations <ul style="list-style-type: none"> • Identify summaries and central ideas of passages. • Recognize restatements of research or experimental findings. • Recognize comparisons between scientific processes, theories and trends. 	1-3
R4, L4, P8, M2, M4, M6	SP.1.b Determine the meaning of symbols, terms and phrases as they are used in scientific presentations <ul style="list-style-type: none"> • Distinguish between multiple meanings of an academic vocabulary term used in context. • Determine the meaning of symbols as they are used in scientific presentations 	2
S-ID, 8.SP, P8, M2, M4, M6	SP.1.c Understand and explain a non-textual scientific presentations <ul style="list-style-type: none"> • Interpret scientific results and information in graphs, tables and various scientific diagrams. 	2
SP.2 Investigation Design (Experimental and Observational)		
R8, P3, P4, M4	SP.2.a Identify possible sources of error and alter the design of an investigation to ameliorate that error <ul style="list-style-type: none"> • Identify the source of error using discrepant results. • Redesign an experiment to reduce sources of error. 	2-3
R2, R5, W5, P1, P8, M, M4, M8	SP.2.b Identify and refine hypotheses for scientific investigations <ul style="list-style-type: none"> • Identify the hypothesis in a scientific investigation. • Refine the hypothesis in a scientific investigation. 	2-3
R8, R9, P2, P5, M3, M4	SP.2.c Identify the strength and weaknesses of one or more scientific investigation (i.e. experimental or observational) designs <ul style="list-style-type: none"> • Identify the strengths or weaknesses of a single experimental design. • Compare experimental designs to identify strengths or weaknesses. 	2-3
W7, 3.MD, P3, P5, M4, M8	SP.2.d Design a scientific investigation <ul style="list-style-type: none"> • Identify the correct order of steps in a scientific experiment. • Identify proper measurement tools or appropriate units for a scientific experiment. 	1-3
R5, P2, P4, M4	SP.2.e Identify and interpret independent and dependent variables in scientific investigations <ul style="list-style-type: none"> • Identify the independent and dependent variables in a scientific experiment. • Interpret the relationship between the independent and dependent variables in a scientific experiment. 	2-3

References to Common Core State Standards and Framework for K-12 Science Education ¹	Science Practices	Range of Depth of Knowledge (DOK) levels ²
SP.3 Reasoning from Data		
R1, P7	SP.3.a Cite specific textual evidence to support a finding or conclusion <ul style="list-style-type: none"> • Identify quotations and text from passages that support conclusions. • Identify numerical data that supports conclusions. 	2-3
R1, R2, R3, P1, P6, P7, M3, M4, M7, M8	SP.3.b Reason from data or evidence to a conclusion <ul style="list-style-type: none"> • Identify if scientific evidence from stimulus supports a conclusion. • Determine which conclusion is supported by evidence in the stimulus. 	2-3
R1, R3, P4, M3, M4, M7, M8	SP.3.c Make a prediction based upon data or evidence <ul style="list-style-type: none"> • Identify how a scientific variable changes as a result of another variable. • Make a prediction or extend a trend from results or data presented. 	2-3
S-CP, 7.SP, P4, P5, M4, M7, M8	SP.3.d Using sampling techniques to answer scientific questions <ul style="list-style-type: none"> • Use a subset of data presented in a stimulus to draw conclusions about a larger set of data. • Identify the correct sampling strategy for a given scientific investigation. • Identify strengths and weaknesses of sampling techniques. 	2-3
SP.4 Evaluating Conclusions with Evidence		
R8, P4, P6, M3, M7, M8	SP.4.a Evaluate whether a conclusion or theory is supported or challenged by particular data or evidence <ul style="list-style-type: none"> • Determine if specific evidence supports or challenges the proposed claim or solution. • Determine which model (hypothesized set of relationships or experiment) is weakened by new evidence. • Identify which data supports the theory or hypothesis. 	2-3
SP.5 Working with Findings		
R9, P2, P4, P6, M3, M7	SP.5.a Reconcile multiple findings, conclusions or theories. <ul style="list-style-type: none"> • Identify the reason(s) a particular finding or theory is superior to another. • Identify the reason(s) two particular findings or theories are both correct. 	2-3
SP.6 Expressing Scientific Information		
R7, W2, P8, M2, M4, M6	SP.6.a Express scientific information or findings visually <ul style="list-style-type: none"> • Translate information presented numerically or verbally into a visual representation. 	2
R7, W2, P5, P8, M2, M4, M6	SP.6.b Express scientific information or findings numerically or symbolically. <ul style="list-style-type: none"> • Translate information presented visually or verbally into a numerical representation. 	1-2
R7, W2, P8, M2, M6	SP.6.c Express scientific information or findings verbally <ul style="list-style-type: none"> • Translate information presented visually or numerically into a verbal representation. 	2-3

References to Common Core State Standards and Framework for K-12 Science Education ¹	Science Practices	Range of Depth of Knowledge (DOK) levels ²
SP.7 Scientific Theories		
R3, R5, L3, P1, P2, P7, M2, M4	SP.7.a Understand and apply scientific models, theories and processes <ul style="list-style-type: none"> Identify a correct answer by applying commonly known scientific models, theories, and processes. Analyze relationship among concepts in a stimulus. 	2-3
P2, P5, M2, M4, M8	SP.7.b Apply formulas from scientific theories <ul style="list-style-type: none"> Solve for an unknown variable by applying concepts and information provided in a stimulus. 	2
SP.8 Probability & Statistics		
S-MD, S-ID, P4, P5, M4, M6	SP.8.a Describe a data set statistically <ul style="list-style-type: none"> Calculate the mean, median, and mode of a data set. 	1-2
7.SP, P5, M4, M6	SP.8.b Use counting and permutations to solve scientific problems <ul style="list-style-type: none"> Determine the number of combinations to solve a scientific problem. 	1-2
7.SP, S-CP, P5, M4, M6	SP.8.c Determine the probability of events <ul style="list-style-type: none"> Determine simple probabilities. Determine compound probabilities of two independent events. Determine offspring ratios using a Punnett square. 	2

¹ The GED® Science Practices (SP#) are derived from The Common Core State Standards for ELA and Literacy (R#) (L#) (W#)(2010), The Common Core State Standards for Mathematics (M#) (2010), and the National Research Council's A Framework for K-12 Science Education: Practices, Crosscutting Concepts and Core Ideas (P#) (forthcoming).

² 26 The Depth of Knowledge (DOK) levels correspond to Norman Webb's (University of Wisconsin) Depth of Knowledge model of cognitive complexity.

GED® Science Test Content Topics

The primary focus of the GED® test - Science is the measurement of essential reasoning skills (e.g., analysis, evaluation, and inference) applied in scientific context. The science content topics describe key concepts that are widely taught in a variety of high school-level courses and are relevant to the lives of GED® test-takers. The content topics provide context for measuring the skills outlined in the science practices.

Test-takers should be broadly and generally familiar with each of the concepts in the science content topics and subtopics: they should be able to recognize and understand, in context, each of the terms listed there, rather than having an in-depth and comprehensive knowledge of each subtopic. The stimuli used in the GED® test - Science provide necessary details about scientific graphic elements, formulas, and other key principles.

		Science Content Topics		
		Life Science (L) (40%)	Physical Science (P) (40%)	Earth and Space Science (ES) (20%)
Focusing Themes	Human Health and Living Systems	a. Human body and health b. Organization of life (structure and function of life) c. Molecular basis for heredity d. Evolution	a. Chemical Properties and Reactions Related to Human Systems	a. Interactions between Earth's systems and living things
	Energy and Related Systems	e. Relationships between life functions and energy intake f. Energy flows in ecologic networks (ecosystems)	b. Conservation, transformation, and flow of energy c. Work, motion, and forces	b. Earth and its system components and interactions c. Structure and organization of the cosmos

For example, a question may include answer options and stimuli that contain specific terms drawn from the content subtopics; however, test-takers will never be asked to formulate their own definition of a scientific term.

Focusing Themes

The two focusing themes ensure that the test covers a wide range of important scientific topics while focusing on a distinct subset of ideas within each content topic. Items from any of the three content domains of life science, physical science, and Earth and space science can pertain to one of these two themes, but content that falls outside the spheres of these themes will not appear on the Science test.

The theme of **Human Health and Living Systems** pertains to material that is vital for the health and safety of all living things on the planet. Topics relating to this theme include (but are not limited to)

- the physical body
- characteristics of humans and other living things
- systems of living organisms and related topics (e.g. diseases, evolution, and heredity)
- the mechanisms for how the human body works on chemical and physical levels
- how the environment affects living things and human society
- how humans and other organisms affect the environment

The theme of **Energy and Related Systems** deals with a fundamental part of the universe, and includes (but is not limited to) topics such as

- sources of energy
- transformations of energy
- uses of energy
- how energy flows through organisms and ecosystems
- Earth's geochemical systems
- how humans gain energy in their bodies
- the results of the use of the energy used in the human body

The Science Content Topics Matrix below identifies the major topics in science and shows the relationship between each content topic and each focusing theme.

The Science Content Topics And Subtopics tables on the following pages break down each content topic into greater detail. Individual test items will be drawn from the subtopics.

Science Content Topics and Subtopics³

Life Science

L.a Human Body and Health

- L.a.1 Body systems (e.g. muscular, endocrine, nervous systems) and how they work together to perform a function (e.g. muscular and skeletal work to move the body)
- L.a.2 Homeostasis, feedback methods that maintain homeostasis (e.g. sweating to maintain internal temperature), and effects of changes in the external environment on living things (e.g. hypothermia, injury)
- L.a.3 Sources of nutrients (e.g. foods, symbiotic organisms) and concepts in nutrition (e.g. calories, vitamins, minerals)
- L.a.4 Transmission of disease and pathogens (e.g. airborne, bloodborne), effects of disease or pathogens on populations (e.g. demographics change, extinction), and disease prevention methods (e.g. vaccination, sanitation)

L.b Relationship Between Life Functions and Energy Intake

- L.b.1 Energy for life functions (e.g. photosynthesis, respiration, fermentation)

L.c Energy Flows in Ecologic Networks (Ecosystems)

- L.c.1 Flow of energy in ecosystems (e.g. energy pyramids), conservation of energy in an ecosystem (e.g. energy lost as heat, energy passed on to other organisms) and sources of energy (e.g. sunlight, producers, lower level consumer)
- L.c.2 Flow of matter in ecosystems (e.g. food webs and chains, positions of organisms in the web or chain) and the effects of change in communities or environment on food webs
- L.c.3 Carrying capacity, changes in carrying capacity based on changes in populations and environmental effects and limiting resources to necessary for growth
- L.c.4 Symbiosis (e.g. mutualism, parasitism, commensalism) and predator/prey relationships (e.g. changes in one population affecting another population)
- L.c.5 Disruption of ecosystems (e.g. invasive species, flooding, habitat destruction, desertification) and extinction (e.g. causes [human and natural] and effects)

L.d Organization of Life (Structure and Function of Life)

- L.d.1 Essential functions of life (e.g. chemical reactions, reproduction, metabolism) and cellular components that assist the functions of life (e.g. cell membranes, enzymes, energy)
- L.d.2 Cell theory (e.g. cells come from cells, cells are the smallest unit of living things), specialized cells and tissues (e.g. muscles, nerve, etc.) and cellular levels of organization (e.g. cells, tissues, organs, systems)
- L.d.3 Mitosis, meiosis (e.g. process and purpose)

L.e Molecular Basis for Heredity

- L.e.1 Central dogma of molecular biology, the mechanism of inheritance (e.g. DNA) and chromosomes (e.g. description, chromosome splitting during Meiosis)
- L.e.2 Genotypes, phenotypes and the probability of traits in close relatives (e.g. Punnett squares, pedigree charts)
- L.e.3 New alleles, assortment of alleles (e.g. mutations, crossing over), environmental altering of traits, and expression of traits (e.g. epigenetics, color-points of Siamese cats)

L.f Evolution

- L.f.1 Common ancestry (e.g. evidence) and cladograms (e.g. drawing, creating, interpreting)
- L.f.2 Selection (e.g. natural selection, artificial selection, evidence) and the requirements for selection (e.g. variation in traits, differential survivability)
- L.f.3 Adaptation, selection pressure, and speciation

Physical Science

Pa Conservation, Transformation, and Flow of Energy

- Pa.1 Heat, temperature, the flow of heat results in work and the transfer of heat (e.g. conduction, convection)
- Pa.2 Endothermic and exothermic reactions
- Pa.3 Types of energy (e.g. kinetic, chemical, mechanical) and transformations between types of energy (e.g. chemical energy [sugar] to kinetic energy [motion of a body])
- Pa.4 Sources of energy (e.g. sun, fossil fuels, nuclear) and the relationships between different sources (e.g. levels of pollutions, amount of energy produced)
- Pa.5 Types of waves, parts of waves (e.g. frequency, wavelength), types of electromagnetic radiation, transfer of energy by waves, and the uses and dangers of electromagnetic radiation (e.g. radio transmission, UV light and sunburns)

Pb Work, Motion, and Forces

- Pb.1 Speed, velocity, acceleration, momentum, and collisions (e.g. inertia in a car accident, momentum transfer between two objects)
- Pb.2 Force, Newton's Laws, gravity, acceleration due to Gravity (e.g. freefall, law of gravitational attraction), mass and weight
- Pb.3 Work, simple machines (types and functions), mechanical advantages (force, distance, and simple machines), and power

Pc Chemical Properties and Reactions Related to Living Systems

- Pc.1 Structure of matter
- Pc.2 Physical and chemical properties, changes of state, and density
- Pc.3 Balancing chemical equations and different types of chemical equations, conservation of mass in balanced chemical equations and limiting reactants
- Pc.4 Parts in solutions, general rules of solubility (e.g. hotter solvents allow more solute to dissolve), saturation and the differences between weak and strong solutions

Earth and Space Science

ES.a Interactions between Earth's Systems and Living Things

- ES.a.1 Interactions of matter between living and non-living things (e.g. cycles of matter) and the location, uses and dangers of fossil fuels
- ES.a.2 Natural Hazards (e.g. earthquakes, hurricanes, etc.) their effects (e.g. frequency, severity, and short- and long-term effects), and mitigation thereof (e.g. dikes, storm shelters, building practices)
- ES.a.3 Extraction and use of natural resources, renewable vs. non-renewable resources and sustainability

ES.b Earth and its System Components and Interactions

- ES.b.1 Characteristics of the atmosphere, including its layers, gases and their effects on the Earth and its organisms, including climate change
- ES.b.2 Characteristics of the oceans (e.g. salt water, currents, coral reefs) and their effects on Earth and organisms
- ES.b.3 Interactions between Earth's systems (e.g. weathering caused by wind or water on rock, wind caused by high/low pressure and Earth rotation, etc.)
- ES.b.4 Interior structure of the Earth (e.g. core, mantle, crust, tectonic plates) and its effects (e.g. volcanoes, earth quakes, etc.) and major landforms of the Earth (e.g. mountains, ocean basins, continental shelves, etc.)

ES.c Structures and Organization of the Cosmos

- ES.c.1 Structures in the universe (e.g. galaxies, stars, constellations, solar systems), the age and development of the universe, and the age and development of Stars (e.g. main sequence, stellar development, deaths of stars [black hole, white dwarf])
- ES.c.2 Sun, planets, and moons (e.g. types of planets, comets, asteroids), the motion of the Earth's motion and the interactions within the Earth's solar system (e.g. tides, eclipses)
- ES.c.3 The age of the Earth, including radiometrics, fossils, and landforms

Item Types & Layouts

Item Types in Science

The GED® test now uses a variety of item types, made possible through computer-based testing. The computer-based testing platform allows the opportunity to use interactive item types that are not possible on a pencil-and-paper test.

The Science test includes:

- Multiple choice items
- Fill-in-the-blank items (Technology-enhanced)
- Drag-and-drop items (Technology-enhanced)
- Drop-down items (Technology-enhanced)
- Hot Spot items (Technology-enhanced)
- Short answer items

These items assess the full depth and breadth of skills outlined in the GED® Science Assessment Targets. Employing a variety of item types allows us to assess the targeted content at a number of DOK levels. Each item type provides opportunities for test-takers to apply different cognitive strategies to demonstrate proficiency with Science practices and content knowledge (*See Assessment Guide for Educators Introduction: Depth of Knowledge Summary for more information*). Each item type on the Science test is presented either as a stand-alone item or as part of an item scenario in which two or three items pertain to a single stimulus. Stimulus materials include brief text, graphs, tables, or other graphic representations of data or scientific concepts. The Science

Technology-Enhanced Items

In Technology-enhanced (TE) items, test-takers interact with the content in a more authentic way. Test-takers may be asked to select blocks of text, select multiple answers from a list, drag an answer to a location, or manipulate symbols or other graphics.

test stimuli reflect the focusing theme of either “Human Health and Living Systems” or “Energy and Related Systems” as identified in the GED® Science Assessment Targets. (See Chapter Three: Assessment Targets: Science for more information.)

Multiple choice (MC)

Multiple choice (MC) items consist of a question accompanied by several possible answer choices. This item type is used to assess aspects of every Science Practice and Content Topic listed in the GED® Science Assessment Targets. Multiple choice items continue to be a reliable method for measuring skills and knowledge at a range of cognitive levels in a standardized manner. MC items on the GED® test have four answer options.

Fill-in-the-blank (FIB)

Fill-in-the-blank (FIB) items consist of a sentence with one or more blanks for the test-taker to complete. These items give test-takers the opportunity to construct a very brief response, like a single word or a short phrase, when potential answers have little variability. For example, this item type is used when an item calls for a response to a specific calculation or the identification of a specific quantity from a graphic representation of data.

Drag-and-drop

Drag-and-drop items are interactive tasks that require test-takers to move images or words to designated “drop targets” on a computer screen. On the Science test, this item type is used to measure a test-taker’s skills with regard to assembling data or comparing and classifying information. For instance, an item could ask test-takers to place organisms in specific locations on a food web. Other examples of tasks well-suited to drag-and-drop items are ones in which test-takers place labels on a graph or chart, fill in a Venn diagram with data from a brief textual stimulus, order steps in a scientific experiment, or place data points from a given context into a chart, table, or graphical model.

Drop-down

Drop-down items have a drop-down menu embedded within a brief text. They are used to give test-takers opportunities to choose the correct response to complete statements. Test-takers are given the advantage of seeing the complete statements they create in an interactive manner on screen. These items measure many of the

same skills that fill-in-the-blank items can, though they provide a selection of possible responses from which test-takers can choose. This item type is especially effective for the purposes of assessing how well a test-taker can identify a logical conclusion drawn from text-based evidence or even make a generalization based on an author's argument.

Hot spot

Hot spot items consist of a graphic image or block of text with virtual "sensors" placed strategically within it. The test-taker selects a portion of the text or part of the graphic by clicking on the designated sensor. This item type is used to measure a test-taker's understanding of relationships between data points cited from a textual or graphic stimulus. For example, a hot spot item could contain a pedigree chart requiring test-takers to select offspring with a particular trait in order demonstrate their understanding of heredity. Other items might ask test-takers to select data or points in a graph, chart, or table that support or refute a given conclusion or to select parts of a specific model given some selection criteria (e.g. a model of the human body, a cladogram [i.e., a diagram showing the relationships between organisms], or a matter-cycle diagram).

Short answer (SA)

Short answer (SA) are items that require test-takers to compose their own brief responses to the wide range of content outlined in the GED® Science Assessment Targets. This item type is used to provide a test-taker the opportunity to create a valid summary of a passage or model, create and successfully communicate a valid conclusion or hypothesis, or derive evidence from a textual or graphic stimulus that supports particular conclusion.

Science Practice and Content Topic:

The Science Assessment Targets represent a "two-layer" system. The top layer is the science practices and the second layer is the content topics. Every item is aligned to one practice and one content topic.

Item Layouts in Science

Item layouts are shown to highlight the structure of each item type described in the previous section. The content in the item layouts shown in this guide is not representative of the GED® test and is merely included to illustrate test item functionality rather than content.

Multiple Choice Item and a Passage

This layout allows the test-takers to see the stimulus—whether it be textual or graphic or both—and item simultaneously. For Science, this layout is used when two or three items will pertain to a single, brief text or graphic.

Social Studies - Candidate Name
Question 1 of 10

Answer Explanation
Flag for Review

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The chart below describes the four methods used to amend the U.S. Constitution.

Four Methods of Amending the U.S. Constitution

	Step 1	Step 2
1.	A two-thirds vote in both houses of the U.S. Congress	Ratified by three-fourths of the state legislatures
2.	A two-thirds vote in both houses of the U.S. Congress	Ratified by ratification conventions in three-fourths of the states
3.	A national constitutional convention called by two-thirds of the state legislatures	Ratified by three-fourths of the state legislatures
4.	A national constitutional convention called by two-thirds of the state legislatures	Ratified by ratification conventions in three-fourths of the states

Which statement correctly describes an important way that the process of amending the U.S. Constitution is different from the process of creating federal laws?

- A. Only one government branch is involved in the amendment process.
- B. Only one legislative body can conclude the amendment process.
- C. Only state legislatures are involved in the amendment process.
- D. Only state governments can start the amendment process.

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Fill-in-the-blank

This item type (shown below using Social Studies content) requires test-takers to fill in a single blank.

Social Studies - Candidate Name
Question 5 of 10

Answer [Explanation](#)
[Flag for Review](#)

Women's Voting Rights

Since the 19th century, many people have worked for equal rights for women. Much of this effort focused on suffrage, which is the right to vote. One of the greatest victories for advocates of women's rights was ratification of the 19th Amendment to the U.S. Constitution in 1920. The 19th Amendment stated that "The right of citizens of the United States to vote shall not be denied or abridged by the United States or by any State on account of sex." However, the struggle for equality in other areas of society continued even after the 19th Amendment granted woman suffrage.

Number of Women in the U.S. House of Representatives, 1917-2011

Session of Congress	Number of Women Representatives
65	0
70	5
75	10
80	10
85	15
90	10
95	20
100	25
105	50
110	70

This data is taken from the public domain.

Type the appropriate session of Congress in the box.

The number of women representatives who served in the Congress was twice the number of women representatives who served in the 101st Congress.

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Drag-and-drop Item

This example using math content shows six elements of an equation (boxed numbers and boxed letter x), three of which would be selected and dragged to one of the drop targets in the equation boxes next to “y =.” In items that use this layout, the appearance and number of the drag tokens and the drop targets may vary, but all drag-and-drop items allow test-takers to interact with the material as they move objects around on the screen.

Mathematical Reasoning - Candidate Name
Question 6 of 10

Answer Explanation
 Calculator

 Flag for Review

A scientist is studying red maple tree growth in a state park. She measured the trunk diameters of a sample of trees in the same month every other year. The tables show the data for two of the trees.

Tree 1

Year	Trunk Diameter (inches)
1	18.6
3	19.2
5	19.8
7	20.4
9	21.0
11	21.6
13	22.2

Tree 2

Year	Trunk Diameter (inches)
1	11.4
3	12.0
5	12.6
7	13.2
9	13.8
11	14.4
13	15.0

This is the final year in which she will collect data. When her data collection is complete, she will predict future red maple tree growth.

Formula Sheet
Calculator Reference

The scientist creates an equation that models her data for each tree so that she can predict the diameter in the future. Complete a linear equation that fits the data for tree 1, where x is the year and y is the trunk diameter, in inches.

Click on the variables and numbers you want to select and drag them into the boxes.

Equation for Tree 1

$$y = \boxed{0.3} \boxed{} + \boxed{0.6}$$

-0.6
-0.3

18.0
18.3
18.6
x

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Drop-down Item

In this item type, test-takers choose their answers from a drop-down menu that appears embedded within text.

Mathematical Reasoning - Candidate Name Question 8 of 10

Answer Explanation Calculator Flag for Review

Formula Sheet Calculator Reference

The graph shows the level of ibuprofen, y units, in a patient's bloodstream x hours after the ibuprofen was taken.

Ibuprofen Level in Patient's Bloodstream

Time Since Ibuprofen Was Taken (hours)	Ibuprofen Level (units)
0	0
1	6
2	4
3	3
4	2
5	1
6	0.8
7	0.6
8	0.5

The level of ibuprofen in the patient's bloodstream increased from hours to hours.

Select...

0

$\frac{2}{3}$

$2\frac{1}{2}$

5

8

Hot Spot Item

This item layout shows a brief stimulus placed in a split screen with a number line graphic. The graphic contains one or more “sensor” regions, or “hot spots,” on which the test-takers can click in order to provide responses to the question. In this example, the green circles represent the test-taker’s answer to this item.

Mathematical Reasoning - Candidate Name
Question 5 of 10

Answer Explanation
 Calculator

 Flag for Review

A scientist is studying red maple tree growth in a state park. She measured the trunk diameters of a sample of trees in the same month every other year. The tables show the data for two of the trees.

Tree 1		Tree 2	
Year	Trunk Diameter (inches)	Year	Trunk Diameter (inches)
1	18.6	1	11.4
3	19.2	3	12.0
5	19.8	5	12.6
7	20.4	7	13.2
9	21.0	9	13.8
11	21.6	11	14.4
13	22.2	13	15.0

This is the final year in which she will collect data. When her data collection is complete, she will predict future red maple tree growth.

Formula Sheet

 Calculator Reference

The scientist plots the data for tree 2 on a coordinate grid. She begins by plotting data for year 3 and year 11. What are the locations of the two points on the coordinate grid?

Click on the grid to plot the points.

(Note: To remove a point, place the arrow over the point and click the left mouse button.)

Diameter of Tree 2

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Short Answer Box

This item layout requires test-takers to answer one or more questions in a brief written paragraph. This item type is used only on the Science test.

Science - Candidate Name Question 6 of 16

Answer Explanation Flag for Review

page 1 | page 2

Tropical rain forests contain diverse communities of organisms with many interesting relationships. One such relationship connects parasitic fungi and their insect hosts. A type of parasitic fungus, called *Ophiocordyceps unilateralis*, disperses spores onto the forest floor, but cannot successfully grow on the ground. The fungus requires specific conditions and must grow inside of a specific ant species, called the host, to reproduce. The ants, various species of carpenter ant, make nests in the trees.

O. unilateralis feeds on and grows inside the insect host, and within a few days the fungus affects the insect's brain. The insect exhibits unusual behaviors such as wandering away from the colony to where light and humidity favor fungal growth. Just before dying, the insect bites into and firmly attaches itself to a plant. Then, the fungus slowly grows outward from the dead insect's head, producing a pod of spores that eventually bursts open. The spores fall to the ground, restarting the life cycle of the fungus.

Deforestation, or clearing away trees, is occurring in tropical rain forests.

Explain how deforestation could disrupt the life cycle of *Ophiocordyceps unilateralis* in tropical rain forests. Include multiple pieces of evidence from the text to support your answer.

Type your response in the box. This task may require approximately 10 minutes to complete.

Cut Copy Paste Undo Redo

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The Development Cycle of a Short Answer Item

The Development Cycle of a Short Answer Item

The GED® test features a variety of item types that allow us to measure the full breadth and depth of the assessment targets. Short answer (SA) items appear on only the Science test. SA items allow us to measure a wide range of skills identified in the assessment targets at a higher cognitive level than traditional multiple choice (MC) items. This chapter focuses on the SA item development and scoring processes.

Measuring Complex Content Through Short Answer Items

The tasks that appear in SA items are much more like problems the GED® test-takers encounter in their daily lives, whether writing papers or reports in a postsecondary program or solving problems in the workplace.

Although MC items continue to be a proven, reliable method for obtaining information about a test-taker's mastery of various skills, SA items allow us to observe how test-takers apply a wider variety of cognitive strategies to the same content in a more authentic, real-world application, as shown in the example below.

Science Test Example

Science Test MC Item	Science Test SA Item
Which step [out of four listed] would produce a particular outcome in a scientific process?	Design an experiment to test the hypothesis [which is given in the stimulus]. Be sure to include descriptions of your data collection process and data analysis in your response.

Advantage: SA items allow test developers to access a higher level of cognitive complexity because they require test-takers to express a response in their own words.

Developing Short Answer Scoring Guides

Each SA item on the GED® test - Science is scored on a three-point scale. For some items, the three points are accumulated when the test-takers identify or analyze up to three specific details or correct answers. This type of SA can be scored analytically, meaning that one point is given for each correct part in a test-taker's response. Other items are scored holistically. In these holistic items, each score point reflects a range of possible test-taker responses, with varying levels of correctness. This style of SA is particularly effective at measuring a test-taker's skills with regard to summarizing or synthesizing information.

Because each item has its own rules for scoring, scoring guides are developed alongside the item itself in two stages. The completed guides contain as broad a selection of responses as necessary to convey the types of answers that can receive full and partial credit. In the first stage of scoring guide development, test developers list possible correct answers that reflect the content target that the item intends to measure. For instance, if the SA item asks test-takers to identify three textual details that support a main idea in a passage, the preliminary scoring guide will list as many relevant phrases or sentences from the passage as necessary.

The second stage of SA scoring guide development takes place during the **rangefinding process**. The primary purpose of rangefinding is to select exemplars at each score point level from a representative sample of responses. An exemplar is an optimal sample response for each score point. These exemplars, which are drawn from the pool of responses created when the items are field tested, serve to help train both human scorers and the automated scoring engine. Because test-takers can be both creative and insightful, they may come up with correct responses to a given SA item that the test developers did not anticipate when drafting the preliminary scoring guides. Therefore, SA scoring guides are often updated and completed during the rangefinding process, incorporating answers or common phrasings that have been directly observed in test-taker responses during the field test.

Scoring guides broadly represent the variety of answers found in the sample pool. After finalization, the scoring guides are used with the exemplars to train human scorers. Once all items from field testing have been scored by humans, the scoring guides and exemplars are used to train the automated scoring engine. The

automated engine replicates human scoring and is then used to score items on the operational tests, ensuring that test-takers are not only measured on their demonstration of higher-order thinking skills, but that they also receive feedback on their test scores as quickly as possible.

Short Answer Scoring Process

1. First Stage: Scoring Guide Development

- Test developers create a scoring guide for each item which lists all the possible correct answers

2. Second Stage: Rangefinding

- Exemplars, or optimal sample responses for each score point, are pulled from the pool of test-taker responses from field-testing
- The SA scoring guides may be updated to incorporate additional answers or common phrasings based on the test-taker responses during the field test
- The scoring guides are used with the exemplars to train human scorers
- The scoring guides and exemplars are used to train the automated scoring engine

Performance Level Descriptors

Performance Level Descriptors

Performance Level Descriptors explain the skills a test-taker generally demonstrates in order to score into one of four performance levels on the GED® test and the skills they need to develop to advance their score to the next performance level.

The four performance levels for the GED® Science Test are Performance Level 1 - Below Passing, Performance Level 2 – Pass/High School Equivalency, Performance Level 3 – GED® College Ready, and Performance Level 4 – GED® College Ready + Credit.

Performance Level 1: Below Passing Level

Test-takers who score at this level typically have a **limited but developing proficiency** demonstrating the skills in the following categories: examining scientific text, understanding and applying scientific methods and concepts, and interpreting scientific data using numeric reasoning.

Test-takers at the Below Passing level typically demonstrate the following skills:

Analyze Scientific and Technical Arguments, Evidence, and Text-Based Information

- Cite specific textual evidence to support a finding or conclusion at a limited and/or inconsistent level

Applying Scientific Processes and Procedural Concepts

- Identify and refine hypotheses for scientific investigations at a limited and/or inconsistent level
- Reason from data or evidence to a conclusion at a limited and/or inconsistent level
- Identify the strength and weaknesses of one or more scientific investigations (i.e. experimental or observational) designs at a limited and/or inconsistent level

Reasoning Quantitatively and Interpreting Data in Scientific Contexts

- Describe a data set statistically at a limited and/or inconsistent level
- Understand and explain non-textual scientific presentations at a limited and/or inconsistent level
- Express scientific information or findings numerically or symbolically at a limited and/or inconsistent level
- Express scientific information or findings visually at a limited and/or inconsistent level

In order to progress to the Pass/High School Equivalency level, test-takers need to:

1. continue to **strengthen** the skills listed in the Below Passing Level, including:
 - Cite specific textual evidence to support a finding or conclusion
 - Express scientific information or findings verbally
 - Identify and refine hypotheses for scientific investigations
 - Understand and explain non-textual scientific presentations

and

2. **develop** the following additional skills:
 - Understand and explain textual scientific presentations
 - Identify possible sources of error and alter the design of an investigation to ameliorate that error
 - Identify and interpret independent and dependent variables in scientific investigations
 - Understand and apply scientific models, theories, and processes
 - Apply formulas from scientific theories

Performance Level 2 - Pass/High School Equivalence

Test-takers who score at this level typically have a **satisfactory** proficiency in demonstrating skills in the following categories: examining scientific text, understanding and applying scientific methods and concepts, and interpreting scientific data using numeric reasoning.

Test-takers are generally able to demonstrate knowledge of and ability with the skills identified in the Below Passing level at a satisfactory level as well as the following skills:

Analyze Scientific and Technical Arguments, Evidence, and Text-Based Information

- Understand and explain textual scientific presentations at a satisfactory level
- Express scientific information or findings verbally at a satisfactory level
- Determine the meaning of symbols, terms, and phrases as they are used in scientific presentations at a satisfactory level
- Reconcile multiple findings, conclusions, or theories at a satisfactory level

Applying Scientific Processes and Procedural Concepts

- Make a prediction based on data or evidence at a satisfactory level
- Identify possible sources of error and alter the design of an investigation to ameliorate that error at a satisfactory level
- Identify and interpret independent and dependent variables in scientific investigations at a satisfactory level
- Understand and apply scientific models, theories, and processes at a satisfactory level
- Design a scientific investigation at a satisfactory level
- Evaluate whether a conclusion or theory is supported or challenged by particular data or evidence at a satisfactory level

Reasoning Quantitatively and Interpreting Data in Scientific Contexts

- Apply formulas from scientific theories at a satisfactory level

- Determine the probability of events at a satisfactory level
- Use counting and permutations to solve scientific problems at a satisfactory level

In order to progress to the **GED® College Ready** level, test-takers need to continue to **strengthen** the skills listed in the Below Passing level and the skills listed in the Pass/High School Equivalency level, including:

- Understand and apply scientific models, theories, and processes
- Design a scientific investigation
- Apply formulas from scientific theories
- Determine probability of events
- Identify possible sources of error and alter the design of an investigation to ameliorate that error
- Evaluate whether a conclusion or theory is supported or challenged by particular data or evidence
- Reconcile multiple findings, conclusions, or theories
- Make a prediction based on data or evidence

Performance Level 3 - GED® College Ready

Test-takers who score at this level typically have a strong proficiency in demonstrating skills in the following categories: examining scientific text, understanding and applying scientific methods and concepts, and interpreting scientific data using numeric reasoning.

Test-takers are generally able to demonstrate strong knowledge of and ability with the skills identified in the Below Passing and the Pass/High School Equivalency levels, including:

Analyze Scientific and Technical Arguments, Evidence, and Text-Based Information

- Reconcile multiple findings, conclusions, or theories at a strong level

Applying Scientific Processes and Procedural Concepts

- Apply formulas from scientific theories at a strong level
- Identify possible sources of error and alter the design of an investigation to ameliorate that error at a strong level
- Make a prediction based on data or evidence at a strong level
- Design a scientific investigation at a strong level
- Understand and apply scientific models, theories, and processes at a strong level
- Evaluate whether a conclusion or theory is supported or challenged by particular data or evidence at a strong level

Reasoning Quantitatively and Interpreting Data in Scientific Contexts

- Determine probability of events at a strong level

In order to progress to the **GED® College Ready + Credit** level, test-takers need to continue to **strengthen** the skills listed in the previous levels including:

- Reconcile multiple findings, conclusions, or theories
- Design a scientific investigation
- Evaluate whether a conclusion or theory is supported or challenged by particular data or evidence
- Understand and apply scientific models, theories, and processes
- Determine probability of events

Performance Level 4 - GED® College Ready + Credit

Some institutions may confer three (3) semester hours, lower division credits in introductory physical science (survey, without laboratory) on students who score at this level. Test-takers who score at this level typically have an outstanding proficiency in demonstrating skills in the following categories: examining scientific text, understanding and applying scientific methods and concepts, and interpreting scientific data using numeric reasoning.

Test-takers are generally able to demonstrate knowledge of and ability with the skills identified in the previous levels, plus the following:

Analyze Scientific and Technical Arguments, Evidence, and Text-Based Information

- Reconcile multiple findings, conclusions, or theories at an outstanding level

Applying Scientific Processes and Procedural Concepts

- Design a scientific investigation at an outstanding level
- Evaluate whether a conclusion or theory is supported or challenged by particular data or evidence at an outstanding level
- Understand and apply scientific models, theories, and processes at an outstanding level

Reasoning Quantitatively and Interpreting Data in Scientific Contexts

- Determine probability of events at an outstanding level

Appendix

A

The GED® Test - Science: A Content Comparison Between 2002 and the Current Test

Note: Codes in the Current Test column refer to the Current GED® Assessment Targets and Indicators as outlined in Chapter 1. The codes may not appear in numerical order, as the goal of the table below is to show areas of correspondence between the 2002 content and the Current content.

Science Practices	
2002	Current Test
Understand unifying concepts and processes, including <ul style="list-style-type: none"> • systems • order and organization • evidence • models and explanations • change, constancy and measurement • evolution • equilibrium 	SP1.a Understand and explain textual scientific presentations. SP1.b Determine the meaning of symbols, terms and phrases as they are used in scientific presentations. SP1.c Understand and explain a non-textual scientific presentations. SP7.a Understand and apply scientific models, theories and processes. SP7.b Apply formulas from scientific theories.

Science Practices	
2002	Current Test
<p>Use science as inquiry, including</p> <ul style="list-style-type: none"> • identifying questions and concepts that guide scientific investigations • designing and conducting scientific investigations • using appropriate tools and techniques to gather data • thinking critically and logically about • relationships between evidence and explanations • analyzing alternative explanations • communicating scientific arguments • understanding scientific inquiry 	<p>SP2.a Identify possible sources of error and alter the design of an investigation to ameliorate that error.</p> <p>SP2.b Identify and refine hypotheses for scientific investigations.</p> <p>SP2.c Identify the strength and weaknesses of one or more scientific investigation (i.e. experimental or observational) designs.</p> <p>SP2.d Design a scientific investigation.</p> <p>SP2.e Identify and interpret independent and dependent variables in scientific investigations.</p> <p>SP3.a Cite specific textual evidence to support a finding or conclusion.</p> <p>SP3.b Reason from data or evidence to a conclusion.</p> <p>SP3.c Make a prediction based upon data or evidence.</p> <p>SP3.d Using sampling techniques to answer scientific questions.</p> <p>SP4.a Evaluate whether a conclusion or theory is supported or challenged by particular data or evidence.</p> <p>SP5.a Reconcile multiple findings, conclusions or theories.</p> <p>SP6.a Express scientific information or findings visually.</p> <p>SP6.b Express scientific information or findings numerically or symbolically.</p> <p>SP6.c Express scientific information or findings verbally.</p> <p>SP8.a Describe a data set statistically.</p> <p>SP8.b Use counting and permutations to solve scientific problems.</p> <p>SP8.c Determine the probability of events.</p>
<p>Understand the links between science and technology to</p> <ul style="list-style-type: none"> • Identify, change, or improve a piece of technology or technique • Make decisions in regards to identifying and stating new problems or needs • Designing, implementing, and evaluating a solution. <p>Use science in social and personal perspectives to make decisions about personal and social issues, including</p> <ul style="list-style-type: none"> • personal and community health • population growth • natural resources • environmental quality • natural and human-induced hazards • science and technology in local, national, and global challenges. 	<p>[Science and technology and science in social and personal perspectives are not separately assessed on the 2014 test. These overall concepts are integrated into the other relevant areas on the current test.]</p>

Science Content Topics

Physical Science	
2002	Current Test
<ul style="list-style-type: none"> • structure of atoms • structure and properties of matter • chemical reactions • motions and forces • conservation of energy and increase in disorder • interactions of energy and matter 	Pa Conservation, Transformation, and Flow of Energy Pb Work, Motion, and Forces Pc Chemical Properties and Reactions Related to Living Systems
Life Science	
2002	Current Test
<ul style="list-style-type: none"> • the cell • molecular basis of heredity • biological evolution • interdependence of organisms • matter • energy • organization in living systems 	L.a Human Body and Health L.b Relationship Between Life Functions and Energy Intake L.c Energy Flows in Ecologic Networks (Ecosystems) L.d Organization of Life (Structure and Function of Life) L.e Molecular Basis for Heredity L.f Evolution
Earth and Space Science	
2002	Current Test
<ul style="list-style-type: none"> • energy in the Earth system • geochemical cycles • origin and evolution of the Earth system • origin and evolution of the universe 	ES.a Interactions between Earth's Systems and Living Things ES.b Earth and its System Components and Interactions ES.c Structures and Organization of the Cosmos

What's different on the Current Science Test?

Many of the science reasoning skills that were assessed on the 2002 test continue to be assessed on the current test. However, in the current Science Practices, these skills are articulated in greater detail and with greater focus.

The current Science Practices focus on test-takers' ability to glean information from scientific texts, reason with data representations and statistics, and apply key scientific models, theories and processes. The intent of the Science Practices is to provide clearer and more specific information to both test developers and educators about the skills that will be assessed.

Similarly, the content of the Current Science test continues to be drawn from the three major content domains of Physical Science, Life Science and Earth and Space Science. However, instead of the broad and open-ended categories that appeared in the 2002 content specifications, the Content Topics in the Current Science Assessment Targets are broken down into the Subtopics, which give much greater detail so as to narrow the scope of the content that is "fair game" for being featured in test questions. The content topics are also further filtered by the focusing themes. Content of each item must pertain to one of these two themes:

- Human Health and Living Systems
- Energy and Related Systems

Test-takers should be *broadly and generally familiar* with each of the basic concepts enumerated in the Science Content Topics and Subtopics, and they should be able to recognize and understand, in context, each of the *terms* listed therein. Test-takers are not expected to have an in-depth and comprehensive knowledge of each subtopic. Rather, the stimuli about which each question pertains will provide necessary details about scientific figures, formulas, and other key principles. For example, a question may include answer options and stimuli that contain specific terms drawn from the content subtopics; however, test-takers will never be asked to formulate their own definition a term without the item providing sufficient contextual support for such a task.

For more information on the science content topics and subtopics and the focusing themes, see the Science Assessment Targets in Chapter 1.

Appendix

B

Science Reporting Categories

The GED® Science Test focuses on the fundamentals of science reasoning, striking a balance of deeper conceptual understanding, procedural skill and fluency, and the ability to apply these fundamentals in realistic situations.

The Science reporting categories are organized according to the Science Practices, rather than the Science content indicators. This organization has been chosen because the Science Practices are integrated into every item on the Science test and represent thinking and reasoning skills that are critical for adults to master. Although the content Topics and Subtopics are also reflected in all items, the Science content areas are too numerous for the test to be able to provide reliable and meaningful reporting data on them. Test-takers, however, will be receiving much more detailed information both on the skills they possess and on those they need to develop than ever before. With this additional information, adult educators will be in a position to focus their work with test-takers on critical skill development needs.

The reporting information provided by the GED® test is one of the most important elements of the assessment system. Gaining a firm understanding of the reporting categories on the GED® test will help adult educators in planning how they can best help adult learners to gain the skills they will need to be successful both on the test and in the future pathway they ultimately pursue.

Reporting Category 1: Analyzing scientific and technical arguments, evidence and text-based information		30%
SP1.a	Understand and explain a textual scientific presentations	
SP1.b	Determine the meaning of symbols, terms and phrases as they are used in scientific presentations	
SP3.a	Cite specific textual evidence to support a finding or conclusion	
SP5.a	Reconcile multiple findings, conclusions or theories.	
SP6.c	Express scientific information or findings verbally	
Reporting Category 2: Applying scientific processes and procedural concepts		
SP2.a	Identify possible sources of error and alter the design of an investigation to ameliorate that error	
SP2.b	Identify and refine hypotheses for scientific investigations	
SP2.c	Identify the strength and weaknesses of one or more scientific investigation (i.e. experimental or observational) designs	
SP2.d	Design a scientific investigation	
SP2.e	Identify and interpret independent and dependent variables in scientific investigations	
SP3.b	Reason from data or evidence to a conclusion	
SP3.c	Make a prediction based upon data or evidence	
SP4.a	Evaluate whether a conclusion or theory is supported or challenged by particular data or evidence	
SP7.a	Understand and apply scientific models, theories and processes	
Reporting Category 3: Reasoning quantitatively and interpreting data in scientific contexts		
SP1.c	Understand and explain a non-textual scientific presentations	
SP3.d	Using sampling techniques to answer scientific questions	
SP6.a	Express scientific information or findings visually	
SP6.b	Express scientific information or findings numerically	
SP7.b	Apply formulas from scientific theories	
SP8.a	Describe a data set statistically	
SP8.b	Use counting and permutations to solve scientific problems	
SP8.c	Determine the probability of events	

Appendix

C

Reference Codes for Science Practices in the Assessment Targets

Appendix C gives the reference for each code identified in the “References” column in the Science Practices section of the Science Assessment Targets.

Numerical/Letter Symbol	Science Standards Document Reference
The Reading, Writing, and Language Master Standards are found in the Common Core State Standards for English Language Arts 6-12.	
R1, R2, R3, R4, R5, R7, R8, R9	Common Core State Standards for English Language Arts & Literacy Reading Master Standards
L3, L4	Common Core State Standards for English Language Arts & Literacy Language Master Standards
W2, W5, W7	Common Core State Standards for English Language Arts & Literacy Writing Master Standards
The Standards for Mathematical Practice are found in the Common Core State Standards for Mathematics.	
M2, M3, M4, M6, M7	Common Core State Standards for Mathematics Standards for Mathematical Practice
The Science Practices are found in Dimension 1 of the Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas	
P1, P2, P3, P4, P5, P6, P7, P8	A Framework for K-12 Science Education: Practices, Crosscutting Concepts and Core Ideas Science Practices
This domain comes from the K-8 section of the Common Core State Standards for Mathematics. The numbers in parentheses represent the grade levels of that domain that served as the basis for creating GED® mathematical reasoning indicators.	
SP (7, 8)	Common Core State Standards for Mathematics Statistics and Probability

Numerical/Letter Symbol	Science Standards Document Reference
These domains come from the High School section of the Common Core State Standards for Mathematics. The letter before the hyphen represents the conceptual category, while the letter(s) after the hyphen represent(s) the domain.	
S-ID	Common Core State Standards for Mathematics Statistics and Probability Interpreting Categorical and Quantitative Data
S-CP	Common Core State Standards for Mathematics Statistics and Probability Conditional Probability and the Rules of Probability
S-MD	Common Core State Standards for Mathematics Statistics and Probability
Using Probability to Make Decisions	

Appendix

D

Glossary of Key Terms for the Science Test

Analysis/analyze (do not substitute *infer, summarize*): to examine critically in order to determine meaning and to understand the essential elements of [a text or other stimulus]

Application/apply (do not substitute *interpret, infer, summarize, conclude, calculate, solve, predict*): to use or employ an already established skill or piece of information in a new situation

Argument (do not substitute *claim, stance, argumentation*): a process or line of reasoning. For our purposes, arguments can be made either persuasively (i.e., to convince an audience of something) or rhetorically (i.e., to lay out a logical progression of ideas in support of a central stance).

Argumentation (do not substitute *argument, claim, stance, point of view*): the presentation of a line (or lines) of reasoning (i.e., the way in which something is argued, not the line of reasoning itself)

Assumption (do not substitute *premise, conclusion*): something taken for granted; a supposition

Author's credibility (do not substitute *author's point of view, meaning, bias, propaganda*): the degree to which an author can be believed or trusted

Author's point of view (do not substitute *author's purpose, meaning, author's credibility*): the author's attitude or outlook with which information, events, etc. are presented

Author's purpose/intent (do not substitute *meaning, summary, author's point of view, perspective*): the reason an author composes a text or other document (e.g., to convince an audience to use reusable bags rather than paper, to explain Lincoln's stance on abolition of slavery)

Bias (do not substitute *propaganda, author's credibility*): a particular tendency (of an author or a group), especially ones that prevents unprejudiced consideration

Claim (do not substitute *stance, argument author's purpose, author's point of view, hypothesis, position, perspective*): an assertion of something as fact

Compute/computation/calculate/calculation: to determine by mathematical methods (for our purposes, arithmetically or algebraically)

Conclusion/conclude (do not substitute *generalization, hypothesis, inference, application, summarize, predict*): a statement that follows logically from another or others in an argument (Note: arguments may be text-based, mathematical, scientific, etc.)

Create (do not substitute *apply, analyze, synthesize*): to originate or invent (e.g., an original line of reasoning)

Data (do not substitute *information*): individual facts, statistics, or pieces of information (can be qualitative or quantitative). See **information** for disambiguation.

Dependent variable: the variable that may change as a result of the independent variable

Detail (do not substitute *idea*): a small part than can be considered individually

Evaluate (do not substitute *interpret, infer, summarize, analyze*): to make a judgment about the significance, worth, validity, or quality of something.

Evidence (do not substitute *detail, reasoning*): that which tends to prove or disprove something; grounds for belief

Finding (do not substitute *conclusion, evidence, assumption*): that which is discovered through research or study (See conclusion for disambiguation— these concepts are closely related)

Format (do not substitute *genre*): general appearance, style, arrangement (e.g., of a text)

Generalization (do not substitute *summary, conclusion, hypothesis*): a principle, theory, or idea that can be applied in many instances

Hypothesis (do not substitute *generalization, conclusion, claim, stance, position, assumption, inference*): a proposition or set of propositions set forth as an explanation for a group of facts or phenomena; conjecture that is a guide for investigation

Idea (do not substitute *theme, detail*): any conception resulting from mental understanding, awareness, or activity

Independent variable: the variable deliberately manipulated in an experiment

Inference/infer (do not substitute *interpret, summarize, analyze, hypothesize*): to conclude by reasoning from evidence that which is not explicitly stated

Information (do not substitute *data*): knowledge gained through experience or study. More abstract and general than “data.”

Interpret (do not substitute *infer, summarize, analyze*): to provide the meaning of, or explain, that which is explicitly stated or displayed graphically or symbolically

Justify (do not substitute *support*): to show a claim or statement to be writing, especially using evidence

Main idea (do not substitute *theme, summary, topic, idea*): the most important central thought in a paragraph or longer informational text

Meaning (do not substitute *tone, voice*): what is or is intended to be expressed

Permutations: an arrangement of a set or number of objects, without repetition, where order is a factor

Premise (do not substitute *conclusion, assumption, hypothesis*): a basis, stated or assumed, on which reasoning proceeds

Prediction (do not substitute *conclusion, assumption, reasoning, premise, hypothesis*): A statement of something in advance of occurrence, especially on a reasoned or evidentiary basis

Reasoning (do not substitute *evidence, meaning, conclusion*): the process of forming conclusions, judgments, or inferences from evidence

Sample: a subset of individuals (or in this case, data) chosen from a larger set (a population)

Sampling techniques: a method used to gather data on a small portion of a larger population. Sampling is used to obtain a representative, statistically valid sample of the larger set.

Scientific model (do not substitute *scientific presentation, theory*): An interpretative description of a phenomenon or system that facilitates access to that phenomenon. May be expressed in a diagram, a set of equations and/or a textual description, though none of those expressions are the model itself. Rather, the expressions represent or communicate the model.

Scientific presentation (do not substitute *scientific model, theory*): any medium through which scientific data or information is conveyed, including text, graphs, tables, diagrams, etc.

Sequence of events (do not substitute *plot, structure*): the order in which events (often historical) occur. Most often conveyed chronologically, but may also be conveyed procedurally, non-literally, etc. Typically, we use “sequence of events” to describe historical events and we use “plot” to describe the events that occur in fictional works.

Stance (do not substitute *claim, argument, argumentation*): the position on which an author bases an argument (e.g., pro or con)

Structure (do not substitute *sequence of events*): the relationships among and/or organization of component parts of a text or other medium (e.g., Q&A or cause-effect)

Summarize (do not substitute *interpret, analyze*): a brief account that gives the main points of something

Support (do not substitute *justify*): to establish by providing appropriate facts and evidence (either quantitative or textual)

Synthesis/synthesize (do not substitute *apply, summarize, analyze*): to combine elements or ideas from multiple materials into a unified, if complex, whole

Theory (do not substitute *scientific presentation, scientific model*): a set of principles that explain or predict phenomena

Tone (do not substitute *meaning, voice*): the author’s attitude toward the subject and/or audience (e.g., informal, playful, serious, condescending, etc.)

Topic (do not substitute *idea, theme, main idea, summary*) the subject of a discussion or work (typically more concrete than a theme (e.g., sedimentary rocks (topic) vs. rebirth (theme))) in an informational text

Assessment Guide for Educators

Social Studies

June 2016



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Note on the June 2016 Edition

Assessment Guide for Educators — Social Studies:

Minor correction of typographical error. Percentages incorrectly listed as 40% and 30%, now corrected to 50% and 20%. Page 5.

Note on the March 2016 Edition

GED Testing Service has published the March 2016 Edition of the Assessment Guide for Educators to include the following:

1. Updated performance level information to reflect the new performance levels: Below Passing, Pass/High School Equivalency, GED® College Ready, and GED® College Ready+Credit
2. Updated information on the Social Studies test to reflect the elimination of the Social Studies Extended Response question
3. Streamlining and simplification of the guide, based on adult educator feedback, to make the guide more user-friendly and to eliminate redundancies

Assessment Targets

Assessment Targets for Social Studies

The GED® test has three main purposes—to provide candidates with

1. A path to a high school credential
2. Evidence of their readiness to enter workforce training programs or postsecondary education
3. Information about their strengths and weaknesses in key academic areas

The philosophy underlying the GED® test is that there is a core of academic skills and content knowledge that must be acquired in order for an adult to be prepared to enter a job, a training program, or an entry-level, credit-bearing postsecondary course. This core of knowledge and skills is reflected in the career- and college-readiness standards now adopted in some form by the majority of states.

Content Specifications for the GED® Social Studies Test

The GED® Social Studies test focuses on the fundamentals of social studies reasoning, striking a balance of (1) deeper conceptual understanding, (2) procedural skill and fluency, and (3) the ability to apply these fundamentals in realistic situations. As a result, each item on the Social Studies test will be aligned to one *Social Studies Practice* and one *Content Topic*.

The Social Studies Practices can be described as skills that are key to reasoning in both textual and quantitative social science contexts. The practices come from important skills specified in career- and college-readiness standards, as well as in National Standards for History.

The Social Studies test also focuses on four major content domains: civics and government, United States history, economics, and geography and the world. The social studies content topics are drawn from these four domains. The content topics provide context for measuring a test-taker's ability to apply the reasoning skills described in the practices. The content topics reflect both what is taught in many high-school-level social sciences courses and what is most relevant and useful for an adult population.

To measure this content at a range of levels of complexity, several different item types are used in the test, including multiple choice, drag-and-drop, hot spot, and fill-in-the-blank.

The following specifications guide the GED® Social Studies test:

1. Approximately 50 percent focuses on civics and government, 20 percent on United States history, 15 percent on economics, and 15 percent on geography and the world
2. The test includes items that assess textual analysis and understanding, data representation and inference skills, and problem solving using social studies content
3. Each item on the Social Studies test align to one Social Studies Practice and one Content Topic
4. Each item aligns to one DOK level, based on appropriate alignment to Social Studies Practice
5. The test items are written to DOK level 1, 2 or 3
6. Problem-solving skills will be measured in both academic and workplace contexts
7. Approximately 50 percent of the test items are in scenarios in which two or three items are based on a single stimulus (textual, graphic, or a combination of both); the remaining approximately 50 percent of the items are standalone items

The Social Studies Assessment Targets are divided into two sections: the **Practices** and the **Content Topics**. The Social Studies **Practices** describe skills necessary for reasoning in a social sciences context, while the **Content Topics** describe a body of knowledge typical of what is taught in US high schools.

Workplace Context: Stimuli in this category may include workplace letters, resume cover letters, letters to customer service departments, memos, flyers for company-sponsored events, explanations of initiatives, procedural documents, descriptions of activities, or changes in policies. They also include community-related documents like public postings or letters to the editor.

References to Common Core State Standards, NCSS and NSH ¹	Social Studies Practices	Range of Depth of Knowledge (DOK) levels ²
R.1, R.8	<p>SSP1 Drawing Conclusions and Making Inferences</p> <ul style="list-style-type: none"> a. Determine the details of what is explicitly stated in primary and secondary sources and make logical inferences or valid claims based on evidence. b. Cite or identify specific evidence to support inferences or analyses of primary and secondary sources, attending to the precise details of explanations or descriptions of a process, event, or concept. 	<p>2-3</p> <p>1-3</p>
R.2, NCSS Literacy Skills	<p>SSP2 Determining Central Ideas, Hypotheses and Conclusions</p> <ul style="list-style-type: none"> a. Determine the central ideas or information of a primary or secondary source document, corroborating or challenging conclusions with evidence. b. Describe people, places, environments, processes, and events, and the connections between and among them. 	<p>1-3</p> <p>2-3</p>
R.3, R.8	<p>SSP3 Analyzing Events and Ideas</p> <ul style="list-style-type: none"> a. Identify the chronological structure of a historical narrative and sequence steps in a process. b. Analyze in detail how events, processes, and ideas develop and interact in a written document; determine whether earlier events caused later ones or simply preceded them. c. Analyze cause-and-effect relationships and multiple causation, including action by individuals, natural and societal processes, and the influence of ideas. d. Compare differing sets of ideas related to political, historical, economic, geographic, or societal contexts; evaluate the assumptions and implications inherent in differing positions. 	<p>1-2</p> <p>2-3</p> <p>2-3</p> <p>2-3</p>
R.4.2, L.4.2.	<p>SSP4 Interpreting Meaning of Symbols, Words and Phrases</p> <ul style="list-style-type: none"> a. Determine the meaning of words and phrases as they are used in context, including vocabulary that describes historical, political, social, geographic, and economic aspects of social studies. 	<p>1-3</p>
R.6, NSH 3.F	<p>SSP5 Analyzing Purpose and Point of View</p> <ul style="list-style-type: none"> a. Identify aspects of a historical document that reveal an author's point of view or purpose (e.g., loaded language, inclusion or avoidance of particular facts). b. Identify instances of bias or propagandizing. c. Analyze how a historical context shapes an author's point of view. d. Evaluate the credibility of an author in historical and contemporary political discourse. 	<p>2</p> <p>2-3</p> <p>2-3</p> <p>2-3</p>

References to Common Core State Standards, NCSS and NSH ¹	Social Studies Practices	Range of Depth of Knowledge (DOK) levels ²
R.9.1, R.7.1, R.7.2, Q7: 7.RP, 3.MD.3, S-ID.1, 8.SP.1, S-ID.6, S-ID.7, NSH 2,	<p>SSP6 Integrating Content Presented in Different Ways</p> <ul style="list-style-type: none"> a. Integrate quantitative or technical analysis (e.g., charts, research data) with qualitative analysis in print or digital text. 2-3 b. Analyze information presented in a variety of maps, graphic organizers, tables, and charts; and in a variety of visual sources such as artifacts, photographs, political cartoons. 2-3 c. Translate quantitative information expressed in words in a text into visual form (e.g., table or chart); translate information expressed visually or mathematically into words. 1-3 	
R.8, NSH 3.E	<p>SSP7 Evaluating Reasoning and Evidence</p> <ul style="list-style-type: none"> a. Distinguish among fact, opinion, and reasoned judgment in a primary or secondary source document. 2-3 b. Distinguish between unsupported claims and informed hypotheses grounded in social studies evidence. 2-3 	
R.9, R.7	<p>SSP8 Analyzing Relationships between Texts</p> <ul style="list-style-type: none"> a. Compare treatments of the same social studies topic in various primary and secondary sources, noting discrepancies between and among the sources. 2-3 	
R.1, W.1, W.2, W.4, W.5, L.1, L.2, L.4	<p>SSP9 Writing Analytic Response to Source Texts³</p> <ul style="list-style-type: none"> a. Produce writing that develops the idea(s), claim(s) and/or argument(s) thoroughly and logically, with well-chosen examples, facts, or details from primary and secondary source documents. 2-3 b. Produce writing that introduces the idea(s) or claim(s) clearly; creates an organization that logically sequences information; and maintains a coherent focus. 2-3 c. Write clearly and demonstrate sufficient command of standard English conventions. 1-2 	
Q7: 7.RP, 3.MD.3, S-ID.1, 8.SP.1, S-ID.6, S-ID.7	<p>SSP10 Reading and Interpreting Graphs, Charts and Other Data Representation</p> <ul style="list-style-type: none"> a. Interpret, use, and create graphs (e.g., scatterplot, line, bar, circle) including proper labeling. Predict reasonable trends based on the data (e.g., do not extend trend beyond a reasonable limit). 2-3 b. Represent data on two variables (dependent and independent) on a graph; analyze and communicate how the variables are related. 2-3 c. Distinguish between correlation and causation. 1-3 	
Q8: 6.SP.3, S-MD.2, 6.SP.2, 6.SP.5., S-ID.2, S-ID.3, S-ID.4, S-ID.9	<p>SSP11 Measuring the Center of a Statistical Dataset</p> <ul style="list-style-type: none"> a. Calculate the mean, median, mode, and range of a dataset. 1 	

1 The GED® Social Studies practices are derived from the Common Core State Standards for ELA and Literacy (R#) (L#) (2010), the Common Core State Standards for Mathematics (N#) (O#) (P#) (Q#) (RP#) (S-ID#) (S-MD#) (S-SP#) (2010), NCSS National Curriculum Standards for Social Studies: A Framework for Teaching, Learning, and Assessment (NCSS Literacy Skills) (2010), and National Standards for History Revised Edition (NSH#) (1996).

2 The Depth of Knowledge (DOK) levels correspond with Norman Webb’s (University of Wisconsin) Depth of Knowledge model of cognitive complexity.

3 The Extended Response writing task will require test-takers to apply a range of Social Studies Practices; however, the practices under SSP9 will be of primary importance in the writing task, and these practices will only be assessed through the writing task.

Social Studies Content Topics

The Social Studies Content Topics describe key concepts that are widely taught in a variety of high-school social studies courses and are relevant to the lives of GED® test-takers. The content topics are designed to provide context for measuring the skills defined in the social studies practices section of this document.

To learn more about the reference column, see Appendix C.

The Social Studies Practices maintain a close relationship with the Social Studies Content Topics. More specifically, the primary focus of the GED® Social Studies test continues to be the measurement of essential reasoning skills, such as analysis, evaluation, inference, and so on, applied in a social studies context. However, test-takers should still be generally familiar with each of the basic concepts listed in the Social Studies Content Topics and subtopics, and they should be able to recognize and understand, in context, each of the terms listed there. Nevertheless, test-takers are not expected to have an in-depth and comprehensive knowledge of each subtopic. Rather, the stimuli used in the GED® Social Studies test provide necessary details about social studies-related figures, events, processes, and concepts. For example, a question may include answer options and stimuli that contain specific terms drawn from the content subtopics; however, test-takers will never be asked to formulate their own definition of a social studies term.

Focusing Themes

The content topics for the Social Studies test reflect two main themes. These themes have been designed to ensure both (1) that the test covers a wide range of important concepts and ideas in social studies, and (2) focus is placed on distinct subsets of ideas within each content topic. Content that falls outside these themes is not tested on the Social Studies test.

- **Development of Modern Liberties and Democracy** explores the development of current ideas about democracy as well as human and civil rights from ancient civilizations to the present. It examines contemporary thinking; policies and structures; major events that have shaped our democratic values; and major thinkers who contributed to American ideas of democratic government.
- **Dynamic Responses in Societal Systems** explores how the systems, structures, and policies in societies respond to

each other, conditions, and events. For example, societies and civilizations have developed and changed in response to particular geographic features and natural events. National economies respond to both governmental policies and natural laws of economics—such as supply and demand—around which policies are built. Similarly, countries respond to both internal and external changes and challenges in ways that are beyond the ability of any one person to control.

The Social Studies Content Topics Matrix on the next page identifies the major topics in social studies and shows the relationship between each content topic and each focusing theme. Each content topic in the matrix below contains a broad range of ideas. Additionally, each topic is aligned to a particular theme. The Development of Modern Liberties and Democracy theme easily lends itself to ideas relevant to civics and government as well as U.S. history, and the Dynamic Responses in Societal Systems is more closely tied to topics in economics and geography and the world.

The following Social Studies Content Topics table provides greater detail on each topic. Individual test items are drawn from the subtopics.

Focusing Themes	Social Studies Topic Matrix			
	CG: Civics and Government (50%)	USH: U.S. History (20%)	E: Economics (15%)	G: Geography and the World (15%)
I. Development of Modern Liberties and Democracy	<ul style="list-style-type: none"> a. Types of modern and historical governments b. Principles that have contributed to development of American constitutional democracy c. Structure and design of United States government d. Individual rights and civic responsibilities 	<ul style="list-style-type: none"> a. Key historical documents that have shaped American constitutional government b. Revolutionary and Early Republic Periods c. Civil War & Reconstruction d. Civil Rights Movement 	<ul style="list-style-type: none"> a. Key economic events that have shaped American government and policies b. Relationship between political and economic freedoms 	<ul style="list-style-type: none"> a. Development of classic civilizations
II. Dynamic Responses in Societal Systems	<ul style="list-style-type: none"> e. Political parties, campaigns, and elections in American politics f. Contemporary public policy 	<ul style="list-style-type: none"> e. European population of the Americas f. World War I & II g. The Cold War h. American foreign policy since 9/11 	<ul style="list-style-type: none"> c. Fundamental economic concepts d. Microeconomics and macroeconomics e. Consumer economics f. Economic causes and impacts of wars g. Economic drivers of exploration and colonization h. Scientific and Industrial Revolutions 	<ul style="list-style-type: none"> b. Relationships between the environment and societal development c. Borders between peoples and nations d. Human migration

Social Studies Content Topics and Subtopics

Civics and Government	
CG.a	<p>Types of modern and historical governments</p> <p>CG.a.1 Direct democracy, representative democracy, parliamentary democracy, presidential democracy, monarchy and others types of government that contributed to the development of American constitutional democracy</p>
CG.b	<p>Principles that have contributed to development of American constitutional democracy</p> <p>CG.b.1 Natural rights philosophy</p> <p>CG.b.2 Popular sovereignty and consent of the governed</p> <p>CG.b.3 Constitutionalism</p> <p>CG.b.4 Majority rule and minority rights</p> <p>CG.b.5 Checks and balances</p> <p>CG.b.6 Separation of powers</p> <p>CG.b.7 Rule of law</p> <p>CG.b.8 Individual rights</p> <p>CG.b.9 Federalism</p>
CG.c	<p>Structure and design of United States government</p> <p>CG.c.1 Structure, powers, and authority of the federal executive, judicial, and legislative branches</p> <p>CG.c.2 Individual governmental positions (e.g. president, speaker of the house, cabinet secretary, etc.)</p> <p>CG.c.3 Major powers and responsibilities of the federal and state governments</p> <p>CG.c.4 Shared powers</p> <p>CG.c.5 The amendment process</p> <p>CG.c.6 Governmental departments and agencies</p>
CG.d	<p>Individual rights and civic responsibilities</p> <p>CG.d.1 The Bill of Rights</p> <p>CG.d.2 Personal and civil liberties of citizens</p>
CG.e	<p>Political parties, campaigns, and elections in American politics</p> <p>CG.e.1 Political parties</p> <p>CG.e.2 Interest groups</p> <p>CG.e.3 Political campaigns, elections and the electoral process</p>
CG.f	<p>Contemporary Public Policy</p>

United States History	
USH.a	<p>Key historical documents that have shaped American constitutional government</p> <p>USH.a.1 Key documents and the context and ideas that they signify (e.g. Magna Carta, Mayflower Compact, Declaration of Independence, United States Constitution, Martin Luther King’s Letter from the Birmingham Jail, landmark decisions of the United States Supreme Court, and other key documents)</p>
USH.b	<p>Revolutionary and Early Republic Periods</p> <p>USH.b.1 Revolutionary War</p> <p>USH.b.2 War of 1812</p> <p>USH.b.3 George Washington</p> <p>USH.b.4 Thomas Jefferson</p> <p>USH.b.5 Articles of Confederation</p> <p>USH.b.6 Manifest Destiny</p> <p>USH.b.7 U.S. Indian Policy</p>
USH.c	<p>Civil War and Reconstruction</p> <p>USH.c.1 Slavery</p> <p>USH.c.2 Sectionalism</p> <p>USH.c.3 Civil War Amendments</p> <p>USH.c.4 Reconstruction policies</p>
USH.d	<p>Civil Rights</p> <p>USH.d.1 Jim Crow laws USH.d.2 Women’s suffrage USH.d.3 Civil Rights Movement</p> <p>USH.d.4 Plessy vs. Ferguson and Brown vs. Board of Education</p> <p>USH.d.5 Warren court decisions</p>
USH.e	<p>European settlement and population of the Americas</p>
USH.f	<p>World Wars I & II</p> <p>USH.f.1 Alliance system</p> <p>USH.f.2. Imperialism, nationalism, and militarism</p> <p>USH.f.3 Russian Revolution</p> <p>USH.f.4 Woodrow Wilson</p> <p>USH.f.5 Treaty of Versailles and League of Nations</p> <p>USH.f.6 Neutrality Acts</p> <p>USH.f.7 Isolationism</p> <p>USH.f.8 Allied and Axis Powers</p> <p>USH.f.9 Fascism, Nazism, and totalitarianism</p> <p>USH.f.10 The Holocaust</p> <p>USH.f.11 Japanese-American internment</p> <p>USH.f.12 Decolonization</p> <p>USH.f.13 GI Bill</p>

United States History	
USH.g	<p>The Cold War</p> <p>USH.g.1 Communism and capitalism</p> <p>USH.g.2 NATO and the Warsaw Pact</p> <p>USH.g.3 U.S. maturation as an international power</p> <p>USH.g.4 Division of Germany, Berlin Blockade and Airlift</p> <p>USH.g.5 Truman Doctrine</p> <p>USH.g.6 Marshall Plan</p> <p>USH.g.7 Lyndon B. Johnson and The Great Society</p> <p>USH.g.8 Richard Nixon and the Watergate scandal</p> <p>USH.g.9 Collapse of U.S.S.R. and democratization of Eastern Europe</p>
USH.h	<p>American foreign policy since 9/11</p>

Economics	
E.a	Key economic events that have shaped American government and policies
E.b	Relationship between political and economic freedoms
E.c	Fundamental Economic Concepts E.c.1 Markets E.c.2 Incentives E.c.3 Monopoly and competition E.c.4 Labor and capital E.c.5 Opportunity cost E.c.6 Profit E.c.7 Entrepreneurship E.c.8 Comparative advantage E.c.9 Specialization E.c.10 Productivity E.c.11 Interdependence
E.d	Microeconomics and Macroeconomics E.d.1 Supply, demand and price E.d.2 Individual choice E.d.3 Institutions E.d.4 Fiscal and monetary policy E.d.5 Regulation and costs of government policies E.d.6 Investment E.d.7 Government and market failures E.d.8 Inflation and deflation E.d.9 GDP E.d.10 Unemployment E.d.11 Tariffs
E.e	Consumer economics E.e.1 Types of credit E.e.2 Savings and banking E.e.3 Consumer credit laws
E.f	Economic causes and impacts of wars
E.g	Economic drivers of exploration and colonization
E.h	Scientific and Industrial Revolutions

Geography	
G.a	Development of classical civilizations
G.b	Relationships between the environment and societal development G.b.1 Nationhood and statehood G.b.2 Sustainability G.b.3 Technology G.b.4 Natural resources G.b.5 Human changes to the environment
G.c	Borders between peoples and nations G.c.1 Concepts of region and place G.c.2 Natural and cultural diversity G.c.3 Geographic tools and skills
G.d	Human migration G.d.1 Immigration, emigration and diaspora G.d.2 Culture, cultural diffusion and assimilation G.d.3 Population trends and issues G.d.4 Rural and urban settlement

Item Types & Item Layout

Item Types in Social Studies

The GED® test uses a variety of item types, made possible through computer-based testing. The computer-based testing platform allows the opportunity to use interactive item types that are not possible on a pencil-and-paper test.

The Social Studies test includes:

- Multiple Choice items
- Fill-in-the-blank
- Drag-and-drop items (Technology-enhanced)
- Drop-down items embedded in passages (Technology-enhanced)
- Hot Spot items (Technology-enhanced)

These items assess the full depth and breadth of skills outlined in the GED® Social Studies Assessment Targets. Employing this variety of item types also allows us to assess the targeted content at a number of Depth of Knowledge (DOK) levels, as they each provide opportunities for test-takers to apply different cognitive strategies and demonstrate proficiency with social studies content (See *Depth of Knowledge Summary* in the Assessment Guide for Educators Introduction for more information). Each item type on the Social Studies test may be presented either as a stand-alone item or as part of an item scenario in which two or three items pertain to a single stimulus.

Stimulus materials may include brief text, maps, graphs, tables, or other graphic representations of data or social science

Technology-Enhanced Items

In Technology-enhanced (TE) items, test-takers interact with the content in a more authentic way. Test-takers may be asked to select blocks of text, select multiple answers from a list, drag an answer to a location, or manipulate symbols or other graphics.

concepts. Many of the brief texts featured in both stand-alone items and item scenarios are drawn from texts reflecting “the Great American Conversation.” These texts may be directly excerpted from founding documents, such as The Bill of Rights, or they may contain analyses of these documents. They may also be drawn from other more contemporary primary and secondary source documents (e.g. political speeches and commentary) that convey important concepts about American civics.

“The Great American Conversation” refers to texts like the founding documents (e.g. The Bill of Rights) or other sources, including more contemporary ones that reflect important ideas about American citizenship and modern liberties.

Multiple choice (MC)

Multiple choice (MC) items consist of a question accompanied by several possible answer choices. This item type is used to assess aspects every Social Studies Practice and Content Topic listed in the GED® Social Studies Assessment Targets. Multiple choice items continue to be a reliable method for measuring skills and knowledge at a range of cognitive levels in a standardized manner. MC items on the GED® test have four answer options.

Fill-in-the-blank (FIB)

Fill-in-the-blank (FIB) items consist of a sentence or scenario with one or multiple blanks for the test-taker to complete. These items give test-takers the opportunity to construct a very brief response, like a single word or a short phrase, when potential answers have little variability. For example, this item type might be used when an item requires a test-taker to identify a particular data point on a chart reflecting economic trends. It could also be used to excerpt a word or phrase from a text to demonstrate understanding of an idea or vocabulary term that could be inferred from a brief textual stimulus.

Drag-and-drop

Drag-and-drop items are another type of interactive task that require test-takers to move images or words to designated drop targets on a computer screen. They may be used to assess how well a test-taker can make comparisons between concepts or representations of data or how well they classify or order information. For example, an individual drag-and-drop item may require a test-taker to place labels on a map to indicate important commodities produced in various regions. Other items might provide the test-taker an

opportunity to place data points or labels drawn from a brief text onto a graph or chart.

Drop-down

Drop-down items have drop-down menu functionality embedded within a brief text. They will be used to give test-takers opportunities to choose the correct response to complete statements. Test-takers are given the advantage of seeing the complete statements they create in an interactive manner on screen. These items can measure many of the same skills that fill-in-the-blank items can, though they provide a selection of possible responses from which test-takers can choose. This item type is especially effective for the purposes of assessing how well a test-taker can identify a logical conclusion drawn from text-based evidence or even make a generalization based on an author's argument.

Hot spot

Hot spot items consist of a graphic image or block of text with virtual "sensors" placed strategically within it. The test-taker selects a portion of the text or part of the graphic by clicking on the designated sensor. This interactive item type allows test-takers to respond to questions that ask for supporting evidence or other key information. Hot spot items can also be used to measure a test-taker's understanding of relationships between data points cited from a textual or graphic stimulus and are also particularly effective for measuring a test-taker's ability to understand geographic concepts with regard to mapping. Other applications of hot-spot functionality might include asking test-takers to select data or points in a graph, chart, or table that support or refute a given conclusion stated in a brief textual stimulus.

Item Layouts in Social Studies

Item layouts are shown to highlight the structure of each item type described in the previous section. The content in the item layouts shown in this guide is not representative of the GED® test and is merely included to illustrate test item functionality rather than content.

Multiple Choice Item and a Passage

This layout allows the test-takers to see the stimulus text and item simultaneously. For Social Studies, two or three items will pertain to a single, brief text or graphic.

Social Studies - Candidate Name
Question 1 of 10

Answer Explanation
 Flag for Review

page 1 | page 2 | page 3

The chart below describes the four methods used to amend the U.S. Constitution.

Four Methods of Amending the U.S. Constitution

	Step 1	Step 2
1.	A two-thirds vote in both houses of the U.S. Congress	Ratified by three-fourths of the state legislatures
2.	A two-thirds vote in both houses of the U.S. Congress	Ratified by ratification conventions in three-fourths of the states
3.	A national constitutional convention called by two-thirds of the state legislatures	Ratified by three-fourths of the state legislatures
4.	A national constitutional convention called by two-thirds of the state legislatures	Ratified by ratification conventions in three-fourths of the states

Which statement correctly describes an important way that the process of amending the U.S. Constitution is different from the process of creating federal laws?

- A. Only one government branch is involved in the amendment process.
- B. Only one legislative body can conclude the amendment process.
- C. Only state legislatures are involved in the amendment process.
- D. Only state governments can start the amendment process.

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Fill-in-the-blank Item

This item type requires test-takers to type their response into the blank (empty box).

Social Studies - Candidate Name
Question 5 of 10

Answer Explanation
Flag for Review

Women's Voting Rights

Since the 19th century, many people have worked for equal rights for women. Much of this effort focused on suffrage, which is the right to vote. One of the greatest victories for advocates of women's rights was ratification of the 19th Amendment to the U.S. Constitution in 1920. The 19th Amendment stated that "The right of citizens of the United States to vote shall not be denied or abridged by the United States or by any State on account of sex." However, the struggle for equality in other areas of society continued even after the 19th Amendment granted woman suffrage.

Number of Women in the U.S. House of Representatives, 1917-2011

Session of Congress	Number of Women Representatives
65	2
70	5
75	8
80	10
85	15
90	12
95	18
100	25
105	45
110	70

This data is taken from the public domain.

Type the appropriate session of Congress in the box.

The number of women representatives who served in the Congress was twice the number of women representatives who served in the 101st Congress.

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Drag-and-drop Item

This example using math content shows six elements of an equation (boxed numbers and boxed letter x), three of which would be selected and dragged to one of the drop targets in the equation boxes next to “y =.” In items that use this layout, the appearance and number of the drag tokens and the drop targets may vary, but all drag-and-drop items allow test-takers to interact with the material as they move objects around on the screen.

Mathematical Reasoning - Candidate Name
Question 6 of 10

Answer Explanation
 Calculator

 Flag for Review

A scientist is studying red maple tree growth in a state park. She measured the trunk diameters of a sample of trees in the same month every other year. The tables show the data for two of the trees.

Tree 1

Year	Trunk Diameter (inches)
1	18.6
3	19.2
5	19.8
7	20.4
9	21.0
11	21.6
13	22.2

Tree 2

Year	Trunk Diameter (inches)
1	11.4
3	12.0
5	12.6
7	13.2
9	13.8
11	14.4
13	15.0

This is the final year in which she will collect data. When her data collection is complete, she will predict future red maple tree growth.

Formula Sheet
Calculator Reference

The scientist creates an equation that models her data for each tree so that she can predict the diameter in the future. Complete a linear equation that fits the data for tree 1, where x is the year and y is the trunk diameter, in inches.

Click on the variables and numbers you want to select and drag them into the boxes.

Equation for Tree 1

$$y = \boxed{0.3} \boxed{} + \boxed{0.6}$$

-0.6
-0.3

18.0
18.3
18.6
x

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Drop-down Item

In this item type, illustrated here with science content, test-takers will choose their answers from a drop-down menu that will appear embedded within text.

Mathematical Reasoning - Candidate Name Question 8 of 10

Answer Explanation Calculator

The graph shows the level of ibuprofen, y units, in a patient's bloodstream x hours after the ibuprofen was taken.

Ibuprofen Level in Patient's Bloodstream

Time Since Ibuprofen Was Taken (hours)	Ibuprofen Level (units)
0	0
1	6
2	4
3	3
4	2
5	1
8	0.5

The level of ibuprofen in the patient's bloodstream increased from hours to hours.

Select...

0

2/3

2 1/2

5

8

Hot Spot Item

Each graph in this item is a “sensor” region or hot spot on which test-takers click to provide their responses.

Mathematical Reasoning - Candidate Name
Question 5 of 10

Answer Explanation
 Calculator

 Flag for Review

A scientist is studying red maple tree growth in a state park. She measured the trunk diameters of a sample of trees in the same month every other year. The tables show the data for two of the trees.

Tree 1		Tree 2	
Year	Trunk Diameter (inches)	Year	Trunk Diameter (inches)
1	18.6	1	11.4
3	19.2	3	12.0
5	19.8	5	12.6
7	20.4	7	13.2
9	21.0	9	13.8
11	21.6	11	14.4
13	22.2	13	15.0

This is the final year in which she will collect data. When her data collection is complete, she will predict future red maple tree growth.

The scientist plots the data for tree 2 on a coordinate grid. She begins by plotting data for year 3 and year 11. What are the locations of the two points on the coordinate grid?

Click on the grid to plot the points.

(Note: To remove a point, place the arrow over the point and click the left mouse button.)

Diameter of Tree 2

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Performance Level Descriptors

Performance Level Descriptors

Performance Level Descriptors explain the skills a test-taker generally demonstrates in order to score into one of three performance levels on the GED® test and the skills they need to develop to advance their score.

The four performance levels for the GED® Social Studies test are Below Passing, Pass/High School Equivalency, GED® College Ready, and GED® College Ready + Credit.

Below Passing Level

Test-takers who score at this level typically have a limited but developing proficiency in demonstrating skills in the following categories: analyzing and creating text features in a social studies context, applying social studies concepts to the analysis and construction of arguments, and reasoning quantitatively and interpreting data in social studies contexts.

Test-takers at the Below Passing level typically demonstrate the following skills:

Analyzing and Creating Text Features in a Social Studies Context

- Determine the details of what is explicitly stated in primary and secondary sources and make logical inferences or valid claims based on evidence at a limited and/or inconsistent level
- Determine the central ideas or information of a primary or secondary source document, corroborating or challenging conclusions with evidence at a limited and/or inconsistent level
- At a limited or inconsistent level, determine the meaning of words and phrases as they are used in context, including vocabulary that describes historical, political, social, geographic, and economic aspects of social studies
- Distinguish between fact and opinion in a primary or secondary source document at a limited and/or inconsistent level

Primary sources are artifacts, documents, or other sources of information that were created by someone with direct knowledge of an issue, or in the time period being studied. Primary sources serve as original sources of information about the topic.

Secondary sources are documents or other sources of information that cite, comment on, or build upon primary sources.

Applying Social Studies Concepts to the Analysis and Construction of Arguments

- At a limited and/or inconsistent level, cite or identify specific evidence to support inferences or analyses of primary and secondary sources, attending to the precise details of explanations or descriptions of a process, event, or concept
- Describe people, places, environments, processes, and events, and the connections between and among them at a limited and/or inconsistent level

- At a limited and/or inconsistent level, analyze cause-and-effect relationships and multiple causation, including the importance of natural and societal processes, the individual, and the influence of ideas

Reasoning Quantitatively and Interpreting Data in Social Studies Contexts

- Integrate quantitative or technical analysis (e.g., charts, research data) with qualitative analysis in print or digital text at a limited and/or inconsistent level
- At a limited and/or inconsistent level, analyze information presented in a variety of maps, graphic organizers, tables, and charts; and in a variety of visual sources such as artifacts, photographs, political cartoons
- Translate quantitative information expressed in words in a text into visual form (e.g. table or chart); translate information expressed visually or mathematically into words at a limited and/or inconsistent level
- Interpret, use, and create graphs including proper labeling. Predict trends within a reasonable limit, based on the data, at a limited and/or inconsistent level
- Represent data on two variables (dependent and independent) on a graph; analyze and communicate how the variables are related at a limited and/or inconsistent level
- Distinguish between causation and correlation at a limited and/or inconsistent level
- Calculate the mean, median, mode, and range of a data set, at a limited and/or inconsistent level

In order to progress to the **Pass/High School Equivalency** level, test-takers need to:

- continue to strengthen the skills listed in the Below Passing level, including:
- Determine the central ideas or information of a primary or secondary source document, corroborating or challenging conclusions with evidence
- Cite or identify specific evidence to support inferences or analyses of primary and secondary sources, attending to the precise details of explanations or descriptions of a process, event, or concept
- Describe people, places, environments, processes, and events, and the connections between and among them
- Analyze cause-and-effect relationships and multiple causation, including the importance of natural and societal processes, the individual, and the influence of ideas
- Integrate quantitative or technical analysis (e.g., charts, research data) with qualitative analysis in print or digital text
- Analyze information presented in a variety of maps, graphic organizers, tables, and charts; and in a variety of visual sources such as artifacts, photographs, political cartoons
- Interpret, use, and create graphs including proper labeling. Predict trends within a reasonable limit, based on the data.
- Translate quantitative information expressed in words in a text into visual form (e.g., table or chart); translate information expressed visually or mathematically into words

and

develop the following additional skills:

- Identify aspects of a historical document that reveal an author’s point of view or purpose
- Compare treatments of the same social studies topic in various primary and secondary sources, noting discrepancies between and among the sources
- Identify the chronological structure of a historical narrative and sequence steps in a process
- Compare differing sets of ideas related to political, historical, economic, geographic, or societal contexts; evaluate the assumptions and implications inherent in differing position
- Identify instances of bias and propagandizing
- Analyze how a historical context shapes an author’s point of view

Pass/High School Equivalency Level

Test-takers who score at this level typically have a satisfactory proficiency in demonstrating skills in the following categories: analyzing and creating text features in a social studies context, applying social studies concepts to the analysis and construction of arguments, and reasoning quantitatively and interpreting data in social studies contexts.

Test-takers are generally able to demonstrate knowledge of and ability with the skills identified in the Below Passing level at a satisfactory level, as well as the following skills:

Analyzing and Creating Text Features in a Social Studies Context

- Identify aspects of a historical document that reveal an author's point of view or purpose at a satisfactory level
- Compare treatments of the same social studies topic in various primary and secondary sources, noting discrepancies between and among the sources at a satisfactory level

Applying Social Studies Concepts to the Analysis and Construction of Arguments

- Identify the chronological structure of a historical narrative and sequence steps in a process at a satisfactory level
- At a satisfactory level, compare differing sets of ideas related to political, historical, economic, geographic, or societal contexts; evaluate the assumptions and implications inherent in differing positions
- Identify instances of bias or propagandizing at a satisfactory level
- Analyze how a historical context shapes an author's point of view at a satisfactory level

In order to progress to the **GED® College Ready** level, test-takers need to continue to **strengthen** the skills listed in the Below Passing and the Pass/High School Equivalency levels, including:

- Identify aspects of a historical document that reveal an author’s point of view or purpose
- Describe people, places, environments, processes, and events, and the connections between and among them
- Identify the chronological structure of a historical narrative and sequence steps in a process
- Analyze cause-and-effect relationships and multiple causation, including the importance of natural and societal processes, the individual, and the influence of ideas
- Compare differing sets of ideas related to political, historical, economic, geographic, or societal contexts; evaluate the assumptions and implications inherent in differing positions
- Analyze how a historical context shapes an author’s point of view
- Integrate quantitative or technical analysis (e.g., charts, research data) with qualitative analysis in print or digital text
- Translate quantitative information expressed in words in a text into visual form (e.g., table or chart); translate information expressed visually or mathematically into words
- Represent data on two variables (dependent and independent) on a graph; analyze and communicate how the variables are related
- Distinguish between correlation and causation

GED® College Ready Level

Test-takers who score at this level typically have a strong proficiency in demonstrating skills in the following categories: analyzing and creating text features in a social studies context, applying social studies concepts to the analysis and construction of arguments, and reasoning quantitatively and interpreting data in social studies contexts.

Test-takers are generally able to demonstrate strong knowledge of and ability with the skills identified in the Below Passing and the Pass/High School Equivalency levels, including:

Analyzing and Creating Text Features in a Social Studies Context

- Determine how authors reveal their points of view or purposes in historical documents at a strong level
- Compare treatments of the same social studies topic in various primary and secondary sources, noting discrepancies between and among the sources at a strong level

Applying Social Studies Concepts to the Analysis and Construction of Arguments

- Identify the chronological structure of a historical narrative and sequence steps in a process at a strong level
- At a strong level, analyze cause-and-effect relationships and multiple causation, including the importance of natural and societal processes, the individual, and the influence of ideas
- At a strong level, compare differing sets of ideas related to political, historical, economic, geographic, or societal contexts; evaluate the assumptions and implications inherent in differing positions at a strong level
- Analyze how a historical context shapes an author's point of view at a strong level

Reasoning Quantitatively and Interpreting Data in Social Studies Contexts

- Integrate quantitative or technical analysis (e.g., charts, research data) with qualitative analysis in print or digital text at a strong level

- Represent data on two variables (dependent and independent) on a graph; analyze and communicate how the variables are related at a strong level
- Distinguish between correlation and causation at a strong level

In order to progress to the **GED® College Ready + Credit level**, test-takers need to continue to **strengthen** the skills listed in the Below Passing and the Pass/High School Equivalency levels, including:

- Determine the central ideas or information of a primary or secondary source document, corroborating or challenging conclusions with evidence
- Compare treatments of the same social studies topic in various primary and secondary sources, noting discrepancies between and among the sources
- Analyze cause-and-effect relationships and multiple causation, including the importance of natural and societal processes, the individual, and the influence of ideas
- Compare differing sets of ideas related to political, historical, economic, geographic, or societal contexts; evaluate the assumptions and implications inherent in differing positions
- Analyze how a historical context shapes an author’s point of view
- Integrate quantitative or technical analysis (e.g., charts, research data) with qualitative analysis in print or digital text
- Translate quantitative information expressed in words in a text into visual form (e.g., table or chart); translate information expressed visually or mathematically into words

GED® College Ready + Credit Level

Test-takers who score at this level typically have an outstanding proficiency in demonstrating skills in the following categories: analyzing and creating text features in a social studies context, applying social studies concepts to the analysis and construction of arguments, and reasoning quantitatively and interpreting data in social studies contexts. Test-takers are generally able to demonstrate outstanding knowledge of and ability with the skills identified in the previous levels including:

Analyzing and Creating Text Features in a Social Studies Context

- Determine the central ideas or information of a primary or secondary source document, corroborating or challenging conclusions with evidence at an outstanding level
- Compare treatments of the same social studies topic in various primary and secondary sources, noting discrepancies between and among the sources at an outstanding level

Applying Social Studies Concepts to the Analysis and Construction of Arguments

- At an outstanding level, analyze cause-and-effect relationships and multiple causation, including the importance of natural and societal processes, the individual, and the influence of ideas
- At an outstanding level, compare differing sets of ideas related to political, historical, economic, geographic, or societal contexts; evaluate the assumptions and implications inherent in differing positions
- Analyze how a historical context shapes an author's point of view at an outstanding level

Reasoning Quantitatively and Interpreting Data in Social Studies Contexts

- Integrate quantitative or technical analysis (e.g., charts, research data) with qualitative analysis in print or digital text at an outstanding level
- Translate quantitative information expressed in words in a text into visual form (e.g., table or chart); translate information expressed visually or mathematically into words at an outstanding level

Appendix

A

The GED® Test - Social Studies: A Content Comparison Between 2002 and the Current Test

Note: Codes in the current column refer to the Current GED® Assessment Targets and Indicators as outlined in Chapter 1. The codes may not appear in numerical order, as the goal of the table below is to show areas of correspondence between the 2002 content and the current test content.

Social Studies Practices	
2002	Current Test
Understand the meaning and intent of text and/ or visual material, restate information and summarize ideas.	SSP1.a Determine the details of what is explicitly stated in primary and secondary sources and make logical inferences or valid claims based on evidence. SSP4.a Determine the meaning of words and phrases as they are used in context, including vocabulary that describes historical, political, social, geographic, and economic aspects of social studies.
Identify implications and make inferences.	SSP1.b Cite or identify specific evidence to support inferences or analyses of primary and secondary sources, attending to the precise details of explanations or descriptions of a process, event, or concept.
Use information and ideas in a situation different from that provided by the item stimulus.	SSP1.b Cite or identify specific evidence to support inferences or analyses of primary and secondary sources, attending to the precise details of explanations or descriptions of a process, event, or concept.
Apply the appropriate abstraction to a new problem without prompting or instruction.	[Not assessed on the current test.]
Break down information and understand the relationship between component ideas.	SSP2.a Determine the central ideas or information of a primary or secondary source document, corroborating or challenging conclusions with evidence. SSP2.b Describe people, places, environments, processes, and events, and the connections between and among them.

Social Studies Practices	
2002	Current Test
Distinguish facts from opinions and hypotheses.	SSP.7.a Distinguish among fact, opinion, and reasoned judgment in a primary or secondary source document. SSP.7.b Distinguish between unsupported claims and informed hypotheses grounded in social studies evidence.
Distinguish conclusions from supporting statements.	SSP.11.b Identify specific pieces of evidence an author uses in support of claims or conclusions.
Recognize information that is designed to persuade an audience, recognize unstated assumptions, recognize fallacies in logic in arguments or conclusions.	SSP.5.b Identify instances of bias or propagandizing.
Identify cause and effect relationships and distinguish them from other sequential relationships.	SSP.3.a Identify the chronological structure of a historical narrative and sequence steps in a process.
Recognize the point of view of a writer in a historical account.	SSP.5.a Identify aspects of a historical document that reveal an author’s point of view or purpose (e.g., loaded language, inclusion or avoidance of particular facts).
Recognize the historical context of the text, avoiding “present-mindedness.”	SSP.5.c Analyze how a historical context shapes an author's point of view.
Identify comparisons and contrasts among points of view and interpretations of issues.	SSP.8.a Compare treatments of the same social studies topic in various primary and secondary sources, noting discrepancies between and among the sources.
Determine implications, effects, and the value of presenting visual data in different ways.	SSP.6.a Integrate quantitative or technical analysis (e.g., charts, research data) with qualitative analysis in print or digital text. SSP.6.b Analyze information presented in a variety of maps, graphic organizers, tables, and charts; and in a variety of visual sources such as artifacts, photographs, political cartoons. SSP.6.c Translate quantitative information expressed in words in a text into visual form (e.g., table or chart); translate information expressed visually or mathematically into words.
Use criteria provided to make judgments about the validity or accuracy of information.	SSP.5.d Evaluate the credibility of an author in historical and contemporary political discourse.
Identify generalizations, principles, or strategies and assess the appropriateness of information to substantiate conclusions, hypotheses, and generalizations (using such criteria as source, objectivity, technical correctness, and currency.	SSP.2.a Determine the central ideas or information of a primary or secondary source document, corroborating or challenging conclusions with evidence. SSP.5.d Evaluate the credibility of an author in historical and contemporary political discourse.
Assess the accuracy of facts.	SSP.3.a Identify the chronological structure of a historical narrative and sequence steps in a process. SSP.5.d Evaluate the credibility of an author in historical and contemporary political discourse.
Compare and contrast differing accounts of the same event.	SSP.5.d Evaluate the credibility of an author in historical and contemporary political discourse. SSP.8.a Compare treatments of the same social studies topic in various primary and secondary sources, noting discrepancies between and among the sources.
Recognize the role that values, beliefs, and convictions play in decision making.	SSP.5.a Identify aspects of a historical document that reveal an author’s point of view or purpose (e.g., loaded language, inclusion or avoidance of particular facts). SSP.5.b Identify instances of bias or propagandizing.

Social Studies Content Topics

United States History	
2002	Current Test
Beginnings to 1820 (Native Peoples, Colonization, Settlement, Revolution, the New Nation)	USH.a Key historical documents that have shaped American constitutional government
1801–1900 (Expansion, Reform, Civil War, Reconstruction, Industrial Development)	USH.b Revolutionary and Early Republic Periods USH.c Civil War and Reconstruction
1890–present (Emergence of Modern America, Great Depression, World War II, Postwar United States, Contemporary United States)	USH.d Civil Rights USH.e European settlement and population of the Americas USH.f World Wars I & II USH.g The Cold War USH.h American foreign policy since 9/11

Geography and the World	
2002	Current Test
<ul style="list-style-type: none"> • World in Spatial Terms • Places and Regions • Physical Systems • Human Systems • Environment and the Society • Uses of Geography • Beginnings–1000 B.C. (Beginnings and Early Civilizations) • 1000 B.C.–300 B.C. (Classical Traditions, Empires, Religions) • 300 B.C.–A.D. 1770 (Growing Trade, Hemispheric Interactions, First Global Age) • 1750–1914 (Age of Revolutions) • 1900–present (Urbanization; World Wars; Global Depression; Advances in Science and Technology) • New Democracies of Africa, Asia, South America; The Cold War; “Global Culture”) 	<ul style="list-style-type: none"> G.a Development of classical civilizations G.b Relationships between the environment and societal development G.c Borders between peoples and nations G.d Human Migration

Civics and Government	
2002	Current Test
<ul style="list-style-type: none"> • Civic Life • Politics and Government • Foundations of the American Political System • American Government • Relationship of United States to Other Nations • The Roles of Citizens in American Democracy 	<ul style="list-style-type: none"> CG.a Types of modern and historical governments CG.b Principles that have contributed to development of American constitutional democracy CG.c Structure and design of United States government CG.d Individual rights and civic responsibilities CG.e Political parties, campaigns, and elections in American politics CG.f Contemporary Public Policy

Economics	
2002	Current Test
<ul style="list-style-type: none"> • Economic Reasoning and Choice • Comparison of Economic Systems • Business in a Free Enterprise System • Production and Consumers • Financial Institutions • Government’s Role in the Economy, Labor and the Economy • Global Markets and Foreign Trade 	<ul style="list-style-type: none"> E.a Key economic events that have shaped American government and policies E.b Relationship between political and economic freedoms E.c Fundamental Economic Concepts E.d Microeconomics and Macroeconomics E.e Consumer economics E.f Economic causes and impacts of wars E.g Economic drivers of exploration & colonization E.h Scientific and Industrial Revolutions

Appendix

B

Social Studies Reporting Categories

Reporting Category 1: Analyzing and creating text features in a social studies context

Examples of skills measured in Social Studies Reporting

Category 1:

- Analyzing primary and secondary sources for various purposes
- Identifying aspects of a historical document that reveal the author’s point of view or purpose Distinguishing between unsupported claims and those that are grounded in evidence necessary for understanding concepts in the social sciences
- Determining the meaning of domain-specific words used in context

Reporting Category 2: Applying social studies concepts to analysis and construction of arguments

Examples of skills measured in Social Studies Reporting

Category 2:

- Applying social-studies-specific reasoning skills to a variety of tasks
- Examining the relationships among people, environments, events, processes, and ideas and accurately describing the chronological and/or causal nature of the relationships
- Comparing different ideas within social studies disciplines such as civics and economics, and examining the implications of these ideas

- Producing writing that thoroughly and logically develops an idea, claim, or argument based on primary and/or secondary source texts
- Supporting contentions with specific textual evidence from the source texts and demonstrating an understanding of the contexts in which these documents were written

Reporting Category 3: Reasoning quantitatively and interpreting data in social studies contexts

Examples of skills measured in Social Studies Reporting

Category 3:

- Analyzing data presented in a wide variety of formats, including maps, graphic organizers, photographs, and political cartoons
- Integrating analyses of quantitative data with analyses of written information to inform their understanding of the topic at hand
- Accurately using and interpreting graphs in order to analyze the differing ways in which variables are related to one another

Important note regarding the Social Studies reporting categories:

The Social Studies reporting categories are organized according to the Social Studies Practices, rather than the Social Studies content indicators. This organization has been chosen because the Social Studies Practices are integrated into every item on the Social Studies test. While the content indicators are also reflected in all items, the Social Studies content Topics and Subtopics are too numerous for the test to be able to provide reliable and meaningful reporting data. Test-takers, however, will be receiving much more detailed information both on the skills they possess and on those they need to develop than ever before. With this additional information, adult educators will be in a position to focus their work with test-takers on critical skill development needs. Refer to Appendix D of this chapter to view the detailed information that is captured in each of the Social Studies reporting categories.

The reporting information provided by the Current GED® test is one of the most important elements of the new assessment system.

Gaining a firm understanding of the reporting categories on the GED® test will help adult educators in planning how they can best help adult learners to gain the skills they will need to be successful both on the test and in the future pathway they ultimately pursue.

Appendix

C

Reference Codes for Social Studies Practices

The table below provides the reference for each code identified in the “References” column in the Social Studies Practices section of the Social Studies Assessment Targets.

Numerical/Letter Symbol	Social Studies Standards Document Reference
R1, R2, R3, R4, R6, R7, R8, R9	CCSS for English Language Arts & Literacy Reading Master Standards
L1, L2, L4	CCSS for English Language Arts & Literacy Language Master Standards
W1, W2, W4	CCSS for English Language Arts & Literacy Writing Master Standards
NCSS Literacy Skills	National Curriculum Standards for Social Studies: A Framework for Teaching, Learning, and Assessment
NSH 2, NSH 3.E, NSH 3.F	National Standards for History Revised Edition
N-Q	Common Core State Standards for Mathematics Number and Quantity Quantities
RP	Common Core State Standards for Mathematics Ratios and Proportional Relationships
S-ID	CCSS for Mathematics Standards for Mathematical Content Statistics and Probability Using Probability to Make Decisions
S-MD	CCSS for Mathematics Standards for Mathematical Content Statistics and Probability Using Probability to Make Decisions
S-SP	CCSS for Mathematics Standards for Mathematical Content Statistics and Probability

Appendix

D

Glossary of Key Terms for the Social Studies Test

Analysis/analyze (do not substitute *infer, summarize*): to examine critically in order to determine meaning and to understand the essential elements of [a text or other stimulus]

Application/apply (do not substitute *interpret, infer, summarize, conclude, calculate, solve, predict*): to use or employ an already established skill or piece of information in a new situation

Argument (do not substitute *claim, stance, argumentation*): a process or line of reasoning. For our purposes, arguments can be made either persuasively (i.e., to convince an audience of something) or rhetorically (i.e., to lay out a logical progression of ideas in support of a central stance)

Argumentation (do not substitute *argument, claim, stance, point of view*): the presentation of a line (or lines) of reasoning (i.e., the way in which something is argued, not the line of reasoning itself)

Assumption (do not substitute *premise, conclusion*): something taken for granted; a supposition

Author (do not substitute *narrator, speaker*): the person who wrote a text or other document

Author's credibility (do not substitute *author's point of view, meaning, bias, propaganda*): the degree to which an author can be believed or trusted

Author's point of view (do not substitute *author's purpose, meaning, author's credibility*): the author's attitude or outlook with which information, events, etc. are presented

Author's purpose/intent (do not substitute *meaning, summary, author's point of view, perspective*): the reason an author composes a text or other document (e.g., to convince an audience to use reusable bags rather than paper, to explain Lincoln's stance on abolition of slavery)

Bias (do not substitute *propaganda, author's credibility*): a particular tendency (of an author or a group), especially one that prevents unprejudiced consideration

Causation: a connection between two events or sets of circumstances whereby one produces or brings about the other; that is, one is the cause and the other its effect

Character (do not substitute *people, figure*): a person represented in a story or other literary work (for our purposes, characters are often fictional)

Claim (do not substitute *stance, argument author's purpose, author's point of view, hypothesis, position, perspective*): an assertion of something as fact

Conclusion/conclude (do not substitute *generalization, hypothesis, inference, application, summarize, predict*): a statement that follows logically from another or others in an argument (note: arguments may be text-based, mathematical, scientific, etc.)

Connotative meaning (do not substitute *literal (denotative) meaning, figurative meaning, symbolic meaning*): an association or idea suggested by a word; implicated meaning

Correlation: a relationship or connection between two or more events or sets of circumstances

Create (do not substitute *apply, analyze, synthesize*): to originate or invent (e.g., an original line of reasoning)

Data (do not substitute *information*): individual facts, statistics, or pieces of information (can be qualitative or quantitative). See **information** for disambiguation.

Detail (do not substitute *idea*): a small part that can be considered individually

Evaluate: (do not substitute *interpret, infer, summarize, analyze*): to make a judgment about the significance, worth, validity or quality of something

Evidence (do not substitute *detail, reasoning*): that which tends to prove or disprove something; grounds for belief

Figurative meaning/language (do not substitute *connotative meaning*): that which involves figures of speech and/or is not meant literally (e.g., that which is described through metaphor)

Finding (do not substitute *conclusion, evidence, assumption*): that which is discovered through research or study (See **conclusion** for disambiguation— these concepts are closely related)

Format (do not substitute *genre*): general appearance, style, arrangement (e.g., of a text)

Generalization (do not substitute *summary, conclusion, hypothesis*): a principle, theory or idea that can be applied in many instances

Genre (do not substitute *format*): a class or category, usually used to describe literary or artistic work (e.g., fiction, poetry, etc.)

Historical context: events, figures, ideas prevalent in the popular or political discourse at the time at which something (e.g., a document) was originated

Hypothesis (do not substitute *generalization, conclusion, claim, stance, position, assumption, inference*): a proposition or set of propositions set forth as an explanation for a group of facts or phenomena; conjecture that is a guide for investigation

Idea (do not substitute *theme, detail*): any conception resulting from mental understanding, awareness or activity

Inference/infer (do not substitute *interpret, summarize, analyze, hypothesize*): to conclude by reasoning from evidence that which is *not* explicitly stated

Information (do not substitute *data*): knowledge gained through experience or study. More abstract and general than “data.”

Interpret (do not substitute *infer, summarize, analyze*): to provide the meaning of, or explain, that which is explicitly stated or displayed graphically or symbolically

Justify (do not substitute *support*): to show a claim or statement to be writing, especially using evidence

Literal meaning (do not substitute *inference, interpretation, generalization*): meaning that is in exact accordance with the most explicit, primary meaning of a word or text

Main idea (do not substitute *theme, summary, topic, idea*): the most important central thought in a paragraph or longer *informational* text

Meaning (do not substitute *tone, voice*): what is or is intended to be expressed

Premise (do not substitute *conclusion, assumption, hypothesis*): a basis, stated or assumed, on which reasoning proceeds

Prediction (do not substitute *conclusion, assumption, reasoning, premise, hypothesis*): A statement of something in advance of occurrence, especially on a reasoned or evidentiary basis

Primary source: an original document describing events or ideas of which the author has personal knowledge or experience

Propaganda (do not substitute *bias*): systematic, purposefully persuasive messages that attempt to influence the emotions, attitudes, opinions, and actions of an audience

Reasoning (do not substitute *evidence, meaning, conclusion*): the process of forming conclusions, judgments, or inferences from evidence

Rhetorical technique (do not substitute *author's purpose, figurative language, literary device*): any device an author may use to evoke particular tone or feeling or to provide a frame that may help an audience think about a topic (e.g., appeal to reason); an element of style (i.e., literary devices are a type of rhetorical technique, but not all rhetorical techniques are literary devices)

Scientific model (do not substitute *scientific presentation, theory*): An interpretative description of a phenomenon or system that facilitates access to that phenomenon. May be expressed in a diagram, a set of equations and/or a textual description, though none of those expressions are the model itself. Rather, the expressions represent or communicate the model

Scientific presentation (do not substitute *scientific model, theory*): any medium through which scientific data or information is conveyed, including text, graphs, tables, diagrams, etc.

Secondary source: a document that relates, discusses and comments upon a primary source

Sequence of events (do not substitute *plot, structure*): the order in which events (often historical) occur. Most often conveyed chronologically, but may also be conveyed procedurally, non-literally, etc. Typically, we use “sequence of events” to describe historical events and we use “plot” to describe the events that occur in fictional works.

Speaker (do not substitute *author, narrator*): a person who speaks (used specifically to describe one who delivers a speech or the voice expressed in a poem. Should *not* be used to describe a narrator in a work of fiction or an author in a work of non-fiction.)

Stance (do not substitute *claim, argument, argumentation*): the position on which an author bases an argument (e.g., pro or con)

Structure (do not substitute *sequence of events*): the relationships among and/or organization of component parts of a text or other medium (e.g., Q&A or cause-effect)

Summarize (do not substitute *interpret, analyze*): a brief account that gives the main points of something

Support (do not substitute *justify*): to establish by providing appropriate facts and evidence (either quantitative or textual).

Synthesis/synthesize (do not substitute *apply, summarize, analyze*): to combine elements or ideas from multiple materials into a unified, if complex, whole

Theme (do not substitute *idea, topic, main idea, summary*): the unifying, dominant idea in a *literary* text

Tone (do not substitute *meaning, voice*): the author’s attitude toward the subject and/or audience (e.g., informal, playful, serious, condescending, etc.)

Topic (do not substitute *idea, theme, main idea, summary*): the subject of a discussion or work (typically more concrete than a theme (e.g., sedimentary rocks (topic) vs. rebirth (theme))) in an *informational* text

Voice (do not substitute *meaning, tone*): a combination of an author’s syntax, diction, style, and perspective that is unique to that particular author