

# PreACT<sup>®</sup> Secure Technical Memo



**January 2023**

Version 2023.1



## Introduction

The *PreACT® Secure Technical Memo* provides a high-level introduction to technical information about PreACT Secure. The principal purpose of the memo is to document some basic technical characteristics of PreACT Secure for its intended uses and interpretations. The *PreACT Secure Technical Memo* documents test blueprints, scores, and high-level content descriptions that help support appropriate interpretations of PreACT Secure scores. The *PreACT Secure Technical Memo* applies to PreACT Secure administered during the 2022–2023 school year. The memo will be replaced with a full technical manual in fall 2023.

ACT endorses and is committed to complying with *The Standards for Educational and Psychological Testing* (AERA, APA, & NCME, 2014). ACT also endorses the *Code of Fair Testing Practices in Education* (Joint Committee on Testing Practices, 2004), which is a statement of the obligations to test takers of those who develop, administer, or use educational tests and test data in the following four areas: developing and selecting appropriate tests, administering and scoring tests, reporting and interpreting test results, and informing test takers. ACT endorses and is committed to complying with the *Code of Professional Responsibilities in Educational Measurement* (NCME Ad Hoc Committee on the Development of a Code of Ethics, 1995), which is a statement of professional responsibilities for those involved with various aspects of assessments, including development, marketing, interpretation, and use.

We encourage individuals who want more detailed information on a topic discussed in this manual, or on a related topic, to contact ACT.

Please direct comments or inquiries to the address below:

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## Content Specifications

**English.** The English test puts the student in the position of a writer who makes decisions to revise and edit a text. Students must use the context of the passage to make choices that demonstrate their understanding of grammar, usage, and mechanics conventions. Students must apply understanding of rhetorical purposes and strategies, structure and organize sentences and paragraphs, and maintain a consistent style and tone.

### English Reporting Categories

**Production of Writing:** Apply their understanding of the rhetorical purpose and focus of writing to effectively develop a topic. Students must also use various strategies to achieve logical organization, topical unity, and general cohesion.

**Topic Development:** Demonstrate an understanding of, and control over, the rhetorical aspects of texts. Students must identify the purposes of parts of texts, determine whether a text or part of a text has met its intended goal, and evaluate the relevance of material in terms of a text's focus.

**Organization, Unity, and Cohesion:** Use various strategies to ensure that a text is logically organized, flows smoothly, and has an effective introduction and conclusion.

**Knowledge of Language:** Demonstrate effective language use by ensuring precision and concision in word choice and maintaining consistency in style and tone.

**Conventions of Standard English:** Apply an understanding of the conventions of standard English grammar, usage, and mechanics to revise and edit text.

**Punctuation, Usage, and Capitalization Conventions:** Edit text to conform to standard English punctuation, usage, and capitalization.

**Sentence Structure and Formation:** Test understanding of relationships between and among clauses, placement of modifiers, and shifts in sentence construction.

**Usage Conventions:** Edit text to conform to standard English usage of idioms, frequently confused words, pronoun case, and subject-verb and pronoun-antecedent agreement.

**Math.** The math test considers the whole of a student’s mathematical development, focusing on prerequisite knowledge and skills important for success in college mathematics courses and career training programs. The material covered emphasizes the major content areas that are prerequisites to successful performance in entry-level courses in college mathematics. Knowledge of basic formulas and computational skills are assumed as background for problems. Recall of complex formulas and computation are not required.

The math content domains for PreACT Secure and the ACT are equivalent but are sampled differently. Compared to the ACT, PreACT Secure samples fewer topics found in Grade 11 and 12 math courses. Questions fall into one or more the following reporting categories.

Math Reporting Categories
<b>Preparing for Higher Math</b>
<p><b>Number and Quantity:</b> Students demonstrate knowledge of the real number system and reason with numerical quantities in different forms, including expressions with rational exponents and radicals. In addition, students demonstrate knowledge of the complex number system and manipulate vectors and matrices.</p> <p><b>Algebra:</b> Students evaluate, solve, graph, model with, and interpret parameters of expressions, equations, and systems of equations. Students work with various expression and equation types, including linear, polynomial, rational, exponential, and logarithmic.</p> <p><b>Functions:</b> Students demonstrate knowledge of functions: their definition and notation, their various representations, and their applications. They manipulate and translate functions and interpret important features of their graphs. Function types include linear, polynomial, radical, piecewise, rational, exponential, and logarithmic.</p> <p><b>Geometry:</b> Students apply their knowledge about various geometric objects to solve problems involving area, volume, slope, coordinate geometry, and transformations. In addition, students demonstrate knowledge of topics such as trigonometric ratios and equations of conic sections.</p> <p><b>Statistics and Probability:</b> Students describe the center and spread of distributions, understand and model relationships in bivariate data, and work with sample spaces. Students demonstrate more advanced topics including inferential statistics, conditional probability, and expected value.</p>
<b>Integrating Essential Skills</b>
<p>Students encounter questions that focus on the synthesis and application of a variety of skills to solve more complex problems. The questions address concepts such as rates and percentages, proportional relationships, perimeter and area, mean and median, and expressing numbers in different ways. Students are also asked to solve non-routine problems that require a combination of skills, apply skills in varied contexts, and demonstrating fluency with fundamental mathematical skills.</p>
<b>Modeling</b>
<p>All questions from across the test that involve producing, interpreting, understanding, evaluating, and improving models are captured by this reporting category. Each question is also counted in other appropriate reporting categories above. This category is an overall measure of how well students use modeling skills across mathematical topics.</p>

**Reading.** The reading test measures a student’s ability to read closely, reason logically about texts using evidence, and integrate information from multiple sources. Passages in the reading test include literary narratives, such as prose fiction, memoirs, and personal essays, as well as informational texts from the natural sciences and social sciences. These texts span a range of complexity levels representative of what students would encounter in challenging high school or first-year college courses. In addition, reading items assess a student’s ability to complete reading-related tasks at various depth-of-knowledge (DOK) levels, and the tests reflect a range of difficulty appropriate for the grade level.

Reading Reporting Categories
<ul style="list-style-type: none"> <li>• <b>Key Ideas and Details:</b> Read texts closely to determine central ideas and themes, to summarize information and ideas accurately; and to understand sequential, comparative, and cause-effect relationships.</li> <li>• <b>Craft and Structure:</b> Determine the meaning of words and phrases, to analyze an author’s rhetorical choices, to analyze text structure, and to understand authorial purpose and characters’ points of view.</li> <li>• <b>Integration of Knowledge and Ideas:</b> Understand authors’ claims, differentiate between facts and opinions, and use evidence to make connections between different texts that are related by topic.</li> </ul>

**Science.** The PreACT Secure science test assesses and reports on science knowledge and process skills across three domains, which are also the three reporting categories for the ACT science test. All questions are based on authentic scientific scenarios that are built around important scientific concepts and designed to mirror the experiences of students and working scientists engaging in real science.

Science Reporting Categories
<p><b>Interpretation of Data:</b> Students manipulate and analyze scientific data presented in tables, graphs, and diagrams (e.g., recognize trends in data, translate tabular data into graphs, interpolate and extrapolate, and reason mathematically).</p> <p><b>Scientific Investigation:</b> Students understand experimental tools, procedures, and design (e.g., identify variables and controls) and compare, extend, and modify experiments (e.g., predict the results of additional trials).</p> <p><b>Evaluation of Models, Inferences, &amp; Experimental Results:</b> Students judge the validity of scientific claims and evidence, and formulate conclusions and predictions based on that information (e.g., determine which explanation for a scientific phenomenon is supported by new findings).</p>

## Blueprints

**English:** 48 items (36 scored and 12 field test), 35 minutes, all multiple choice

Reporting Category	Number of Scored Items	Percentage of Test
Production of Writing	10–12	28–33%
Knowledge of Language	5–7	14–19%
Conventions of Standard English	18–20	50–56%

**Math:** 38 items (33 operational and 5 field test), 45 minutes, all multiple choice

Reporting Category	Number of Scored Items	Percentage of Test
Preparing for Higher Math	21	64%
<ul style="list-style-type: none"> <li>• Number &amp; Quantity</li> <li>• Algebra</li> <li>• Functions</li> <li>• Geometry</li> <li>• Statistics &amp; Probability</li> </ul>	3–5 4–6 4–6 3–5 3–5	
Integrating Essential Skills	12	36%
Modeling	≥8	*

\*The percentage of test value for Modeling is intentionally left blank. Modeling is included within the Planning for Higher Mathematics and Integrating Essential Skills reporting categories.

**Reading:** 33 items (25 scored and 8 field test), 35 minutes, all multiple choice

Reporting Category	Number of Scored Items	Percentage of Test
Key Ideas & Details	13–15	52–60%
Craft & Structure	7–9	28–36%
Integration of Knowledge & Ideas	3–4	12–16%

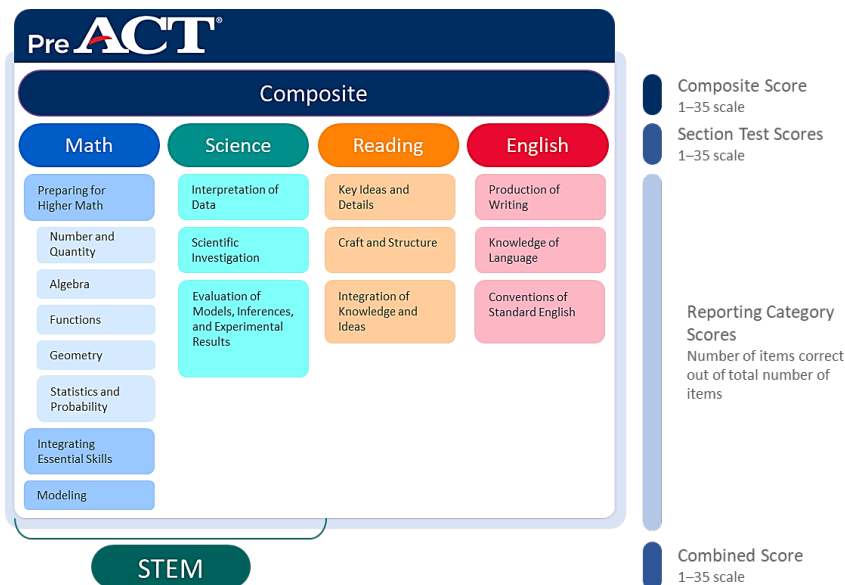
**Science:** 36 items (30 scored and 6 field test), 35 minutes, all multiple choice

Reporting Category	Number of Scored Items	Percentage of Test
Interpretation of Data	6–12	20–40%
Scientific Investigation	5–12	17–40%
Evaluation of Models, Inferences & Experimental Results	6–12	20–40%

## Scores

Combined Scores and Indicators	
<b>Composite and Subject Scores.</b>	Students receive a Composite score; subject scores for English, reading, science, and math; and scores in multiple reporting categories for each of the subject tests. Each subject test score is reported on a scale that ranges from 1 to 35. The ACT's 1–36 score scale is linked to PreACT Secure scores using common-item IRT pre-equating procedures. Therefore, test scores can be compared directly between PreACT Secure and the ACT (e.g., PreACT Secure English to ACT English).
<b>STEM Score.</b>	This score represents the student's overall performance on the science and math portions of the exam.
<b>Progress Toward the ACT National Career Readiness Certificate.</b>	This indicator helps students understand their progress toward career readiness and helps educators prepare their students for success in a variety of career pathways. It will provide an indicator of expected performance on the ACT National Career Readiness Certificate.

Detailed PreACT Secure results indicate performance on the reporting categories of the four academic tests.



## About ACT

ACT is a mission-driven, nonprofit organization dedicated to helping people achieve education and workplace success. Grounded in 60 years of research, ACT is a trusted leader in college and career readiness solutions. Each year, ACT serves millions of students, job seekers, schools, government agencies and employers in the US and around the world with learning resources, assessments, research, and credentials designed to help them succeed from elementary school through career.

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