

Alignment Guide: Texas

Linking the ACT and Texas Standards
to Drive Student Success



ACT[®]

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I. The ACT College and Career Readiness System

Grounded in over 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 everyone succeed from elementary school through career.

The path to college and career success starts early. That's why ACT offers a continuum of sequential progress-monitoring learning tools and assessments that prepare students for a lifetime of success, in the classroom and beyond.

PreACT® 8/9 prepares students for the important transition to high school by helping identify whether they are on track for college and career success. PreACT 8/9 includes multiple-choice items in the areas of English, reading, mathematics, and science.

PreACT® provides students a practice experience for the ACT that empowers them, their parents, and educators with valuable insights earlier in the college preparation process. PreACT includes multiple-choice items in the areas of English, reading, mathematics, and science. Test items are made available as a learning resource after testing.

PreACT® Secure, to be introduced in 2023, offers an online version of PreACT with test items that are secured and not released after testing.

The ACT® test measures what students need to know to be ready for entry-level college credit courses, providing critical feedback with extensive score reporting. The test is available via national weekend test administrations (paper-and-pencil format) or through weekday school-based test administrations (online and paper-and-pencil formats). The ACT includes multiple-choice items in the areas of English, reading, mathematics, and science. The optional writing test assesses a student's ability to compose an effective argumentative essay.

ACT® Online Prep (AOP) is an engaging, interactive online test prep program that helps students develop competencies in the core content measured on the ACT—the content most relevant for college and career readiness. The high-quality learning content includes lessons, two official practice tests covering all five subject areas, and interactive gaming modules. The AOP platform also provides robust reporting at the student and group level so that teachers, counselors, and administrators can track use and progress.

ACT® WorkKeys® Assessments help individuals demonstrate their job readiness while enabling communities, educators, and employers to build a skilled workforce in a rapidly changing environment. Individuals who successfully complete the WorkKeys assessments in Applied Math, Graphic Literacy, and Workplace Documents earn the WorkKeys National Career Readiness Certificate® (WorkKeysNCRC®), a valuable credential for students and job candidates seeking to verify foundational workplace skills. The other WorkKeys assessments include Applied Technology, Business Writing, Workplace Observation, Fit, and Talent. Workkeys is available in online and paper-and-pencil formats.

ACT® WorkKeys® Curriculum offers individuals convenient, personalized courses to build the essential career-relevant skills needed for learning, personal development, and effective job performance. WorkKeys-aligned courses prepare individuals to take the WorkKeys assessments (including the NCRC-aligned assessments) and take their workforce development even further.

II. Introduction

Assessment literacy is taking on greater importance as we aim for equity in addition to excellence in education. The National Academy of Education, in its vision for next-generation accountability assessments, calls for expanding assessment literacy in scope and application:

Assessments are only useful if those who could benefit from the information can access, interpret, and use the information to improve teaching and learning. Recognizing that appropriately educating all who interpret and make use of educational testing data is no small task, we offer a few suggestions. First, we need to ensure that the right people quickly gain access to and use testing data. Second, we need to ensure that teachers, administrators, parents and caregivers, and students are educated in how to interpret and use assessments to further teaching and learning and create equitable educational opportunities. For teachers, this may result in professional development and in-service opportunities. Like all aspects of education, parents and caregivers need to be seen as integral partners in using assessments to further learning. Finally, it is critical that policy makers and media outlets are provided with a framework and context to understand, interpret, and report results.

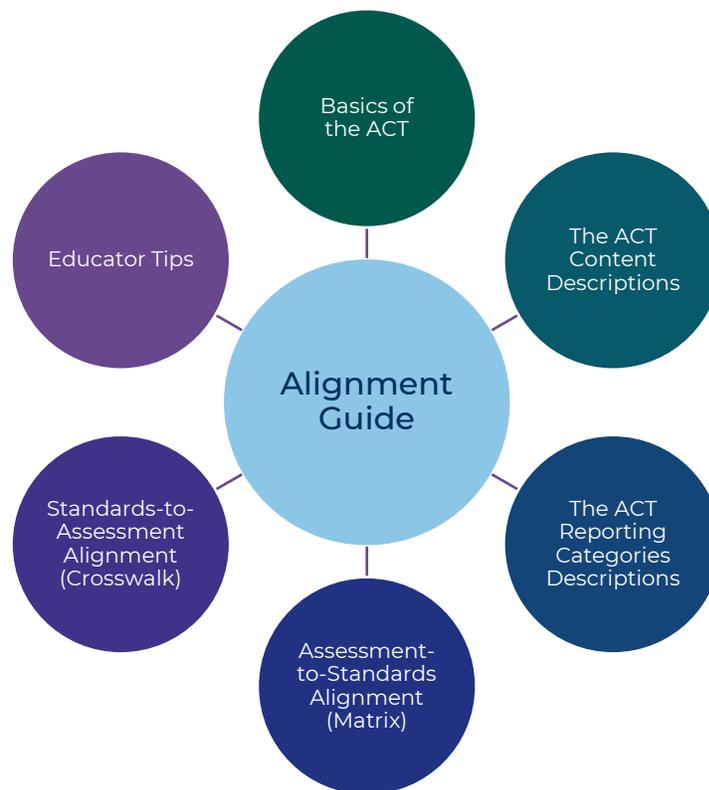
Purpose, Elements, and Audience of the Guide

In support of this vision, ACT has developed this guide to the content of the ACT and its alignment with your state standards.

What is the purpose of this guide? This guide is intended to offer information about the content of the ACT and its alignment to Texas standards, as well as ideas for how to use the information in teaching and planning activities. The guide uses the term *alignment* to describe the link between ACT assessments and Texas standards. This is an informational alignment and is intended to support educators and other stakeholders. The methodology used to create this guide differs from an independent alignment study in which test forms are reviewed in order to judge the strength of alignment according to a number of different criteria.

.**What is in this guide?** The guide has the following elements:

- *Basics of the ACT* – Basic information about the knowledge and skills assessed by the ACT, the ACT reporting categories, and the process of alignment to your state standards
- *Educator Tips* – Ideas for how the alignment information can be applied to inform curriculum development and effective communication about ACT products and scores
- *The ACT Content Descriptions* – Descriptions of the content and structure of each subject test (English, reading, mathematics, science, and writing), plus test blueprints and specification range tables for all but the writing test
- *The ACT Reporting Categories Descriptions* – Tables that list and describe the ACT reporting categories, subcategories, and skills
- *Assessment-to-Standards Alignment* – Information in the form of a table, referred to as a “matrix,” showing which standards are assessed by the ACT in each score reporting category and subcategory
- *Standards-to-Assessment Alignment* – Information in the form of a table, referred to as a “crosswalk,” showing which domains of the ACT (score reporting categories and subcategories) assess each standard



Who is this guide for? The guide was developed for a variety of users:

- *District and school leaders* – District and school leaders can use the information, including alignment tables, to help make decisions about curriculum and to inform design and development of professional learning.
- *Classroom teachers* – Classroom teachers can use the resources provided to inform design and delivery of daily lessons as well as design of classroom-based assessments.

Educators and Texas stakeholders will be able to use the information to support effective communication with students, their families, and the community. The information will help educators describe how a student’s performance on the ACT assessment is tied to curriculum based on your state standards

III. The ACT and Texas Standards

Examining the ACT for alignment with Texas standards requires a basic understanding of what is on the ACT.

Overview of the ACT

This overview briefly describes the purpose of the ACT, who uses the ACT and how, the test content, the types of scores students receive, as well as benefits of the ACT.

Purpose. The primary purpose of the ACT is to measure a student's level of achievement in core academic areas taught in high school. Users apply the ACT test data, test scores, and interpretations for many different purposes:

- *College and career planning* – Students use their results to plan for further education and explore careers based on their own skills, interests, and aspirations.
- *Educational strategy* – High schools use ACT data in academic advising and counseling, evaluation studies, accreditation documentation, and public relations.
- *Educational measurement* – States use the ACT as part of their statewide assessments to measure students' educational achievement and to monitor educational improvement and achievement gaps over time.
- *Admission and placement* – Postsecondary institutions use ACT results for admission and course placement decisions.
- *Qualifications* – Many private, state, and national agencies that provide scholarships, loans, and other types of financial assistance to students tie such assistance to students' academic qualifications, which are partly measured by ACT test scores.

Subjects. The ACT contains subject tests in the following content areas:

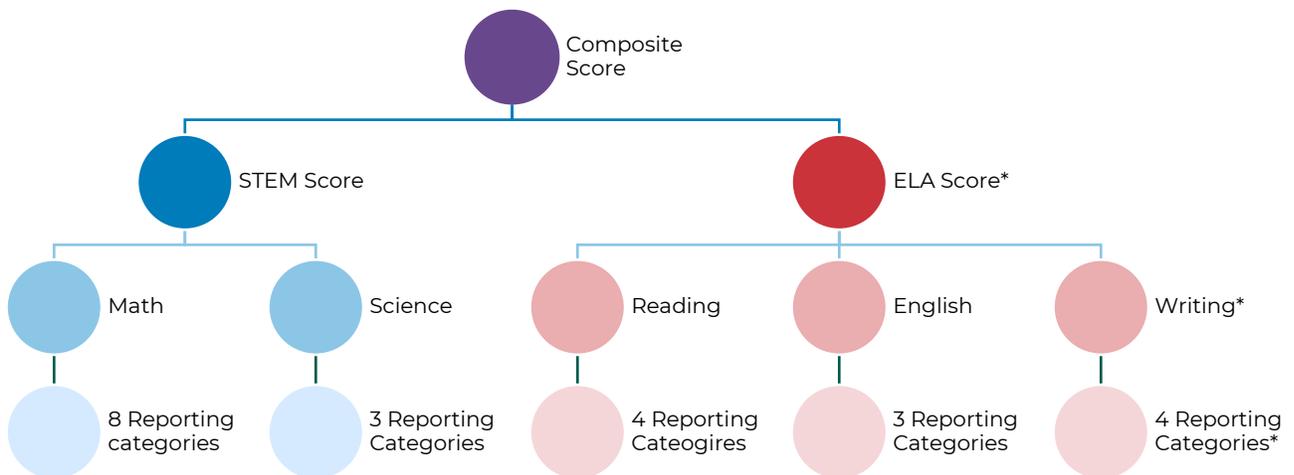
- English
- Reading
- Mathematics
- Science
- Writing (optional)

The English, reading, mathematics, and science tests consist of multiple-choice questions and are administered together as a battery. Students who opt to take the writing test then complete a timed essay-writing task.

Scores. The ACT provides a variety of scores, as shown in the table on the next page and described below:

- *Composite and subject scores* – Students receive a composite score; overall subject scores for English, mathematics, reading, science, and writing (optional); and scores in multiple reporting categories for each of the subject tests. Apart from the writing test, each subject test score is reported on a scale that ranges from 1 to 36. The writing score is reported on a 2–12 scale.
- *Science, technology, engineering, and math (STEM) score* – Combines mathematics and science scores
- *English language arts (ELA) score* – Combines English, reading, and writing scores (only reported for students who take the writing test)
- *ACT reporting category scores* – Provide granular information about student performance in a number of designated categories on each subject test

Scores Reported on the ACT



* ELA and Writing scores only reported for students who take the ACT + Writing

Users. Primary intended users of the ACT test include the following:

- *Students* – High school students (typically in Grades 11 and 12)
- *Educators* – Educational agencies or organizations supporting the academic preparation of these students (schools, districts, and states)
- *Postsecondary educational organizations* – Colleges and universities, talent recognition organizations, and scholarship agencies

Users apply the ACT test data, test scores, and interpretations for many different purposes:

- *College and career planning* – Students use their results to plan for further education and explore careers based on their own skills, interests, and aspirations.
- *Educational strategy* – High schools use ACT data in academic advising and counseling, evaluation studies, accreditation documentation, and public relations.
- *Educational measurement* – States use the ACT as part of their statewide assessments to measure students' educational achievement and to monitor educational improvement and achievement gaps over time.
- *Admission and placement* – Postsecondary institutions use ACT results for admission and course placement decisions.
- *Qualifications* – Many private, state, and national agencies that provide scholarships, loans, and other types of financial assistance to students tie such assistance to students' academic qualifications, which are partly measured by ACT test scores.

Benefits. The intended benefits of using the ACT test include the following:

- *For students*
 - Allows them to demonstrate their knowledge and skills gained throughout educational course work in the four core content areas as well as writing
 - Provides them with a profile of their relative strengths and weaknesses in the test content areas and informs them about what they know and can do, based on the ACT College Readiness Benchmarks (the minimum ACT test scores required for students to have a reasonable chance of success in first-year college courses) and the ACT College and Career Readiness Standards® (empirically derived descriptions of the essential skills and knowledge students need to be prepared for college and career)

- Assists them in better preparing for college and careers through planning and studying subjects directly linked to successful outcomes
- *For parents and guardians*
 - Provides them with insights about their child's knowledge and skills
- *For educators*
 - Gives schools, districts, and states information about their students' knowledge and skills
 - Provides indicators as to whether a student is likely ready for college-level course work or a work training program, based on the ACT College and Career Readiness Benchmarks and the Progress Toward the ACT National Career Readiness Certificate (NCRC)
- *For postsecondary educational organizations*
 - Presents colleges and universities, talent identification organizations, and scholarship agencies with information about a student's level of achievement in the subject areas assessed by the test

The ACT Reporting Categories and Texas Standards

Among the various scores reported for students who take the ACT are scores that detail student performance in the various content reporting categories of each subject test. Because these categories are important parts of the test's content framework, it is helpful for stakeholders to know how they align with Texas standards.

Your state standards. The ACT reporting categories are aligned with the following standards Texas uses:

- Texas Essential Knowledge and Skills (TEKS)
- Texas College and Career Readiness Standards (CCRS)

Alignment process. The alignment is performed by ACT subject matter experts who have years of experience aligning assessments to state-level college and career readiness standards. These are the same ACT subject matter experts who design and develop annual forms of ACT assessment. They follow this three-step process for each subject area:

1. They analyze each of the Texas standards to determine which ACT reporting category, if any, best matches the intent of the Texas standard.

2. Using their deep knowledge of the ACT test content, they indicate which content subcategory includes one or more items that assess a given Texas standard.
3. Finally, they record the alignment in alignment tables.

Using the tables. To use the alignment tables effectively, you need to review the ACT reporting category tables. These are provided in the sections for each subject test. The Educator Tips section includes other insights on how to use information in the tables. The tips are targeted to specific users (district leaders, school leaders, and classroom teachers).

Types of alignment tables. The full set of alignment tables is provided in the sections for each subject test. Two types of tables are presented (as previously noted in the Introduction):

- *MATRIX: The ACT to Texas Standards* – These tables have been designed to allow you to see at a glance the linkage between the different knowledge and skills assessed in each ACT reporting category and Texas standards. Matrix tables are provided for all the ACT subject tests, with English, reading, and writing combined as ELA.
- *CROSSWALK: Texas Standards to the ACT* – These tables provide the view of alignment from the other direction: Users can look up each Texas standard to find the crosswalk with ACT content. Tables are provided for ELA, mathematics, and science.

MATRIX: The ACT to Texas Standards

	TEXAS STANDARDS			
ACT REPORTING CATEGORIES	Texas Standard	Texas Standard	Texas Standard	Texas Standard
ACT Reporting Category		X	X	
ACT Reporting Category		X		
ACT Reporting Category	X		X	

CROSSWALK: Texas Standards to the ACT

TEXAS STANDARDS	ACT REPORTING CATEGORIES
Texas Standard	ACT Reporting Category

IV. Educator Tips

This section is designed to help you use the following elements of this guide, which appear in each of the subject test sections in the following order:

- The ACT Content Descriptions
- The ACT Reporting Category Descriptions
- MATRIX: The ACT to Texas Standards
- CROSSWALK: Texas Standards to the ACT

Tips are provided for three groups: district leaders, school leaders, and classroom teachers. Some tips are repeated as they apply to more than one group or element.

FOR DISTRICT LEADERS

The ACT Content Descriptions

- *Curriculum and assessment design support* – The information on the structure of the ACT assessment, plus the test blueprints, can be used to plan district supports for curriculum and assessment designs. Note that the ACT is based on empirical research indicating the knowledge and skills needed for college and career readiness. For that reason, make sure the curriculum includes sufficient opportunity for students to learn what is measured on the ACT assessment.
- *Content coverage* – Look closely at the test blueprints to gauge the emphases of knowledge and skills. Use the emphases to help decide expectations for mastery levels of each content area measured. Consult the ACT College and Career Readiness standards to understand how student performance with the different knowledge areas and skills assessed varies across the ACT score range.
- *Consistency of emphases* – Review district high school course syllabi to check consistency in emphases of ACT reporting categories content. For inconsistencies, consider how the ACT test blueprints might inform and help standardize content emphases.
- *Test frequency and design model* – Consider using the test blueprints to determine frequency and design of local assessments. For example, for end-of-course assessments in high school English courses, you

might use reporting categories and emphases similar to those in the relevant ACT assessments.

- *Response opportunity* – Be sure to provide school leaders and classroom educators with an opportunity to read, review, and discuss the ACT content descriptions in this guide.

The ACT Reporting Category Descriptions

- *Curriculum and assessment design support* – Like the test content descriptions, the reporting category descriptions can be used to plan district supports for curriculum and assessment designs. Per the test content description tip, make sure the curriculum includes sufficient opportunity for students to learn what is measured on the ACT assessment.
- *Skills language* – Consider using the reporting category tables to spark dialogue about skills language. Talk with school leaders, instructional coaches, and teachers about how educators describe their college and career preparation instruction. Suggest organizing a professional development activity on skills understanding and skills language consistency.
- *Skills language* – Look closely at the informal educator observation and coaching tools used in your district. Think about how the ACT tables language can help yield greater specificity in next-steps coaching (for example, using ACT language to observe students working effectively to “manipulate and analyze scientific data presented in tables, graphs, and diagrams” rather than a broad focus on “improving student interpretations of data”).
- *Response opportunity* – Be sure to provide school leaders and classroom educators with an opportunity to read, review, and discuss the ACT reporting category descriptions in this guide.

MATRIX: The ACT to Texas Standards

- *Content coverage* – Scan the matrix to see which standards have numerous “X” marks. This allows you to quickly assess your coverage for content on the ACT test in addition to your standards. It also allows you to see content you cover that isn’t assessed on the ACT.

- *Resources check* – It is important for educators to have sufficient resources to teach all college and career readiness standards; you can use the matrix tables to check that. Highlight table cells with concepts that have sufficient resources in your district. Then explore how you might provide resources for teaching concepts in the remaining cells.
- *Professional development planning* – While planning districtwide professional development, examine the concepts in the matrix tables. Does your assessment data indicate instructional needs for any concepts? If so, consider planning professional development to support that.
- *Consistency of emphases* – Review district high school course syllabi to check consistency in emphases of content covered for both your state standards and the ACT reporting categories. For inconsistencies, suggest that the matrix tables, along with the ACT test blueprints, might inform and help standardize content emphases.
- *Response opportunity* – Be sure to provide school leaders and classroom educators with an opportunity to read, review, and discuss the matrix tables in this guide.

CROSSWALK: Texas Standards to the ACT

- *Content coverage* – Does your district provide sufficient depth and breadth of content to meet both your state standards and ACT reporting categories? Consider reviewing curriculum, assessments, and instructional materials across the district to check that. The crosswalk alignment tables may help leaders identify strengths, redundancies, and gaps in programming by noting emphasis, duplication, and missing skills in the intersections of Texas standards and the ACT content.
- *Skills language* – You may wish to provide school leaders and classroom educators with an opportunity to review the academic language represented in both your state standards and the ACT reporting categories. Suggest developing a glossary to ensure consistency in interpretation of core skills instruction.
- *Response opportunity* – Be sure to provide school leaders and classroom educators with an opportunity to read, review, and discuss the ACT content descriptions in this guide.

FOR SCHOOL LEADERS

The ACT Content Descriptions

- *Consistency of emphases* – Review district high school course syllabi to check consistency in emphases of ACT reporting categories content. For inconsistencies, consider how the ACT test blueprints might inform and help standardize content emphases.
- *Frequency and design model* – Consider coaching classroom teachers on using the test blueprints to determine frequency and design of local assessments. For example, for end-of-course assessments in high school English courses, you might use reporting categories and emphases similar to those in the relevant ACT assessments.
- *Sharing with students and families* – Consider excerpting sections of the test content descriptions information to share with students who are preparing to take the ACT, as well as with the families of those students.

The ACT Reporting Category Descriptions

- *Skills language* – As you observe classroom teaching, examine how educators define knowledge and skills. Consider coaching on how to build a consistent academic vocabulary across classrooms. This supports consistency in expectations and student understanding of core content. You may wish to provide classroom educators with an opportunity to review the academic language in both your state standards and the ACT reporting categories. Suggest developing a glossary to ensure consistency in interpretation of core skills instruction.
- *Best practices* – Provide time for educators to review the reporting category descriptions relevant to the content they teach. Then start a dialogue on the “best” instructional practices they use to support learning for each relevant reporting category. Encourage them to share these practices via a research-based “best practices playbook.”

MATRIX: The ACT to Texas Standards

- *Content coverage* – Scan the matrix to see which standards have numerous “X” marks. This allows you to quickly assess your coverage for

content on the ACT test in addition to your standards. It also allows you to see content you cover that isn't assessed on the ACT.

- *Resources check* – It is important for educators to have sufficient resources to teach all college and career readiness standards; you can use the matrix tables to check that. Highlight table cells with concepts that have sufficient resources in your district. Then explore how you might provide resources for teaching concepts in the remaining cells.
- *Professional development planning* – While planning districtwide professional development, examine the concepts in the matrix tables. Does your assessment data indicate instructional needs for any concepts? If so, consider planning professional development to support that.
- *Consistency of emphases* – Review district high school course syllabi to check consistency in emphases of content covered for both your state standards and the ACT reporting categories. For inconsistencies, suggest that the matrix tables, along with the ACT test blueprints, might inform content emphases.
- *Content coverage* – As you observe classroom teaching and provide coaching, consider whether students are demonstrating the skills needed for success—on the ACT and to meet your state standards. Coach educators to use the relevant matrix to see if you need changes in emphases of skills instruction. Ask: *Do the lesson plans include learning objectives aligned to the ACT and Texas standards? Will the learning activities help students to achieve the desired outcomes? Do the formative and summative assessments accurately measure whether students have mastered the learning objectives?*

CROSSWALK: Texas Standards to the ACT

- *Content coverage* – Does your district provide sufficient depth and breadth of content to meet both your state standards and the ACT reporting categories? Consider reviewing curriculum, assessments, and instructional materials across the district to check that. The crosswalk alignment tables may help leaders identify strengths, redundancies, and gaps in programming.
- *Skills language* – As you observe classroom teaching, examine how educators define knowledge and skills. Consider coaching on how to build a consistent academic vocabulary across classrooms. This supports consistency in expectations and student understanding of core content. You may wish to provide classroom educators with an

opportunity to review the academic language in both your state standards and the ACT reporting categories.

- *Professional development planning* – While planning professional development and next steps in coaching, examine the crosswalk tables. Consider strengthening educator knowledge of research-based strategies to teach skills represented by both your state standards and the ACT reporting categories. This is especially important for needs based on student performance data.

FOR CLASSROOM TEACHERS

The ACT Content Descriptions

- *Test prep for students* – Review your course syllabi to determine if there are ways to build student understanding of the ACT reporting categories relevant to each course. Look for ways to show students who plan to take the ACT test how the course content will prepare them for success on that assessment, as well as in meeting your state standards.
- *Content coverage* – Consider the emphases of content in the courses you teach: How do they compare to the emphases of content in relevant ACT subject test blueprints? Do you have sufficient time devoted to core skills? Time-on-task for core skills in the course and curriculum may be informed by the blueprints. Look specifically at the number of items and percentage of time for each relevant reporting category. For example, nearly one-third of the ACT mathematics test measures student performance in modeling, a higher-order skill that requires integration of content across multiple domains. This may prompt you to see if there is sufficient time devoted to instruction on modeling.
- *Sharing with students and families* – Consider excerpting sections of the test content descriptions information to share with students who are preparing to take the ACT, as well as with the families of those students.

The ACT Reporting Category Descriptions

- *Content coverage* – Review your course syllabi to determine if all relevant skills assessed on the ACT are represented in the plan for instruction. Also consider the emphases of course content in relation to

the emphases of content in the related test blueprints. Depth and breadth of content coverage as well as time-on-task for core skills in the course syllabi and curriculum may be informed by the reporting categories descriptions.

- *Data for improvement* – Review the skills you measure in relation to each reporting category. Where you have data for your students (as individuals or as groups), think about strengths and opportunities for improvement represented by each reporting category. Which knowledge areas and skills are likely most in need of intervention and/or extension?
- *Skills language* – You can introduce skills language as you teach, so all students can grow their academic vocabulary in relation to your content. For consistency, consider working with other teachers at your school who teach the same content as you to develop a glossary of academic language. Use the language in reporting categories, along with the language in your curriculum and Texas standards to create this glossary.

MATRIX: The ACT to Texas Standards

- *Content coverage* – Review your course syllabi to determine if all relevant skills assessed on the ACT and described in your state standards are represented in the plan for instruction. Also consider the emphases of course content in relation to the emphases of content in the related test blueprints. Depth and breadth of content coverage as well as time-on-task for core skills in the course syllabi and curriculum may be informed by relevant matrix tables.
- *Data for improvement* – The matrix tables may be helpful not only in planning instruction but also in monitoring student progress toward college and career readiness. Evaluate your current lesson plans: Do they provide all students with the opportunity to deepen their knowledge as they practice skills across different levels of cognitive complexity? Do they include learning objectives aligned to the ACT and your state standards? Do your assessments accurately measure student mastery of these learning objectives? As you review student performance data, consider which students have demonstrated strengths and needs in terms of this intersection between your state standards and ACT reporting categories. Plan tiered instruction and/or extension for performance improvement.
- *Sharing with students and families* – Consider sharing relevant matrix tables with students and their families. Show how the course syllabus

and class instruction is designed to build college and career readiness for all students.

CROSSWALK: Texas Standards to the ACT

- *Content coverage* – Review your course syllabi to determine if all the relevant Texas standards and ACT reporting categories are represented in the plan for instruction. Also consider the emphases of content in relation to the emphases of content in the related test blueprints.
- *Data for improvement* – Review the skills where there is overlap in your state standards and the ACT reporting categories. Note where you have data on student performances linked to these skills and where you do not. Shape formative assessment to gather missing data. This will help you plan effectively to meet student needs linked to these critical content knowledge and skills.
- *Professional development planning* – As you review the intersections of concepts between your state standards and ACT reporting categories, reflect on professional learning goals. Consider setting goals to strengthen knowledge of research-based strategies to teach these intersection skills.

V. English Language Arts (ELA)

ENGLISH

The ACT Content Description

- *Item tally and time* – The ACT English test is a 75-item, 45-minute test.
- *Concept* – The test puts the student in the position of a writer who makes decisions to revise and edit a text.
- *Knowledge and skills tested* – The test measures knowledge areas and related skills reflected in the reporting categories for this test (further described in a chart below):
 - **Production of Writing:** Students apply their understanding of the rhetorical purpose and focus of a piece of writing to develop a topic effectively. They use various strategies to achieve logical organization, topical unity, and cohesion.
 - **Knowledge of Language:** Students demonstrate effective language use by ensuring precision and concision in word choice and maintaining consistency in style and tone.
 - **Conventions of Standard English:** Students apply their understanding of the conventions of Standard English grammar, usage, and mechanics to revise and edit text.
- *Format and question types* – The test consists of five passages, each accompanied by a sequence of multiple-choice test items.
 - Different passage types are used to provide a variety of rhetorical situations.
 - Students must use the rich context of the passage to make editorial choices, demonstrating their understanding of writing strategies and conventions.
 - Passages are chosen not only for their appropriateness in assessing writing and language skills but also to reflect students' interests and experiences.
- *Knowledge and skills not tested* – Spelling and the rote recall of grammar rules are not tested.

English test blueprints. Four scores are reported for the ACT English test—a total test score based on all 75 items and the three reporting category scores. The reporting categories constitute a specific number of items and percentage of the test, as shown below. A table describing the reporting categories in detail follows this.

Reporting Category	Number of Items	Percentage of Test
Production of Writing	22–24	29–32%
Knowledge of Language	11–13	15–17%
Conventions of Standard English	39–41	52–55%

The ACT Reporting Category Descriptions

Reporting Category	Skill Area	Description/Examples
Production of Writing	Topic Development—Purpose and Focus: Involves the ability to make content and stylistic choices that provide support for a text’s rhetorical purpose.	Determine if a text’s purpose is supported by organizational structure and content. Revise text to enhance the focus and cohesion.
	Organization, Unity, and Cohesion: Involves the ability to support a text’s purpose by progressing from point to point logically and smoothly.	Order sentences and paragraphs and use transitions to enhance overall purpose, unity, and logical cohesion. Frame texts effectively with transitions, introductions, and conclusions.
Knowledge of Language	Expressing Ideas Clearly: Involves the ability to be precise and concise by using vocabulary skillfully and by avoiding wordiness and redundancy.	Use general academic and domain-specific language precisely and eliminate redundancy and wordiness when the meaning of the sentence or paragraph must be considered.
	Style: Involves the ability to maintain stylistic consistency appropriate for the communication task and to use language purposefully.	Maintain a consistent style and tone and use words, phrases, and sentences purposefully, considering their effect on the whole text.

Reporting Category	Skill Area	Description/Examples
Conventions of Standard English	Sentence Structure and Formation: Involves the ability to ensure the grammatical soundness of a variety of sentences.	Recognize and correct subtle structural errors in sophisticated sentence structure and complex contexts, including when the meaning of multiple sentences or paragraphs must be considered.
	Usage Conventions: Involves the knowledge of and ability to apply rules of standard English usage.	Recognize and correct usage errors in structurally sophisticated sentences, including when relevant elements are separated by intervening text.
	Punctuation Conventions: Involves the knowledge and ability to apply the rules of standard English punctuation and capitalization.	Recognize and correct punctuation errors in sophisticated sentence structures and complex contexts, including using punctuation to reduce ambiguity of sentences and paragraphs.

READING

The ACT Content Description

- *Item tally and time* – The ACT reading test is a 40-item, 35-minute test.
- *Concept* – The test measures a student's ability to read closely, reason about texts using evidence, and integrate information from multiple sources.
- *Knowledge and skills tested* – The test measures knowledge areas and related skills reflected in the reporting categories for this test (further described in a chart below):
 - **Key Ideas and Details:** Students read texts closely to determine central ideas and themes; summarize information and ideas accurately; and read closely to understand relationships and draw logical inferences and conclusions, including understanding sequential, comparative, and cause-effect relationships.

- **Craft and Structure:** Students determine word and phrase meanings, analyze an author’s word choice rhetorically, analyze text structure, understand authorial purpose and perspective, and analyze characters’ points of view. They interpret authorial decisions rhetorically and differentiate between various perspectives and sources of information.
 - **Integration of Knowledge and Ideas:** Students understand authors’ claims, differentiate between facts and opinions, and use evidence to make connections between different texts that are related by topic. Some items will require students to analyze how authors construct arguments, evaluating reasoning and evidence from various sources.
- *Format and question types* – The test consists of four passages, each accompanied by a sequence of multiple-choice test items.
 - Three passages contain one long prose passage, and one passage contains two shorter prose passages.
 - Passages in the reading test include both literary narratives and informational texts from the humanities, natural sciences, and social sciences.
 - *Knowledge and skills not tested* – Rote recall of facts from outside the passage or rules of formal logic are not tested. Nor does the test include items about vocabulary that can be answered without referring to the passage context.

Reading test blueprints. Five scores are reported for the ACT reading test—a total test score based on all 40 items, the three reporting category scores, and an Understanding of Complex Texts indicator score. The reporting categories constitute a specific number of items and percentage of the test, as shown below. A table describing the reporting categories in detail follows this.

Reporting Category	Number of Items	Percentage of Test
Key Ideas and Details	21–24	53–60%
Craft and Structure	10–12	25–30%
Integration of Knowledge and Ideas	6–9	15–23%

The ACT Reporting Category Descriptions

Reporting Category	Skill Area	Description/Examples
Key Ideas and Details	Close Reading: Involves the ability to attend carefully to what a text says and draw well-supported conclusions from a text.	Analyze challenging, complex, and highly complex texts to determine what the text says explicitly as well as draw conclusions based on textual support.
	Relationships: Involves the ability to identify and understand relationships between individuals, events, themes, and ideas in a text.	Identify and infer sequences, comparative relationships, and cause-effect relationships developed across a text.
	Central Ideas, Themes, Summaries: Involves the ability to synthesize information in a text in order to identify central ideas or themes, differentiate key ideas from ideas of lesser importance, and summarize text concisely.	Determine a central idea or theme of challenging, complex, and highly complex texts and summarize ideas and information developed across a text.
Craft and Structure	Word Meanings and Word Choice: Involves the ability to determine the meaning of words and phrases, including academic and domain-specific words, multiple-meaning words, and figurative language, based on the context of a text.	Determine the meaning, including figurative, connotative, and technical meanings, of words and phrases as they are used in more challenging, complex, and highly complex texts.
	Text Structure: Involves the ability to analyze text rhetorically in order to understand how an author's choices create effects on the reader.	Analyze rhetorical devices and the structure of more challenging, complex, and highly complex texts.
	Purpose and Point of View: Involves the ability to understand and analyze a text's rhetorical situation, including the author's intent, perspective, and use of rhetorical techniques.	Analyze the use of persuasive elements and development of an argument in more challenging, complex, and highly complex texts, assessing whether the evidence provided is relevant, sound, and sufficient.

Reporting Category	Skill Area	Description/Examples
Integration of Knowledge and Ideas	Arguments: Involves the ability to understand and analyze arguments in a text, including claims, counterclaims, and supporting evidence.	Analyze the use of persuasive elements and development of an argument in more challenging, complex, and highly complex texts, assessing whether the evidence provided is relevant, sound, and sufficient.
	Synthesis of Multiple Texts: Involves the ability to understand and analyze arguments in a text, including claims, counterclaims, and supporting evidence.	Analyze how different literary, thematic, and structural elements inform both shared and distinct ideas when comparing more challenging, complex, and highly complex texts, as well as synthesize information across texts to build new knowledge and insights.
	Visual and Quantitative Information: Involves the ability to understand and analyze visual information including tables, charts, graphs, and figures alongside text.	Analyze visual information to draw conclusions and determine how this information relates to more challenging, complex, and highly complex texts.

WRITING

The ACT Content Description

- *Time* – The test is 40-minutes long.
- *Concept* – The test presents students with a single writing task that assesses their ability to compose an effective argumentative essay.
- *Knowledge and skills tested* – The test measures knowledge areas and related skills reflected in the reporting categories for this test (further described in a chart below):
 - **Ideas and Analysis:** Students generate productive ideas and engage critically with multiple perspectives on the given issue. Proficient writers understand the issue they are invited to

address, the purpose for writing, and the audience. They generate ideas that are relevant to the situation.

- **Development and Support:** Students discuss ideas, offer rationale, and strengthen an argument. Proficient writers explain and explore their ideas, discuss implications, and illustrate through examples. They help the reader understand their thinking about the issue.
 - **Organization:** Students organize ideas with clarity and purpose; organizational choices are integral to effective writing. Proficient writers arrange their essay in a way that clearly shows the relationship among ideas, and they guide the reader through their discussion.
 - **Language Use and Conventions:** Students use written language to clearly convey ideas. Proficient writers make use of the conventions of grammar, syntax, word usage, and mechanics. They are also aware of their audience and adjust the style and tone of their writing to communicate effectively.
- *Format and question types* – Students respond to a prompt designed to elicit evidence of core thinking and writing competencies. This includes the ability to engage critically with a complex issue and multiple perspectives surrounding it.
 - Each prompt begins by describing a contemporary issue that is relevant and accessible to students.
 - The prompt also offers three different viewpoints on the issue.
 - Students are asked to establish a perspective on the given issue and relate their perspective to at least one other.
 - Students may adopt one of the perspectives given in the prompt as their own, or they may introduce one that is completely different from those given.
 - *Knowledge and skills not tested* – Students' scores will not be affected by the point of view they take on the issue.

Writing test scoring rubric. Student responses are scored with a four-domain analytic rubric. The domains of the analytic rubric used for scoring may be considered analogous to the reporting categories; the scores reported on the test are directly based on the rubric domains. The number of points possible in each domain is shown below. A table describing the reporting categories in detail follows this.

Reporting Category (Rubric Domain)	Number of Points	Percentage of Test
Ideas and Analysis	2–12	25%
Development and Support	2–12	25%
Organization	2–12	25%
Language Use and Convention	2–12	25%

The ACT Reporting Category Descriptions

Reporting Category (Rubric Domain)	Skill Area	Description/Examples
Ideas and Analysis	Purpose: Understanding the task and writing with purpose	<ol style="list-style-type: none"> 1. Generate a clear thesis that identifies the writer’s objective. 2. Engage with multiple perspectives on a complex issue.
	Critical Elements and Differing Perspectives: Analyzing critical elements of an issue and differing perspectives on it	<ol style="list-style-type: none"> 1. Establish a context for analysis; convey an understanding of the circumstances in which the tension or problem exists. 2. Consider implications, complexities and tensions, and/or underlying values and assumptions.
Development and Support	Reasoning and Evidence: Building and strengthening the argument	<ol style="list-style-type: none"> 1. Establish why the argument is worth considering. 2. Demonstrate reasoning, using examples as necessary, that reinforces the thesis and moves the writer and reader toward a deeper understanding of the issue. 3. Recognize factors that complicate or weaken the writer’s position and address potential critiques related to those complications or weaknesses.

Reporting Category (Rubric Domain)	Skill Area	Description/Examples
Organization	Connecting Ideas	1. Group and sequence ideas logically. Use transitions to clarify relationships among ideas.
	Organizational Strategy: Employing an organizational strategy	1. Unify the argument; connect ideas throughout the essay to the thesis. 2. Rely on a logical progression of ideas that explains the argument and its purpose.
Language Use and Conventions	Enhanced Meaning: Using language to enhance meaning	1. Make word choices that strengthen the argument. 2. Make effective stylistic choices (voice, tone, diction) that make the argument compelling.
	Conventions of Written English: Applying the conventions of standard written English	1. Compose clear sentences with varied structures. 2. Produce writing relatively free of errors in grammar, usage, and mechanics.

MATRIX: The ACT to Texas Standards

The ACT aligned to Texas College and Career Readiness Standards (CCRS) for English/Language Arts (revised 2018)

The ACT ELA Reporting Categories and Skill Areas	Texas College and Career Readiness Standards (CCRS) for English/Language Arts																						
	Writing					Reading																	
	A.1	A.2	I		A.5	A.1	A.2	A.3	A.4	A.5	A.6	A.7	A.8	II				C.1	C.2	C.3	D.1	D.2	D.3
READING																							
Key Ideas and Details																							
Close Reading																				X		X	
Relationships																							
Central Ideas, Themes, Summaries							X																
Craft and Structure																							
Word Meanings and Word Choice											X			X	X		X						
Text Structure							X		X		X			X									
Purpose and Point of View						X		X	X													X	
Integration of Knowledge and Ideas																							
Arguments									X	X													
Synthesis of Multiple Texts										X		X	X						X				
Visual and Quantitative Information										X													
ENGLISH																							
Production of Writing																							
Topic Development— Purpose and Focus	X	X	X	X		X	X	X	X	X	X												
Organization, Unity, and Cohesion	X		X	X		X	X	X	X		X												
Knowledge of Language																							
Expressing Ideas Clearly	X			X							X			X									
Style	X			X							X	X		X									
Conventions of Standard English																							
Sentence Structure and Formation					X																		
Usage Conventions					X																		
Punctuation Conventions					X																		

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Texas College and Career Readiness Standards (CCRS) for English/Language Arts																								
The ACT ELA Reporting Categories and Skill Areas	Writing					Reading																		
	I					II																		
	A.1	A.2	A.3	A.4	A.5	A.1	A.2	A.3	A.4	A.5	A.6	A.7	A.8	B.1	B.2	B.3	B.4	C.1	C.2	C.3	D.1	D.2	D.3	
WRITING																								
Ideas and Analysis																								
Purpose	X		X	X	X	X		X					X											
Critical Elements and Differing Perspectives		X	X	X	X								X											
Development and Support																								
Reasoning and Evidence		X	X	X	X					X			X											
Organization																								
Connecting Ideas		X	X	X	X								X											
Organizational Strategy	X	X	X	X	X								X											
Language Use and Conventions																								
Enhanced Meaning	X			X	X						X		X											
Conventions of Written English				X	X								X											

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The ACT ELA Reporting Categories and Skill Areas	Texas College and Career Readiness Standards (CCRS) for English/Language Arts																		
	Speaking					Listening					Research								
	A.1	A.2	A.3	A.4	A.5	A.1	A.2	A.3	A.4	A.5	A.1	A.2	A.3	B.1	B.2	B.3	C.1	C.2	C.3
READING (no matches) †																			
ENGLISH (no matches) †																			
WRITING																			
Ideas and Analysis																			
Purpose		X*		X*															
Critical Elements and Differing Perspectives		X*																	
Development and Support																			
Reasoning and Evidence					X*														
Organization																			
Connecting Ideas																		X*	
Organizational Strategy																		X*	
Language Use and Conventions																			
Enhanced Meaning			X*	X*				X*											
Conventions of Written English																			

* While the ACT Writing test does not directly measure the selected skill, development of and familiarity with it will contribute to development of skills that are directly measured by the Writing test.

† Standards requiring inferences about students' abilities to collaborate, speak and listen, extend and refine a practice over time, or execute their own research are not covered by the ACT summative assessments. Evidence to support such standards is best gathered directly from activities that are not currently practical in large-scale summative test administration conditions.

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The ACT ELA Reporting Categories and Skill Areas	Texas Essential Knowledge and Skills (TEKS) for English Language Arts and Reading, English III																																		
	Developing and Sustaining Foundational Language Skills						Comprehension Skills									Response Skills									Multiple Genres										
	1		2		3	4					5				6				7				F												
	A	B	C	D	A	B	C		A	B	C	D	E	F	G	H	I	J	A	B	C	D	A	B	C	D.i	D.ii	E.i	E.ii	E.iii	F				
WRITING																																			
Ideas and Analysis																																			
Purpose			X*																																
Critical Elements and Differing Perspectives			X*																																
Development and Support																																			
Reasoning and Evidence			X*																	X*															
Organization																																			
Connecting Ideas			X*																		X*														
Organizational Strategy			X*																		X*														
Language Use and Conventions																																			
Enhanced Meaning			X*																																
Conventions of Written English			X*																																

* While the ACT Writing test does not directly measure the selected skill, development of and familiarity with it will contribute to development of skills that are directly measured by the Writing test.

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Texas Essential Knowledge and Skills (TEKS) for English Language Arts and Reading, English III																												
The ACT ELA Reporting Categories and Skill Areas	Author's Purpose and Craft							Composition									Inquiry and Research											
	8							9					10				11											
	A	B	C	D	E	F	G	A	B.i	B.ii	C	D	E	A	B	C	D	E	F	A	B	C	D	E	F	G.i	G.ii	H
READING																												
Key Ideas and Details																												
Close Reading																												
Relationships																												
Central Ideas, Themes, Summaries	X																											
Craft and Structure																												
Word Meanings and Word Choice					X	X	X																					
Text Structure		X		X	X	X	X																					
Purpose and Point of View																												
Integration of Knowledge and Ideas																												
Arguments							X																					
Synthesis of Multiple Texts																												
Visual and Quantitative Information			X																									
ENGLISH																												
Production of Writing																												
Topic Development—Purpose and Focus	X			X					X	X																		
Organization, Unity, and Cohesion		X							X	X																		
Knowledge of Language																												
Expressing Ideas Clearly				X						X																		
Style										X																		
Conventions of Standard English																												
Sentence Structure and Formation										X	X																	
Usage Conventions										X	X																	
Punctuation Conventions										X	X																	

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Texas Essential Knowledge and Skills (TEKS) for English Language Arts and Reading, English III																														
The ACT ELA Reporting Categories and Skill Areas		Author's Purpose and Craft							Composition										Inquiry and Research											
		8							9					10					11											
		A	B	C	D	E	F	G	A	B.i	B.ii	C	D	E	A	B	C	D	E	F	A	B	C	D	E	F	G.i	G.ii	H	I
WRITING																														
Ideas and Analysis																														
Purpose	X*							X*		X*	X*					X*														
Critical Elements and Differing Perspectives										X*	X*					X*														
Development and Support																														
Reasoning and Evidence							X*			X*	X*					X*											X*			
Organization																														
Connecting Ideas									X*		X*					X*														
Organizational Strategy		X*							X*		X*					X*														
Language Use and Conventions																														
Enhanced Meaning				X*		X*	X*			X*	X*					X*			X*											
Conventions of Written English											X*	X*				X*														

* While the ACT Writing test does not directly measure the selected skill, development of and familiarity with it will contribute to development of skills that are directly measured by the Writing test.

The ACT Aligned to Texas Essential Knowledge and Skills (TEKS) for English Language Arts and Reading, English IV (adopted 2017)

The ACT ELA Reporting Categories and Skill Areas	Texas Essential Knowledge and Skills (TEKS) for English Language Arts and Reading, English IV																																										
	Developing and Sustaining Foundational Language Skills						Comprehension Skills									Response Skills									Multiple Genres																		
	1				2			3	4						5										6				7														
	A	B	C	D	A	B	C		A	B	C	D	E	F	G	H	I	A	B	C	D	E	F	G	H	I	J	A	B	C	D	A	B	C	D.i	D.ii	E.i	E.ii	E.iii	F			
READING																																											
Key Ideas and Details																																											
Close Reading														X	X		X			X																							
Relationships														X			X																										
Central Ideas, Themes, Summaries															X	X			X										X														
Craft and Structure																																											
Word Meanings and Word Choice						X	X										X																										
Text Structure						X											X												X														
Purpose and Point of View																	X											X															X
Integration of Knowledge and Ideas																																											
Arguments														X			X																										
Synthesis of Multiple Texts																X	X																										
Visual and Quantitative Information																	X																										
ENGLISH																																											
Production of Writing																																											
Topic Development—Purpose and Focus						X								X	X																												
Organization, Unity, and Cohesion																																											
Knowledge of Language																																											
Expressing Ideas Clearly						X																	X																				
Style																							X																				
Conventions of Standard English																																											
Sentence Structure and Formation																																											
Usage Conventions																																											
Punctuation Conventions																																											

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The ACT ELA Reporting Categories and Skill Areas	Texas Essential Knowledge and Skills (TEKS) for English Language Arts and Reading, English IV																														
	Developing and Sustaining Foundational Language Skills				Comprehension Skills									Response Skills									Multiple Genres								
	1		2		3	4					5				6		7			F											
	A	B	C	D	A	B	C		A	B	C	D	E	F	G	H	I	J	A	B	C	D	A	B	C	D.i	D.ii	E.i	E.ii	E.iii	F
WRITING																															
Ideas and Analysis																															
Purpose			X*																								X*	X*	X*		X*
Critical Elements and Differing Perspectives			X*																										X*		
Development and Support																															
Reasoning and Evidence			X*																X*		X*							X*			X*
Organization																															
Connecting Ideas			X*																		X*									X*	
Organizational Strategy			X*																		X*							X*	X*		
Language Use and Conventions																															
Enhanced Meaning			X*																												
Conventions of Written English			X*																												

* While the ACT Writing test does not directly measure the selected skill, development of and familiarity with it will contribute to development of skills that are directly measured by the Writing test.

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Texas Essential Knowledge and Skills (TEKS) for English Language Arts and Reading, English IV																												
The ACT ELA Reporting Categories and Skill Areas	Author's Purpose and Craft							Composition									Inquiry and Research											
	8							9					10				11											
	A	B	C	D	E	F	G	A	B.i	B.ii	C	D	E	A	B	C	D	E	F	A	B	C	D	E	F	G.i	G.ii	H
READING																												
Key Ideas and Details																												
Close Reading																												
Relationships																												
Central Ideas, Themes, Summaries	X																											
Craft and Structure																												
Word Meanings and Word Choice					X	X	X																					
Text Structure		X		X	X	X	X																					
Purpose and Point of View	X																											
Integration of Knowledge and Ideas																												
Arguments							X																					
Synthesis of Multiple Texts																												
Visual and Quantitative Information			X																									
ENGLISH																												
Production of Writing																												
Topic Development—Purpose and Focus	X			X					X	X																		
Organization, Unity, and Cohesion		X						X	X																			
Knowledge of Language																												
Expressing Ideas Clearly				X						X																		
Style										X																		
Conventions of Standard English																												
Sentence Structure and Formation										X	X																	
Usage Conventions										X	X																	
Punctuation Conventions										X	X																	

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The ACT ELA Reporting Categories and Skill Areas	Texas Essential Knowledge and Skills (TEKS) for English Language Arts and Reading, English IV																											
	Author's Purpose and Craft							Composition										Inquiry and Research										
	8							9					10					11										
	A	B	C	D	E	F	G	A	B.i	B.ii	C	D	E	A	B	C	D	E	F	A	B	C	D	E	F	G.i	G.ii	H
WRITING																												
Ideas and Analysis																												
Purpose	X*							X*		X*	X*					X*												
Critical Elements and Differing Perspectives										X*	X*					X*												
Development and Support																												
Reasoning and Evidence							X*			X*	X*					X*										X*		
Organization																												
Connecting Ideas									X*		X*					X*												
Organizational Strategy		X*							X*		X*					X*												
Language Use and Conventions																												
Enhanced Meaning				X*		X*	X*			X*	X*					X*			X*									
Conventions of Written English											X*	X*				X*												

* While the ACT Writing test does not directly measure the selected skill, development of and familiarity with it will contribute to development of skills that are directly measured by the Writing test.

CROSSWALK: Texas Standards to the ACT

Texas College and Career Readiness Standards (CCRS) for English/Language Arts (revised 2018) Aligned to the ACT

Texas College and Career Readiness Standards (CCRS) for English/Language Arts			The ACT ELA Reporting Categories and Skill Areas		
Strand	Standard Number	Standard	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
I. Writing	I.A	Compose a variety of texts that demonstrate clear focus, the logical development of ideas in well-organized paragraphs, and the use of appropriate language that advances the author's purpose.			
	I.A.1	Determine effective approaches, genres, rhetorical techniques, and media that demonstrate understanding of the writer's purpose and audience.	Production of Writing: Topic Development—Purpose and Focus; Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly; Style		Ideas and Analysis: Purpose Organization: Organizational Strategy Language Use and Conventions: Enhanced Meaning
	I.A.2	Generate ideas, gather information, and manage evidence relevant to the topic and purpose.			Ideas and Analysis: Critical Elements and Differing Perspectives Development and Support: Reasoning and Evidence Organization: Connected Ideas; Organizational Strategy
	I.A.3	Evaluate relevance, quality, sufficiency, and depth of preliminary ideas and information; organize material generated; and formulate a thesis or purpose statement.			Ideas and Analysis: Purpose; Critical Elements and Differing Perspectives Development and Support: Reasoning and Evidence Organization: Connected Ideas; Organizational Strategy
	I.A.4	Review feedback and revise each draft by organizing it more logically and fluidly, refining key ideas, and using language more precisely and effectively.			All reporting categories
	I.A.5	Edit writing for audience, purpose, context, and style, assuring that it conforms to Standard American English, when appropriate.			All reporting categories
II. Reading	II.A	Identify, analyze, and evaluate information within and across texts of varying lengths and genres.			
	II.A.1	Use effective reading strategies to determine a written work's purpose and intended audience.	Production of Writing: Topic Development—Purpose and Focus; Organization, Unity, and Cohesion	Craft and Structure: Purpose and Point of View	Ideas and Analysis: Purpose
	II.A.2	Use text features to form an overview of content and to locate information.	Production of Writing: Topic Development—Purpose and Focus; Organization, Unity, and Cohesion	Key Ideas and Details: Central Ideas, Themes, Summaries Craft and Structure: Text Structure	
	II.A.3	Identify explicit and implicit textual information including main ideas and author's purpose.	Production of Writing: Topic Development—Purpose and Focus; Organization, Unity, and Cohesion	Craft and Structure: Purpose and Point of View	Ideas and Analysis: Purpose

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Texas College and Career Readiness Standards (CCRS) for English/Language Arts			The ACT ELA Reporting Categories and Skill Areas		
Strand	Standard Number	Standard	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
	II.A.4	Make evidence-based inferences about a text's meaning, intent, and values.	Production of Writing: Topic Development—Purpose and Focus; Organization, Unity, and Cohesion	Craft and Structure: Text Structure; Purpose and Point of View Integration of Knowledge and Ideas: Arguments	
	II.A.5	Analyze and evaluate implicit and explicit arguments in a variety of texts for the quality and coherence of evidence and reasoning.		Integration of Knowledge and Ideas: Arguments; Visual and Quantitative Information	Development and Support: Reasoning and Evidence
	II.A.6	Identify and analyze the author's use of rhetorical and literary devices to create meaning and affect the reader.	Production of Writing: Topic Development—Purpose and Focus; Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly; Style	Craft and Structure: Text Structure; Word Meanings and Word Choice	Language Use and Conventions: Enhanced Meaning
	II.A.7	Compare and analyze how features of genre are used across texts.		Integration of Knowledge and Ideas: Synthesis of Multiple Texts	
	II.A.8	Identify, analyze, and evaluate similarities and differences in how multiple texts present information, argue a position, or relate a theme.		Integration of Knowledge and Ideas: Synthesis of Multiple Texts	All reporting categories
	II.B	Apply a variety of strategies to determine the meanings of unfamiliar words and phrases.			
	II.B.1	Identify new words and concepts acquired through study of their relationships to other words and concepts.	Knowledge of Language: Expressing Ideas Clearly; Style	Key Ideas and Details: Central Ideas, Themes, Summaries Craft and Structure: Text Structure	
	II.B.2	Apply knowledge of roots and affixes to infer the meanings of new words.		Craft and Structure: Word Meanings and Word Choice	
	II.B.3	Use reference guides to confirm the meanings of new words or concepts.		<i>Not appropriate for large-scale standardized testing</i>	
	II.B.4	Make inferences about the denotative and connotative meanings of unfamiliar words using context clues.		Craft and Structure: Word Meanings and Word Choice	
	II.C	Read and analyze literary and other texts from a variety of cultural and historical contexts.			
	II.C.1	Read widely, including complete texts from American, British, and world literatures.		<i>Not appropriate for large-scale standardized testing</i>	
	II.C.2	Analyze the relationships between works of literature and the historical periods and cultural contexts in which they were written.		Integration of Knowledge and Ideas: Synthesis of Multiple Texts Key Ideas and Details: Close Reading	

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Texas College and Career Readiness Standards (CCRS) for English/Language Arts			The ACT ELA Reporting Categories and Skill Areas		
Strand	Standard Number	Standard	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
	II.C.3	Examine the influence of myths, oral traditions, and Classical literature on subsequent works over time.		<i>Not appropriate for large-scale standardized testing</i>	
	II.D	Acquire insights about oneself, others, or the world from reading diverse texts.		<i>Not appropriate for large-scale standardized testing</i>	
	II.D.1	Make text-to-self, text-to-text, and text-to-world connections.		Key Ideas and Details: Close Reading Craft and Structure: Purpose and Point of View	
	II.D.2	Recognize the potential of diverse texts to cultivate empathy.			
III. Speaking	III.A	Understand the elements of both formal and informal communication in group discussions, one-on-one situations, and presentations.	<i>The ACT does not directly assess speaking skills.</i>	<i>The ACT does not directly assess speaking skills.</i>	<i>The ACT does not directly assess speaking skills.</i>
	III.A.1	Participate actively, effectively, and respectfully in one-on-one oral communication as well as in group discussions.			
	III.A.2	Engage in reasoned dialogue, including with differing perspectives.			<i>Indirect association listed:</i> Ideas and Analysis: Purpose; Critical Elements and Differing Perspectives
	III.A.3	Understand how style, register, and content of spoken language vary in different contexts and influence the listener's understanding.			<i>Indirect association listed:</i> Language Use and Conventions: Enhanced Meaning
	III.A.4	Adjust delivery, vocabulary, and length of message for particular audiences, purposes, and contexts.			<i>Indirect association listed:</i> Ideas and Analysis: Purpose; Critical Elements and Differing Perspectives Language Use and Conventions: Enhanced Meaning
	III.A.5	Plan and deliver focused, coherent presentations that convey clear and distinct perspectives and demonstrate sound reasoning			<i>Indirect association listed:</i> Development and Support: Reasoning and Evidence
IV. Listening	IV.A	Apply listening skills in a variety of settings and contexts.	<i>The ACT does not directly assess listening skills.</i>	<i>The ACT does not directly assess listening skills.</i>	<i>The ACT does not directly assess listening skills.</i>
	IV.A.1	Use a variety of active listening strategies to enhance comprehension.			
	IV.A.2	Listen critically and respond appropriately.			<i>Indirect association listed:</i> Language Use and Conventions: Enhanced Meaning
	IV.A.3	Develop an awareness of rhetorical and stylistic choices used to convey a message.			
	IV.A.4	Comprehend detailed instructions, explanations, and directions in a range of contexts (e.g., specialized contexts such as workplace procedures and operating instructions).			

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Texas College and Career Readiness Standards (CCRS) for English/Language Arts			The ACT ELA Reporting Categories and Skill Areas		
Strand	Standard Number	Standard	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
	IV.A.5	Recognize fillers, intentional pauses, and placeholders in speech (e.g., um) and make inferences in context.			
V. Research	V.A	Formulate topic and questions.	<i>The ACT does not directly assess research skills.</i>	<i>The ACT does not directly assess research skills.</i>	<i>The ACT does not directly assess research skills.</i>
	V.A.1	Articulate and investigate research questions.			
	V.A.2	Explore and refine a research topic.			
	V.A.3	Devise a plan for completing work on time.			
	V.B	Locate, evaluate, and select information from a variety of sources.			
	V.B.1	Explore and collect a range of potential sources.			
	V.B.2	Distinguish between and among primary and secondary sources.			
	V.B.3	Assess the relevance and credibility of sources.			
	V.C	Design and produce an effective product.			<i>Indirect association listed: Organization: Connected Ideas; Organizational Strategy</i>
	V.C.1	Integrate and organize material effectively.			
	V.C.2	Use and attribute source material ethically.			
	V.C.3	Follow relevant rules governing attribution.			

Texas Essential Knowledge and Skills (TEKS) for English Language Arts and Reading, English III (adopted 2017) Aligned to ACT

Texas Essential Knowledge and Skills (TEKS) for English Language Arts and Reading, English III			The ACT ELA Reporting Categories and Skill Areas		
Strand	Standard Number	Standard	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
(c) Knowledge and Skills	1	Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking – oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:	<i>The ACT does not directly assess foundational language skills.</i>	<i>The ACT does not directly assess foundational language skills.</i>	<i>The ACT does not directly assess foundational language skills.</i>
	1.A	engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker’s message and critiquing the impact of a speaker’s use of diction and syntax;			
	1.B	follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;			
		give a formal presentation that exhibits a logical structure, smooth transitions, accurate evidence, well-chosen details, and rhetorical devices and that employs eye contact, speaking rate such as pauses for effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and			<i>Indirect association listed: All reporting categories</i>
		participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.			
	2	Developing and sustaining foundational language skills: listening, speaking, reading, writing, and thinking – vocabulary. The student uses newly acquired vocabulary expressively. The student is expected to:			
	2.A	use print or digital resources to clarify and validate understanding of multiple meanings of advanced vocabulary;			
	2.B	analyze context to draw conclusions about nuanced meanings such as in imagery; and	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly	Craft and Structure: Word Meanings and Word Choice; Text Structure	
2.C	determine the meaning of foreign words or phrases used frequently in English such as ad hoc, faux pas, non sequitur, and modus operandi.		Craft and Structure: Word Meanings and Word Choice		

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Texas Essential Knowledge and Skills (TEKS) for English Language Arts and Reading, English III			The ACT ELA Reporting Categories and Skill Areas		
Strand	Standard Number	Standard	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
	3	Developing and sustaining foundational language skills: listening, speaking, reading, writing, and thinking – self-sustained reading. The student reads grade-appropriate texts independently. The student is expected to self-select text and read independently for a sustained period of time.	<i>Not appropriate for large-scale standardized testing</i>	<i>Not appropriate for large-scale standardized testing</i>	<i>Not appropriate for large-scale standardized testing</i>
	4	Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:			
	4.A	establish purpose for reading assigned and self-selected texts;			
	4.B	generate questions about text before, during, and after reading to deepen understanding and gain information;			
	4.C	make and correct or confirm predictions using text features, characteristics of genre, and structures;			
	4.D	create mental images to deepen understanding;			
	4.E	make connections to personal experiences, ideas in other texts, and society;			
	4.F	make inferences and use evidence to support understanding;	Production of Writing: Topic Development—Purpose and Focus	Key Ideas and Details: Close Reading Integration of Knowledge and Ideas: Arguments	
	4.G	evaluate details read to understand key ideas;	Production of Writing: Topic Development—Purpose and Focus	Key Ideas and Details: Close Reading; Central Ideas, Themes, Summaries	
	4.H	synthesize information from a variety of text types to create new understanding; and		Integration of Knowledge and Ideas: Synthesis of Multiple Texts	
	4.I	monitor comprehension and make adjustments such as re-reading, using background knowledge, asking questions, annotating, and using outside sources when understanding breaks down.		<i>All reporting categories</i>	
	5	Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:			
	5.A	describe personal connections to a variety of sources, including self-selected texts;			
	5.B	write responses that demonstrate analysis of texts, including comparing texts within and across genres;			

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Texas Essential Knowledge and Skills (TEKS) for English Language Arts and Reading, English III			The ACT ELA Reporting Categories and Skill Areas		
Strand	Standard Number	Standard	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
	5.C	use text evidence and original commentary to support an analytic response;			<i>Indirect association listed:</i> Development and Support: Reasoning and Evidence
	5.D	paraphrase and summarize texts in ways that maintain meaning and logical order;		Key Ideas and Details: Close Reading; Central Ideas, Themes, Summaries	<i>Indirect association listed:</i> Organization: Connecting Ideas; Organizational Strategy
	5.E	interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;			
	5.F	respond using acquired content and academic vocabulary as appropriate;	Knowledge of Language: Expressing Ideas Clearly; Style		<i>Indirect association listed:</i> Development and Support: Reasoning and Evidence Language Use and Conventions: Enhanced Meaning
	5.G	discuss and write about the explicit and implicit meanings of text;			
	5.H	respond orally or in writing with appropriate register and effective vocabulary, tone, and voice;			Language Use and Conventions: Enhanced Meaning
	5.I	reflect on and adjust responses when valid evidence warrants; and			<i>Indirect association listed:</i> Development and Support: Reasoning and Evidence
	5.J	defend or challenge the authors' claims using relevant text evidence.			<i>Indirect association listed:</i> Development and Support: Reasoning and Evidence
	6	Multiple genres: listening, speaking, reading, writing, and thinking using multiple texts – literary elements. The student recognizes and analyzes literary elements within and across increasingly complex traditional, contemporary, classical, and diverse literary texts. The student is expected to:			
	6.A	analyze relationships among thematic development, characterization, point of view, significance of setting, and plot in a variety of literary texts;		Key Ideas and Details: Close Reading; Central Ideas, Themes, Summaries Craft and Structure: Purpose and Point of View	
	6.B	analyze how characters' behaviors and underlying motivations contribute to moral dilemmas that influence the plot and theme;		Key Ideas and Details: Close Reading	
	6.C	evaluate how different literary elements shape the author's portrayal of the plot; and		Craft and Structure: Text Structure; Word Meanings and Word Choice	
	6.D	analyze how the historical, social, and economic context of setting(s) influences the plot, characterization, and theme.			

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Texas Essential Knowledge and Skills (TEKS) for English Language Arts and Reading, English III			The ACT ELA Reporting Categories and Skill Areas		
Strand	Standard Number	Standard	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
	7	Multiple genres: listening, speaking, reading, writing, and thinking using multiple texts – genres. The student recognizes and analyzes genre-specific characteristics, structures, and purposes within and across increasingly complex traditional, contemporary, classical, and diverse texts. The student is expected to:			
	7.A	read and analyze American literature across literary periods;			
	7.B	analyze relationships among characteristics of poetry, including stanzas, line breaks, speaker, and sound devices in poems across a variety of poetic forms;			
	7.C	analyze how the relationships among dramatic elements advance the plot;			
	7.D	analyze characteristics and structural elements of informational texts such as:			
	7.D.i	clear thesis, strong supporting evidence, pertinent examples, commentary, summary, and conclusion; and	Production of Writing: Organization, Unity, and Cohesion	Key Ideas and Details: Central Ideas, Themes, Summaries Integration of Knowledge and Ideas: Arguments	<i>Indirect association listed:</i> Ideas and Analysis: Purpose; Critical Elements and Differing Perspectives Development and Support: Reasoning and Evidence
	7.D.ii	the relationship between organizational design and author's purpose;	Production of Writing: Organization, Unity, and Cohesion	Craft and Structure: Text Structure	<i>Indirect association listed:</i> Ideas and Analysis: Purpose Organization: Organizational Strategy
	7.E	analyze characteristics and structural elements of argumentative texts such as:			
	7.E.i	clear arguable thesis, appeals, structure of the argument, convincing conclusion, and call to action;	Production of Writing: Organization, Unity, and Cohesion	Integration of Knowledge and Ideas: Arguments	<i>Indirect association listed:</i> Ideas and Analysis: Purpose; Critical Elements and Differing Perspectives Organization: Connecting Ideas; Organizational Strategy
	7.E.ii	various types of evidence and treatment of counterarguments, including concessions and rebuttals; and		Integration of Knowledge and Ideas: Arguments Craft and Structure: Purpose and Point of View	<i>Indirect association listed:</i> Development and Support: Reasoning and Evidence
	7.E.iii	identifiable audience or reader; and			<i>Indirect association listed:</i> Ideas and Analysis: Purpose

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Texas Essential Knowledge and Skills (TEKS) for English Language Arts and Reading, English III			The ACT ELA Reporting Categories and Skill Areas		
Strand	Standard Number	Standard	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
	7.F	analyze the effectiveness of characteristics of multimodal and digital texts.			
	8	Author's purpose and craft: listening, speaking, reading, writing, and thinking using multiple texts. The student uses critical inquiry to analyze the authors' choices and how they influence and communicate meaning within a variety of texts. The student analyzes and applies author's craft purposefully in order to develop his or her own products and performances. The student is expected to:			
	8.A	analyze the author's purpose, audience, and message within a text;	<i>Production of Writing:</i> Topic Development—Purpose and Focus	<i>Craft and Structure:</i> Purpose and Point of View; Central Ideas, Themes, Summaries	<i>Indirect association listed:</i> Ideas and Analysis: Purpose
	8.B	evaluate use of text structure to achieve the author's purpose;	<i>Production of Writing:</i> Organization, Unity, and Cohesion	<i>Craft and Structure:</i> Text Structure	<i>Indirect association listed:</i> Organization: Organizational Strategy
	8.C	evaluate the author's use of print and graphic features to achieve specific purposes;		<i>Integration of Knowledge and Ideas:</i> Visual and Quantitative Information	
	8.D	evaluate how the author's use of language informs and shapes the perception of readers;	<i>Production of Writing:</i> Topic Development—Purpose and Focus <i>Knowledge of Language:</i> Expressing Ideas Clearly	<i>Craft and Structure:</i> Text Structure	<i>Indirect association listed:</i> Language Use and Conventions: Enhanced Meaning
	8.E	evaluate the use of literary devices such as paradox, satire, and allegory to achieve specific purposes;		<i>Craft and Structure:</i> Text Structure	
	8.F	evaluate how the author's diction and syntax contribute to the mood, voice, and tone of a text; and		<i>Craft and Structure:</i> Text Structure	<i>Indirect association listed:</i> Language Use and Conventions: Enhanced Meaning
	8.G	analyze the effects of rhetorical devices and logical fallacies on the way the text is read and understood.		<i>Craft and Structure:</i> Text Structure <i>Integration of Knowledge and Ideas:</i> Arguments	<i>Indirect association listed:</i> Development and Support: Reasoning and Evidence Language Use and Conventions: Enhanced Meaning
	9	Composition: listening, speaking, reading, writing, and thinking using multiple texts – writing process. The student uses the writing process recursively to compose multiple texts that are legible and use appropriate conventions. The student is expected to:			

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Texas Essential Knowledge and Skills (TEKS) for English Language Arts and Reading, English III			The ACT ELA Reporting Categories and Skill Areas		
Strand	Standard Number	Standard	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
	9.A	plan a piece of writing appropriate for various purposes and audiences by generating ideas through a range of strategies such as brainstorming, journaling, reading, or discussing;			Ideas and Analysis: Purpose
	9.B	develop drafts into a focused, structured, and coherent piece of writing in timed and open-ended situations by:			
	9.B.i	using strategic organizational structures appropriate to purpose, audience, topic, and context; and	Production of Writing: Organization, Unity, and Cohesion		Organization: Connecting Ideas; Organizational Strategy
	9.B.ii	developing an engaging idea reflecting depth of thought with effective use of rhetorical devices, details, examples, and commentary;	Production of Writing: Topic Development—Purpose and Focus		Ideas and Analysis: Purpose; Critical Elements and Differing Perspectives Development and Support: Reasoning and Evidence Language Use and Conventions: Enhanced Meaning
	9.C	revise drafts to improve clarity, development, organization, style, diction, and sentence fluency, both within and between sentences;	Production of Writing: Topic Development—Purpose and Focus; Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly; Style Conventions of Standard English: Sentence Structure and Formation; Usage Conventions; Punctuation Conventions		All reporting categories
	9.D	edit drafts to demonstrate a command of standard English conventions using a style guide as appropriate; and	Conventions of Standard English: Sentence Structure and Formation; Usage Conventions; Punctuation Conventions		Language Use and Conventions: Conventions of Written English
	9.E	publish written work for appropriate audiences.			
	10	Composition: listening, speaking, reading, writing, and thinking using multiple texts – genres. The student uses genre characteristics and craft to compose multiple texts that are meaningful. The student is expected to:			
	10.A	compose literary texts such as fiction and poetry using genre characteristics and craft;			
	10.B	compose informational texts such as explanatory essays, reports, resumes, and personal essays using genre characteristics and craft;			
	10.C	compose argumentative texts using genre characteristics and craft;			All reporting categories

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Texas Essential Knowledge and Skills (TEKS) for English Language Arts and Reading, English III			The ACT ELA Reporting Categories and Skill Areas		
Strand	Standard Number	Standard	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
	10.D	compose correspondence in a professional or friendly structure;			
	10.E	compose literary analysis using genre characteristics and craft; and			
	10.F	compose rhetorical analysis using genre characteristics and craft.			Language Use and Conventions: Enhanced Meaning
	11	Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:	<i>Not appropriate for large-scale standardized testing</i>	<i>Not appropriate for large-scale standardized testing</i>	<i>Not appropriate for large-scale standardized testing</i>
	11.A	develop questions for formal and informal inquiry;			
	11.B	critique the research process at each step to implement changes as needs occur and are identified;			
	11.C	develop and revise a plan;			
	11.D	modify the major research question as necessary to refocus the research plan;			
	11.E	locate relevant sources;			
	11.F	synthesize information from a variety of sources;			
	11.G	examine sources for:			
	11.G.i	credibility, bias, and accuracy; and			
	11.G.ii	faulty reasoning such as post hoc-ad hoc, circular reasoning, red herring, and assumptions;			<i>Indirect association listed: Development and Support: Reasoning and Evidence</i>
	11.H	display academic citations, including for paraphrased and quoted text, and use source materials ethically to avoid plagiarism; and			
	11.I	use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.			

Texas Essential Knowledge and Skills (TEKS) for English Language Arts and Reading, English IV (adopted 2017) Aligned to ACT

Texas Essential Knowledge and Skills (TEKS) for English Language Arts and Reading, English IV			The ACT ELA Reporting Categories and Skill Areas		
Strand	Standard Number	Standard	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
(c) Knowledge and Skills	1	Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking – oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:			
	1.A	engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker’s message and critiquing the impact of a speaker’s use of diction, syntax, and rhetorical strategies;			
	1.B	follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;			
	1.C	formulate sound arguments and present using elements of classical speeches such as introduction, first and second transitions, body, conclusion, the art of persuasion, rhetorical devices, employing eye contact, speaking rate such as pauses for effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and			<i>Indirect association listed: All reporting categories</i>
	1.D	participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.			
2		Developing and sustaining foundational language skills: listening, speaking, reading, writing, and thinking – vocabulary. The student uses newly acquired vocabulary expressively. The student is expected to:			
	2.A	use print or digital resources to clarify and validate understanding of multiple meanings of advanced vocabulary;			
	2.B	analyze context to draw conclusions about nuanced meanings such as in imagery; and	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly	Craft and Structure: Word Meanings and Word Choice; Text Structure	
	2.C	determine the meaning of foreign words or phrases used frequently in English such as ad nauseum, in loco parentis, laissez-faire, and caveat emptor.		Craft and Structure: Word Meanings and Word Choice	

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Texas Essential Knowledge and Skills (TEKS) for English Language Arts and Reading, English IV			The ACT ELA Reporting Categories and Skill Areas		
Strand	Standard Number	Standard	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
	3	Developing and sustaining foundational language skills: listening, speaking, reading, writing, and thinking – self-sustained reading. The student reads grade-appropriate texts independently. The student is expected to self-select text and read independently for a sustained period of time.	<i>Not appropriate for large-scale standardized testing</i>	<i>Not appropriate for large-scale standardized testing</i>	<i>Not appropriate for large-scale standardized testing</i>
	4	Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:			
	4.A	establish purpose for reading assigned and self-selected texts;			
	4.B	generate questions about text before, during, and after reading to deepen understanding and gain information;			
	4.C	make and correct or confirm predictions using text features, characteristics of genre, and structures;			
	4.D	create mental images to deepen understanding;			
	4.E	make connections to personal experiences, ideas in other texts, and society;			
	4.F	make inferences and use evidence to support understanding;	Production of Writing: Topic Development—Purpose and Focus	Key Ideas and Details: Close Reading Integration of Knowledge and Ideas: Arguments	
	4.G	evaluate details read to analyze key ideas;	Production of Writing: Topic Development—Purpose and Focus	Key Ideas and Details: Close Reading; Central Ideas, Themes, Summaries	
	4.H	synthesize information from a variety of text types to create new understanding; and		Integration of Knowledge and Ideas: Synthesis of Multiple Texts	
	4.I	monitor comprehension and make adjustments such as re-reading, using background knowledge, asking questions, annotating, and using outside sources when understanding breaks down.		All reporting categories	
	5	Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:			
	5.A	describe personal connections to a variety of sources, including self-selected texts;			
	5.B	write responses that demonstrate analysis of texts, including comparing texts within and across genres;			

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Texas Essential Knowledge and Skills (TEKS) for English Language Arts and Reading, English IV			The ACT ELA Reporting Categories and Skill Areas		
Strand	Standard Number	Standard	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
	5.C	use text evidence and original commentary to support an evaluative response;			<i>Indirect association listed:</i> Development and Support: Reasoning and Evidence
	5.D	paraphrase and summarize texts in ways that maintain meaning and logical order;		Key Ideas and Details: Close Reading – Paraphrasing; Central Ideas, Themes, Summaries – Summarizing	<i>Indirect association listed:</i> Organization: Connecting Ideas; Organizational Strategy
	5.E	interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;			
	5.F	respond using acquired content and academic vocabulary as appropriate;	Knowledge of Language: Expressing Ideas Clearly; Style		<i>Indirect association listed:</i> Development and Support: Reasoning and Evidence Language Use and Conventions: Enhanced Meaning
	5.G	discuss and write about the explicit and implicit meanings of text;			
	5.H	respond orally or in writing with appropriate register and purposeful vocabulary, tone, and voice;			
	5.I	reflect on and adjust responses when valid evidence warrants; and			
	5.J	defend or challenge the authors' claims using relevant text evidence.			
	6	Multiple genres: listening, speaking, reading, writing, and thinking using multiple texts – literary elements. The student recognizes and analyzes literary elements within and across increasingly complex traditional, contemporary, classical, and diverse literary texts. The student is expected to:			
	6.A	analyze relationships among thematic development, characterization, point of view, significance of setting, and plot in a variety of literary texts;		Key Ideas and Details: Close Reading; Central Ideas, Themes, Summaries Craft and Structure: Purpose and Point of View	
	6.B	analyze how characters' behaviors and underlying motivations contribute to moral dilemmas that influence the plot and theme;		Key Ideas and Details: Close Reading	
	6.C	critique and evaluate how complex plot structures such as subplots contribute to and advance the action; and		Key Ideas and Details: Close Reading Craft and Structure: Text Structure	
	6.D	evaluate how the historical, social, and economic context of setting(s) influences the plot, characterization, and theme.			

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Texas Essential Knowledge and Skills (TEKS) for English Language Arts and Reading, English IV			The ACT ELA Reporting Categories and Skill Areas		
Strand	Standard Number	Standard	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
	7	Multiple genres: listening, speaking, reading, writing, and thinking using multiple texts – genres. The student recognizes and analyzes genre-specific characteristics, structures, and purposes within and cross increasingly complex traditional, contemporary, classical, and diverse texts. The student is expected to:			
	7.A	read and analyze British literature across literary periods;			
	7.B	analyze the effects of sound, form, figurative language, graphics, and dramatic structure in poetry across literary time periods and cultures;			
	7.C	analyze and evaluate how the relationships among the dramatic elements advance the plot;			
	7.D	critique and evaluate characteristics and structural elements of informational texts such as:			
	7.D.i	clear thesis, effective supporting evidence, pertinent examples, commentary, summary, and conclusion; and	Production of Writing: Organization, Unity, and Cohesion	Key Ideas and Details: Central Ideas, Themes, Summaries Craft and Structure: Purpose and Point of View Integration of Knowledge and Ideas: Arguments	<i>Indirect association listed:</i> Ideas and Analysis: Purpose; Critical Elements and Differing Perspectives Development and Support: Reasoning and Evidence
	7.D.ii	the relationship between organizational design and author's purpose;	Production of Writing: Organization, Unity, and Cohesion	Craft and Structure: Text Structure – Overall Text Structure	<i>Indirect association listed:</i> Ideas and Analysis: Purpose Organization: Organizational Strategy
	7.E	critique and evaluate characteristics and structural elements of argumentative texts such as:			
	7.E.i	clear arguable thesis, appeals, structure of the argument, convincing conclusion, and call to action	Production of Writing: Organization, Unity, and Cohesion	Integration of Knowledge and Ideas: Arguments	<i>Indirect association listed:</i> Ideas and Analysis: Purpose; Critical Elements and Differing Perspectives Organization: Connecting Ideas; Organizational Strategy
	7.E.ii	various types of evidence and treatment of counterarguments, including concessions and rebuttals; and		Integration of Knowledge and Ideas: Arguments Craft and Structure: Purpose and Point of View	<i>Indirect association listed:</i> Development and Support: Reasoning and Evidence
	7.E.iii	identifiable audience or reader; and			<i>Indirect association listed:</i> Ideas and Analysis: Purpose
	7.F	critique and evaluate the effectiveness of characteristics of multimodal and digital texts.			

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Texas Essential Knowledge and Skills (TEKS) for English Language Arts and Reading, English IV			The ACT ELA Reporting Categories and Skill Areas		
Strand	Standard Number	Standard	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
	8	Author's purpose and craft: listening, speaking, reading, writing, and thinking using multiple texts. The student uses critical inquiry to analyze the authors' choices and how they influence and communicate meaning within a variety of texts. The student analyzes and applies author's craft purposefully in order to develop his or her own products and performances. The student is expected to:			
	8.A	evaluate the author's purpose, audience, and message within a text;	<i>Production of Writing</i> : Topic Development—Purpose and Focus	<i>Craft and Structure</i> : Purpose and Point of View; Central Ideas, Themes, Summaries	<i>Indirect association listed</i> : <i>Ideas and Analysis</i> : Purpose
	8.B	evaluate use of text structure to achieve the author's purpose;	<i>Production of Writing</i> : Organization, Unity, and Cohesion	<i>Craft and Structure</i> : Text Structure	<i>Indirect association listed</i> : <i>Organization</i> : Organizational Strategy
	8.C	evaluate the author's use of print and graphic features to achieve specific purposes;		<i>Integration of Knowledge and Ideas</i> : Visual and Quantitative Information	
	8.D	critique and evaluate how the author's use of language informs and shapes the perception of readers;	<i>Production of Writing</i> : Topic Development—Purpose and Focus <i>Knowledge of Language</i> : Expressing Ideas Clearly	<i>Craft and Structure</i> : Text Structure	<i>Indirect association listed</i> : <i>Language Use and Conventions</i> : Enhanced Meaning
	8.E	evaluate the use of literary devices such as paradox, satire, and allegory to achieve specific purposes;		<i>Craft and Structure</i> : Text Structure; Word Meanings and Word Choice	
	8.F	evaluate how the author's diction and syntax contribute to the effectiveness of a text; and		<i>Craft and Structure</i> : Text Structure Word Meanings and Word Choice	<i>Indirect association listed</i> : <i>Language Use and Conventions</i> : Enhanced Meaning
	8.G	analyze the effects of rhetorical devices and logical fallacies on the way the text is read and understood.		<i>Craft and Structure</i> : Text Structure; Word Meanings and Word Choice <i>Integration of Knowledge and Ideas</i> : Arguments	<i>Indirect association listed</i> : <i>Development and Support</i> : Reasoning and Evidence <i>Language Use and Conventions</i> : Enhanced Meaning
	9	Composition: listening, speaking, reading, writing, and thinking using multiple texts – writing process. The student uses the writing process recursively to compose multiple texts that are legible and use appropriate conventions. The student is expected to:			
	9.A	plan a piece of writing appropriate for various purposes and audiences by generating ideas through a range of strategies such as brainstorming, journaling, reading, or discussing;			<i>Ideas and Analysis</i> : Purpose

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Texas Essential Knowledge and Skills (TEKS) for English Language Arts and Reading, English IV			The ACT ELA Reporting Categories and Skill Areas		
Strand	Standard Number	Standard	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
	9.B	develop drafts into a focused, structured, and coherent piece of writing in timed and open-ended situations by:			
	9.B.i	using strategic organizational structures appropriate to purpose, audience, topic, and context; and	Production of Writing: Organization, Unity, and Cohesion		Organization: Connecting Ideas; Organizational Strategy
	9.B.ii	developing an engaging idea reflecting depth of thought with effective use of rhetorical devices, details, examples, and commentary;	Production of Writing: Topic Development—Purpose and Focus		Ideas and Analysis: Purpose; Critical Elements and Differing Perspectives Development and Support: Reasoning and Evidence Language Use and Conventions: Enhanced Meaning
	9.C	revise drafts to improve clarity, development, organization, style, diction, and sentence fluency, both within and between sentences;	Production of Writing: Topic Development—Purpose and Focus; Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly; Style Conventions of Standard English: Sentence Structure and Formation; Usage Conventions; Punctuation Conventions		All reporting categories
	9.D	edit drafts to demonstrate a command of standard English conventions using a style guide as appropriate; and	Conventions of Standard English: Sentence Structure and Formation; Usage Conventions; Punctuation Conventions		Language Use and Conventions: Conventions of Written English
	9.E	publish written work for appropriate audiences.			
	10	Composition: listening, speaking, reading, writing, and thinking using multiple texts – genres. The student uses genre characteristics and craft to compose multiple texts that are meaningful. The student is expected to:			
	10.A	compose literary texts such as fiction and poetry using genre characteristics and craft;			
	10.B	compose informational texts such as explanatory essays, reports, resumes, and personal essays using genre characteristics and craft;			
	10.C	compose argumentative texts using genre characteristics and craft;			All reporting categories
	10.D	compose correspondence in a professional or friendly structure;			
	10.E	compose literary analysis using genre characteristics and craft; and			
	10.F	compose rhetorical analysis using genre characteristics and craft.			<i>Indirect association listed:</i> Language Use and Conventions: Enhanced Meaning

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Texas Essential Knowledge and Skills (TEKS) for English Language Arts and Reading, English IV			The ACT ELA Reporting Categories and Skill Areas		
Strand	Standard Number	Standard	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
	11	Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:	<i>Not appropriate for large-scale standardized testing</i>	<i>Not appropriate for large-scale standardized testing</i>	
	11.A	develop questions for formal and informal inquiry;			
	11.B	critique the research process at each step to implement changes as needs occur and are identified;			
	11.C	develop and revise a plan;			
	11.D	modify the major research question as necessary to refocus the research plan;			
	11.E	locate relevant sources;			
	11.F	synthesize information from a variety of sources;			
	11.G	examine sources for:			
	11.G.i	credibility, bias, and accuracy; and			
	11.G.ii	faulty reasoning such as straw man, false dilemma, faulty analogies, and non-sequitur;			<i>Indirect association listed: Development and Support: Reasoning and Evidence</i>
	11.H	display academic citations, including for paraphrased and quoted text, and use source materials ethically to avoid plagiarism; and			
	11.I	use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.			

VI. Mathematics

The ACT Content Description

- *Item tally and time* – The ACT mathematics test is a 40-item, 35-minute test.
- *Concept* – The test measures the whole of a student’s mathematical development of topics typically taught up to the beginning of Grade 12 in US schools. It focuses on the prerequisite knowledge and skills important for success in college mathematics courses and career training programs.
- *Knowledge and skills tested* – The test measures knowledge areas and related skills reflected in the reporting categories for this test (further described in a chart below):
 - **Preparing for Higher Mathematics:** Students apply the more recent mathematics they are learning. This reporting category is divided into the following five subcategories:
 - *Number and Quantity:* Students demonstrate knowledge of real and complex number systems. They understand and reason with numerical quantities in many forms, including integer and rational exponents, and vectors and matrices.
 - *Algebra:* Students solve, graph, and model multiple types of expressions. They employ many different kinds of equations, including but not limited to linear, polynomial, radical, and exponential relationships. They find solutions to systems of equations, even when represented by simple matrices, and apply their knowledge to applications.
 - *Functions:* Students apply their knowledge of function definition, notation, representation, and application. Questions may include but are not limited to linear, radical, piecewise, polynomial, and logarithmic functions. Students manipulate and translate functions, as well as find and apply important features of graphs.
 - *Geometry:* Students define and apply knowledge of shapes and solids, such as congruence and similarity relationships or surface area and volume measurements. They understand composition of objects and solve for

missing values in triangles, circles, and other figures, including using trigonometric ratios and equations of conic sections

- *Statistics and Probability*: Students describe center and spread of distributions, apply and analyze data collection methods, understand and model relationships in bivariate data, and calculate probabilities, including the related sample spaces.
 - **Integrating Essential Skills**: Students put together understandings and skills to solve problems of moderate to high complexity. Topics include rate and percentage; proportional reasoning; area, surface area, and volume; quantities and units; expressing numbers in diverse ways; using expressions to represent quantities and equations to capture relationships; rational exponents; the basics of functions; and function notation.
 - **Modeling**: Students use mathematics to represent, through a model, an analysis of an actual, empirical situation. The Modeling reporting category represents all items that involve producing, interpreting, understanding, evaluating, and improving models. Each modeling item is also counted in the other appropriate reporting categories above. Thus, the Modeling reporting category is an overall measure of how well a student uses modeling skills across mathematical topics.
- *Format and question type* – Most test questions are self-contained. Some may belong to a set of several questions (for example, each about the same graph or chart). The items measure the reporting categories in the following way:
 - Preparing for Higher Mathematics items are presented first.
 - Integrating Essential Skills reporting categories items are next.
 - Modeling, the crosscutting reporting category, draws upon items from all the other categories to give a measure of producing, interpreting, understanding, evaluating, and improving models.
 - *Knowledge and skills not tested* – Knowledge of basic formulas and computational skills are assumed as background for the problems, but recall of complex formulas and extensive computation are not required.

Mathematics test blueprints and specifications. Nine scores are reported for the ACT mathematics test—a total test score based on all 60 items and eight reporting category scores, which include the subcategories for Preparing for Higher Mathematics. The reporting categories constitute a specific number of items and percentage of the test, as shown below. A table describing the reporting categories in detail follows this.

Reporting Category	Number of Items	Percentage of Test
Preparing for Higher Mathematics	34–36	57–60%
Number and Quantity	4–6	7–10%
Algebra	7–9	12–15%
Functions	7–9	12–15%
Geometry	7–9	12–15%
Statistics and Probability	5–7	8–12%
Integrating Essential Skills	24–26	40–43%
Modeling	≥ 16	≥ 27%

In addition, the overall mathematics test score, along with the science score, is used to determine the STEM score.

The ACT Reporting Category Descriptions

Reporting Category	Skill Area	Description/Examples
Preparing for Higher Mathematics: Number and Quantity	Rational and Irrational Numbers	Use and apply the properties of rational and irrational numbers.
	Properties of Exponents	Use and apply the properties of exponents.
	Vectors and Matrices	Model situations, perform operations, and solve problems involving vectors and matrices.
	Complex Numbers	Perform operations and solve equations involving complex numbers.
	Quantities and Units	Reason quantitatively and use units to solve problems.

Reporting Category	Skill Area	Description/Examples
Preparing for Higher Mathematics: Algebra	Linear Expressions, equations, and Inequalities	Model situations, solve problems, and perform operations involving linear expressions, equations, and inequalities.
	Quadratic Expressions, Equations, and Inequalities	Model situations, solve problems, and perform operations involving quadratic expressions, equations, and inequalities.
	Rational and Radical Expressions and Equations	Model situations, perform operations, and solve problems involving rational and radical expressions and equations.
	Polynomial Expressions and Equations	Model situations, perform operations, and solve problems involving polynomial expressions and equations.
	Systems of Equations and Inequalities	Write, solve, and graph systems of equations.
Preparing for Higher Mathematics: Functions	Properties of Functions	Create functions and describe their properties. Convert between different representations of functions.
	Function Composition and Inverse Functions	Compose functions, find inverse functions, and find domain and range of composition.
	Sequences and Series	Model situations, perform operations, and solve problems involving sequences and series.
	Trigonometric Functions	Model situations, solve problems, and perform operations using trigonometric functions.
	Exponential and Logarithmic Functions	Model situations, perform operations, and solve problems involving exponential and logarithmic function.

Reporting Category	Skill Area	Description/Examples
Preparing for Higher Mathematics: Geometry	Transformations	Model situations, perform operations, and solve problems involving transformations and their properties in a plane.
	Proof, Reasoning, and Constructions	Construct geometric figures and use logical arguments to prove theorems.
	Similarity, Right Triangles, and Trigonometry	Define trigonometric ratios in terms of right triangles. Apply trigonometric ratios to general triangles.
	Coordinate Geometry	Model situations, perform operations, and solve problems in the coordinate plane.
	Conic Sections	Model situations, perform operations, and solve problems involving conic sections.
	Properties of Circles	Model situations, perform operations, and solve problems involving properties of circles.
	Geometric Measurement and Modeling	Apply geometric concepts in modeling situations.
	Preparing for Higher Mathematics: Statistics and Probability	Interpret Data on a Single Count
Interpret Data on Two Counts		Summarize, represent, and interpret data on a double count or on quantitative variables.
Making Inferences from Experiments and Surveys		Interpret and evaluate random processes underlying statistical experiments.
Rules of Probability		Use rules of probability to compute probabilities and expected values.
Counting, Permutations, and Combinations		Use counting principles, combinations, and permutations to compute probabilities of compound events and solve problems.

Reporting Category	Skill Area	Description/Examples
Integrating Essential Skills	Properties of Real Numbers	Interpret and apply the properties of real numbers to aid problem solving.
	Computation and Problem-Solving with Real Numbers	Use all types of real numbers to compute and answer questions.
	Ratio, Proportion, and Percent	Use ratios, proportions, and percentages in problem-solving situations.
	Writing Algebraic Expressions	Write algebraic expressions to represent situations including linear and polynomial expressions.
	Writing and Solving Simple Equations and Inequalities	Write equations in one or two variables with linear relationships and use these equations to answer questions.
	Perimeter, Circumference, and Area	Calculate perimeter, circumference, and area for polygons and circles.
	Surface Area and Volume	Calculate surface area and volume of solids including prisms, cylinders, cones, and spheres.
	Measurement Units and Unit Conversion	Model situations, perform operations, and solve problems involving measurement units.
	Properties of Lines, Angles, and Shapes	Use the properties of lines, angles, two-dimensional shapes, and three-dimensional shapes to describe situations and to solve problems.
	Pythagorean Theorem	Use the Pythagorean theorem to solve problems and to find distances.
	Scatterplots and Association	Construct and interpret scatterplots and use linear models.
	Data Summary and Displays	Describe measures of center, spread, and shape for a data set. Display data in displays such as line plots, dot plots, histograms, and box plots.

Reporting Category	Skill Area	Description/Examples
	Basic Probability	Compute probabilities for simple events and for compound events where the sample space can be listed.
Modeling	Producing	Produce a model for a given real-world or mathematical context.
	Interpreting	Take information from a model and interpret the information in terms of the situation.
	Understanding	Show understanding by determining conditions under which a model works or does not work.
	Evaluating	Choose the best model for a situation or decide if a model is good enough for a given situation.
	Improving	Change a model or change assumptions of a model by iterating.

MATRIX: The ACT to Texas Standards

The ACT Aligned to Texas College and Career Readiness Standards (CCRS) for Mathematics (revised 2018)

The ACT Mathematics Reporting Categories and Skill Areas	Texas College and Career Readiness Standards (CCRS) for Mathematics																					
	Numeric Reasoning						Algebraic Reasoning						Geometric and Spatial Reasoning									
	A.1	A.2	B.1	B.2	C.1	C.2	A.1	B.1	C.1	C.2	C.3	D.1	D.2	A.1	A.2	A.3	B.1	B.2	C.1	C.2	D.1	D.2
Number and Quantity																						
Rational and Irrational Numbers	X																					
Properties of Exponents																						
Vectors and Matrices																						
Complex Numbers																						
Quantities and Units					X	X																
Algebra																						
Linear Expressions, Equations, and Inequalities								X	X	X	X	X	X									
Quadratic Expressions, Equations, and Inequalities								X														
Rational and Radical Expressions and Equations								X														
Polynomial Expressions and Equations								X														
Systems of Equations and Inequalities									X	X	X											
Functions																						
Properties of Functions								X				X	X									
Function Composition and Inverse Functions																						
Sequences and Series																						
Trigonometric Functions																						
Exponential and Logarithmic Functions																						
Geometry																						
Transformations																	X	X				
Proof, Reasoning, and Constructions																						
Similarity, Right Triangles, and Trigonometry																X						
Coordinate Geometry																			X			
Conic Sections																						

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The ACT Mathematics Reporting Categories and Skill Areas	Texas College and Career Readiness Standards (CCRS) for Mathematics																							
	Numeric Reasoning						Algebraic Reasoning						Geometric and Spatial Reasoning											
	I		II				III																	
	A.1	A.2	B.1	B.2	C.1	C.2	A.1	B.1	C.1	C.2	C.3	D.1	D.2	A.1	A.2	A.3	B.1	B.2	C.1	C.2	D.1	D.2	D.3	
Properties of Circles																								
Geometric Measurement and Modeling														X	X				X	X			X	X
Statistics and Probability (no matches)																								
Interpret Data on a Single Count																								
Interpret Data on Two Counts																								
Making Inferences from Experiments and Surveys																								
Rules of Probability																								
Counting, Permutations, and Combinations																								
Integrating Essential Skills																								
Properties of Real Numbers	X																							
Computation and Problem-Solving with Real Numbers	X	X	X	X																				
Ratio, Proportion, and Percentage																								
Writing Algebraic Expressions							X																	
Writing and Solving Simple Equations and Inequalities							X																	
Perimeter, Circumference, and Area																					X			
Surface Area and Volume																						X		
Measurement Units and Unit Conversion					X	X																		
Properties of Lines, Angles, and Shapes														X	X		X	X			X			
Pythagorean Theorem																								
Scatterplots and Association																								
Data Summary and Displays																								
Basic Probability																								
Modeling (no matches)																								

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The ACT Mathematics Reporting Categories and Skill Areas	Texas College and Career Readiness Standards (CCRS) for Mathematics																		
	Probabilistic Reasoning				Statistical Reasoning								Functions						
	IV				V								VI						
	A.1	B.1	B.2	C.1	A.1	B.1	B.2	B.3	B.4	C.1	C.2	C.3	C.4	A.1	A.2	B.1	B.2	C.1	C.2
Number and Quantity (no matches)																			
Algebra (no matches)																			
Functions																			
Properties of Functions														X	X	X	X	X	X
Function Composition and Inverse Functions																	X		
Sequences and Series																			
Trigonometric Functions															X			X	X
Exponential and Logarithmic Functions															X			X	X
Geometry (no matches)																			
Statistics and Probability																			
Interpret Data on a Single Count									X										
Interpret Data on Two Counts										X	X	X	X						
Making Inferences from Experiments and Surveys					X														
Rules of Probability		X	X	X															
Counting, Permutations, and Combinations	X		X																
Integrating Essential Skills																			
Properties of Real Numbers																			
Computation and Problem-Solving with Real Numbers																			
Ratio, Proportion, and Percentage																			
Writing Algebraic Expressions																			
Writing and Solving Simple Equations and Inequalities																			
Perimeter, Circumference, and Area																			
Surface Area and Volume																			
Measurement Units and Unit Conversion																			
Properties of Lines, Angles, and Shapes																			
Pythagorean Theorem																			
Scatterplots and Association																			
Data Summary and Displays						X	X	X											
Basic Probability																			
Modeling (no matches)																			

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The ACT Mathematics Reporting Categories and Skill Areas	Texas College and Career Readiness Standards (CCRS) for Mathematics																						
	Problem Solving and Reasoning										Communication and Representation						Connections						
	VII					VIII					IX												
	A.1	A.2	A.3	A.4	A.5	B.1	C.1	C.2	D.1	D.2	A.1	A.2	A.3	B.1	B.2	C.1	C.2	C.3	A.1	A.2	B.1	B.2	B.3
Number and Quantity (no matches)																							
Algebra (no matches)																							
Functions																							
Properties of Functions																					X		
Function Composition and Inverse Functions																							
Sequences and Series																							
Trigonometric Functions																							
Exponential and Logarithmic Functions																							
Geometry																							
Transformations																							
Proof, Reasoning, and Constructions							X	X								X	X	X					
Similarity, Right Triangles, and Trigonometry																							
Coordinate Geometry																							
Conic Sections																							
Properties of Circles																							
Geometric Measurement and Modeling																					X	X	X
Statistics and Probability (no matches)																							
Integrating Essential Skills																							
Properties of Real Numbers																							
Computation and Problem-Solving with Real Numbers																							
Ratio, Proportion, and Percentage						X																	
Writing Algebraic Expressions																							
Writing and Solving Simple Equations and Inequalities									X														
Perimeter, Circumference, and Area																							
Surface Area and Volume																							
Measurement Units and Unit Conversion																							
Properties of Lines, Angles, and Shapes																							
Pythagorean Theorem																							
Scatterplots and Association																							
Data Summary and Displays																							
Basic Probability																							
Modeling (no matches)																							

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	Texas Essential Knowledge and Skills (TEKS) for Algebra II																																																						
	Mathematical process standards							Attributes of functions and their inverses				Systems of Equations and Inequalities						Quadratic and square root functions, equations, and inequalities						Exponential and Logarithmic Functions and					Cubic, cube root, absolute value and rational functions, equations, and equalities						Number and algebraic methods					Data															
	1							2				3						4						5					6						7					8															
The ACT Mathematics Reporting Categories and Skill Areas	A	B	C	D	E	F	G	A	B	C	D	A	B	C	D	E	F	G	A	B	C	D	E	F	G	H	A	B	C	D	E	A	B	C	D	E	F	G	H	I	J	K	L	A	B	C	D	E	F	G	H	I	A	B	C
Conic Sections																			X																																				
Properties of Circles																																																							
Statistics and Probability																																																							
Interpret Data on a Single Count																																																							
Interpret Data on Two Counts																																															X		X						
Making Inferences from Experiments and Surveys																																																							
Rules of Probability																																																							
Counting, Permutations, and Combinations																																																							
Integrating Essential Skills																																																							
Properties of Real Numbers																																																							
Computation and Problem-Solving with Real Numbers																																																							
Ratio, Proportion, and Percentage																																																							
Writing Algebraic Expressions																																																							
Writing and Solving Simple Equations and Inequalities																																																							
Perimeter, Circumference, and Area																																																							
Surface Area and Volume																																																							
Measurement Units and Unit Conversion																																																							
Properties of Lines, Angles, and Shapes																																																							
Pythagorean Theorem																																																							
Scatterplots and Association																																															X		X						
Data Summary and Displays																																																							
Basic Probability																																																							

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The ACT Aligned to Texas Essential Knowledge and Skills (TEKS) for Mathematical Models with Applications (adopted 2012)

Texas Essential Knowledge and Skills (TEKS) for Mathematical Models with Applications																																							
Mathematical process standards	Personal finance: graphical and numerical techniques							Personal finance: solve problems involving credit				Personal finance: solve problems related to financial planning			Science and engineering : study patterns and analyze data as it applies to science			Science and engineering: architecture and engineering				Fine arts. study patterns and analyze data as it applies to fine arts				Social sciences: number of elements in a finite sample space and compute the			Social sciences: analyze data as it applies to social sciences						Social sciences: design a study and communicate results				
	1							2				3			4			5			6				7				8			9						10	
The ACT Mathematics Reporting Categories and Skill Areas	A	B	C	D	E	F	G	A	B	C	A	B	C	D	A	B	C	A	B	C	A	B	C	D	A	B	C	D	A	B	C	A	B	C	D	E	F	A	B
Number and Quantity																																							
Rational and Irrational Numbers																																							
Properties of Exponents																																							
Vectors and Matrices																																							
Complex Numbers																																							
Quantities and Units								X	X	X																													
Algebra																																							
Linear Expressions, Equations, and Inequalities								X	X	X								X																					
Quadratic Expressions, Equations, and Inequalities																				X																			
Rational and Radical Expressions and Equations																		X																					
Polynomial Expressions and Equations																		X																					
Systems of Equations and Inequalities								X	X	X																													
Functions																																							
Properties of Functions								X	X									X	X																				
Function Composition and Inverse Functions																																							
Sequences and Series																																							
Trigonometric Functions																										X			X										
Exponential and Logarithmic Functions																	X	X																					

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Texas Essential Knowledge and Skills (TEKS) for Mathematical Models with Applications																																							
The ACT Mathematics Reporting Categories and Skill Areas	Mathematical process standards							Personal finance: graphical and numerical techniques			Personal finance: solve problems involving credit				Personal finance: solve problems related to financial planning			Science and engineering : study patterns and analyze data as it applies to science			Science and engineering: architecture and engineering				Fine arts. study patterns and analyze data as it applies to fine arts				Social sciences: number of elements in a finite sample space and compute the			Social sciences: analyze data as it applies to social sciences						Social sciences: design a study and communicate results	
	1							2			3				4			5			6				7				8			9						10	
	A	B	C	D	E	F	G	A	B	C	A	B	C	D	A	B	C	A	B	C	A	B	C	D	A	B	C	D	A	B	C	A	B	C	D	E	F	A	B
Geometry																																							
Transformations																						X					X												
Proof, Reasoning, and Constructions																																							
Similarity, Right Triangles, and Trigonometry																						X	X	X	X	X	X	X	X										
Coordinate Geometry																																							
Conic Sections																																							
Properties of Circles																																							
Geometric Measurement and Modeling																						X	X	X	X	X	X	X	X										
Statistics and Probability																																							
Interpret Data on a Single Count										X																						X		X		X	X		
Interpret Data on Two Counts										X																				X				X	X	X	X		
Making Inferences from Experiments and Surveys										X																	X	X	X	X	X	X	X	X	X	X			
Rules of Probability										X																	X	X											
Counting, Permutations, and Combinations																										X													
Integrating Essential Skills																																							
Properties of Real Numbers																																							
Computation and Problem-Solving with Real Numbers									X	X																													
Ratio, Proportion, and Percentage								X	X	X							X										X	X											
Writing Algebraic Expressions																																							
Writing and Solving Simple Equations and Inequalities								X	X	X																													
Perimeter, Circumference, and Area																										X													
Surface Area and Volume																						X					X												

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Texas Essential Knowledge and Skills (TEKS) for Mathematical Models with Applications																																								
The ACT Mathematics Reporting Categories and Skill Areas	Mathematical process standards							Personal finance: graphical and numerical techniques			Personal finance: solve problems involving credit				Personal finance: solve problems related to financial planning			Science and engineering : study patterns and analyze data as it applies to science			Science and engineering: architecture and engineering				Fine arts. study patterns and analyze data as it applies to fine arts				Social sciences: number of elements in a finite sample space and compute the			Social sciences: analyze data as it applies to social sciences						Social sciences: design a study and communicate results		
	1							2			3				4			5			6				7				8			9						10		
	A	B	C	D	E	F	G	A	B	C	A	B	C	D	A	B	C	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	A	B	C	D	E	F	A	B
Measurement Units and Unit Conversion																													X											
Properties of Lines, Angles, and Shapes																						X	X					X	X											
Pythagorean Theorem																								X	X															
Scatterplots and Association								X																								X					X	X		
Data Summary and Displays										X																						X	X				X	X		
Basic Probability																																								
Modeling																																								
Producing	X		X	X	X			X	X	X																														
Interpreting	X	X		X		X	X	X	X	X																														
Understanding	X	X				X	X			X																														
Evaluating	X	X	X			X	X			X																														
Improving	X	X				X				X																														

CROSSWALK: Texas Standards to the ACT

Texas College and Career Readiness Standards (CCRS) for Mathematics (adopted 2018) Aligned to the ACT

Texas College and Career Readiness Standards (CCRS) for Mathematics		The ACT Mathematics Reporting Categories and Skill Areas
Standard Number	Standard	
I.	Numeric Reasoning	
I.A.	Number representations and operations	
I.A.1	Compare relative magnitudes of rational and irrational numbers, and understand that numbers can be represented in different ways.	Number and Quantity: Rational and Irrational Numbers Integrating Essential Skills: Properties of Real Numbers; Computation and Problem-Solving with Real Numbers
I.A.2	Perform computations with rational and Irrational Numbers.	Integrating Essential Skills: Computation and Problem-Solving with Real Numbers
I.B	Number sense and number concepts	
I.B.1	Use estimation to check for errors and reasonableness of solutions.	Integrating Essential Skills: Computation and Problem-Solving with Real Numbers
I.B.2	Interpret the relationships between the different representations of numbers.	Integrating Essential Skills: Computation and Problem-Solving with Real Numbers
I.C	Systems of measurement	
I.C.1	Select or use the appropriate type of method, unit, and tool for the attribute being measured.	Number and Quantity: Quantities and Units Integrating Essential Skills: Measurement Units and Unit Conversion
I.C.2	Convert units within and between systems of measurement.	Number and Quantity: Quantities and Units Integrating Essential Skills: Measurement Units and Unit Conversion
II.	Algebraic Reasoning	
II.A	Identifying expressions and equations	
II.A.1	Explain the difference between expressions and equations.	Integrating Essential Skills: Writing Algebraic Expressions; Writing and Solving Simple Equations and Inequalities
II.B	Manipulating expressions	
II.B.1	Recognize and use algebraic properties, concepts, and algorithms to combine, transform, and evaluate expressions (e.g., polynomials, radicals, rational expressions).	Algebra: Linear Expressions, Equations, and Inequalities; Quadratic Expressions, Equations, and Inequalities; Rational and Radical Expressions and Equations; Polynomial Expressions and Equations Functions: Properties of Functions
I.A	Number representations and operations	
I.A.1	Compare relative magnitudes of rational and irrational numbers, and understand that numbers can be represented in different ways.	Number and Quantity: Rational and Irrational Numbers Integrating Essential Skills: Properties of Real Numbers Integrating Essential Skills: Computation and Problem-Solving with Real Numbers

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Texas College and Career Readiness Standards (CCRS) for Mathematics		The ACT Mathematics Reporting Categories and Skill Areas
Standard Number	Standard	
I.A.2	Perform computations with rational and Irrational Numbers.	Integrating Essential Skills : Computation and Problem-Solving with Real Numbers
I.B	Number sense and number concepts	
I.B.1	Use estimation to check for errors and reasonableness of solutions.	Integrating Essential Skills : Computation and Problem-Solving with Real Numbers
II.C	Solving equations, inequalities, and systems of equations and inequalities	
II.C.1	Describe and interpret solution sets of equalities and inequalities.	Algebra : Linear Expressions, Equations, and Inequalities; Systems of Equations and Inequalities
II.C.2	Explain the difference between the solution set of an equation and the solution set of an inequality.	Algebra : Linear Expressions, Equations, and Inequalities; Systems of Equations and Inequalities
II.C.3	Recognize and use algebraic properties, concepts, and algorithms to solve equations, inequalities, and systems of linear equations and inequalities.	Algebra : Linear Expressions, Equations, and Inequalities; Systems of Equations and Inequalities
II.D	Representing relationships	
II.D.1	Interpret multiple representations of equations, inequalities, and relationships.	Algebra : Linear Expressions, Equations, and Inequalities Functions : Properties of Functions
II.D.2	Convert among multiple representations of equations, inequalities, and relationships.	Algebra : Linear Expressions, Equations, and Inequalities Functions : Properties of Functions
III.	Geometric and Spatial Reasoning	
III.A	Figures and their properties	
III.A.1	Recognize characteristics and dimensional changes of two- and three-dimensional figures.	Geometry : Geometric Measurement and Modeling Integrating Essential Skills : Properties of Lines, Angles, and Shapes
III.A.2	Form and validate conjectures about one-, two-, and three-dimensional figures and their properties.	Geometry : Geometric Measurement and Modeling; Proof, Reasoning, and Constructions Integrating Essential Skills : Properties of Lines, Angles, and Shapes
III.A.3	Recognize and apply right triangle relationships including basic trigonometry.	Geometry : Similarity, Right Triangles, and Trigonometry
III.B	Transformations and symmetry	
III.B.1	Identify transformations and symmetries of figures.	Geometry : Transformations Integrating Essential Skills : Properties of Lines, Angles, and Shapes
III.B.2	Use transformations to investigate congruence, similarity, and symmetries of figures	Geometry : Transformations Integrating Essential Skills : Properties of Lines, Angles, and Shapes
III.C	Connections between geometry and other mathematical content strands	
III.C.1	Make connections between geometry and algebraic equations.	Geometry : Geometric Measurement and Modeling; Coordinate Geometry
III.C.2	Make connections between geometry, statistics, and probability.	Geometry : Geometric Measurement and Modeling

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Texas College and Career Readiness Standards (CCRS) for Mathematics		The ACT Mathematics Reporting Categories and Skill Areas
Standard Number	Standard	
III.D	Measurements involving geometry and algebra	
III.D.1	Find the perimeter and area of two-dimensional figures.	Integrating Essential Skills: Perimeter, Circumference, and Area; Properties of Lines, Angles, and Shapes
III.D.2	Determine the surface area and volume of three-dimensional figures.	Geometry: Geometric Measurement and Modeling Integrating Essential Skills: Surface Area and Volume
III.D.3	Determine indirect measurements of geometric figures using a variety of methods.	Geometry: Geometric Measurement and Modeling
IV.	Probabilistic Reasoning	
IV.A	Counting principles	
IV.A.1	Determine the nature and the number of elements in a finite sample space.	Statistics and Probability: Counting, Permutations, and Combinations
IV.B	Computation and interpretation of probabilities	
IV.B.1	Compute and interpret the probability of an event and its complement.	Statistics and Probability: Rules of Probability
IV.B.2	Compute and interpret the probability of [conditional and] compound events.	Statistics and Probability: Rules of Probability; Counting, Permutations, and Combinations
IV.C	Measurement involving probability	
IV.C.1	Use probability to make informed decisions.	Statistics and Probability: Rules of Probability
V.	Statistical Reasoning	
V.A	Design a study	
V.A.1	Formulate a statistical question, plan an investigation, and collect data.	Statistics and Probability: Making Inferences from Experiments and Surveys
V.B	Describe data	
V.B.1	Classify types of data.	Integrating Essential Skills: Data Summary and Displays
V.B.2	Construct appropriate visual representations of data.	Integrating Essential Skills: Data Summary and Displays
V.B.3	Compute and describe the study data with measures of center and basic notions of spread.	Integrating Essential Skills: Data Summary and Displays
V.B.4	Describe patterns and departure from patterns in the study data.	Statistics and Probability: Interpret Data on a Single Count
V.C	Analyze, interpret, and draw conclusions from data	
V.C.1	Analyze data sets using graphs and summary statistics.	Statistics and Probability: Interpret Data on Two Counts
V.C.2	Analyze relationships between paired data using spreadsheets, graphing calculators, or statistical software.	Statistics and Probability: Interpret Data on Two Counts
V.C.3	Make predictions using summary statistics.	Statistics and Probability: Interpret Data on Two Counts
V.C.4	Identify and explain misleading uses of data.	Statistics and Probability: Interpret Data on Two Counts

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Texas College and Career Readiness Standards (CCRS) for Mathematics		The ACT Mathematics Reporting Categories and Skill Areas
Standard Number	Standard	
VI.	Functions	
VI.A	Recognition and representation of functions	
VI.A.1	Recognize if a relation is a function.	Functions: Properties of Functions
VI.A.2	Recognize and distinguish between different types of functions.	Functions: Properties of Functions; Trigonometric Functions; Exponential and Logarithmic Functions
VI.B	Analysis of functions	
VI.B.1	Understand and analyze features of a functions.	Functions: Properties of Functions
VI.B.2	Algebraically construct and analyze new functions.	Functions: Properties of Functions; Function Composition and Inverse Functions
VI.C	Model real-world situations with functions	
VI.C.1	Apply known functions to model real-world situations.	Functions: Properties of Functions; Trigonometric Functions; Exponential and Logarithmic Functions
VI.C.2	Develop a function to model a situation.	Functions: Properties of Functions; Trigonometric Functions; Exponential and Logarithmic Functions
VII.	Problem Solving and Reasoning	
VII.A	Mathematical problem solving	
VII.A.1	Analyze given information.	Modeling: Interpreting
VII.A.2	Formulate a plan or strategy.	Modeling: Producing
VII.A.3	Determine a solution.	Modeling: Improving
VII.A.4	Justify the solution.	Modeling: Interpreting
VII.A.5	Evaluate the problem-solving process.	Modeling: Evaluating
VII.B	Proportional reasoning	
VII.B.1	Use proportional reasoning to solve problems that require fractions, ratios, percentages, decimals, and proportions in a variety of contexts using multiple representations.	Integrating Essential Skills: Ratio, Proportion, and Percentage
VII.C	Logical reasoning	
VII.C.1	Develop and evaluate convincing arguments.	Geometry: Proof, Reasoning, and Constructions
VII.C.2	Understand attributes and relationships with inductive and deductive reasoning.	Geometry: Proof, Reasoning, and Constructions
VII.D	Real-world problem solving	
VII.D.1	Interpret results of the mathematical problem in terms of the original real-world situation.	Integrating Essential Skills: Writing and Solving Simple Equations and Inequalities
VII.D.2	Evaluate the problem-solving process.	Modeling: Evaluating
VIII.	Communication and Representation	
VIII.A	Language, terms, and symbols of mathematics	

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Texas College and Career Readiness Standards (CCRS) for Mathematics		The ACT Mathematics Reporting Categories and Skill Areas
Standard Number	Standard	
VIII.A.1	Use mathematical symbols, terminology, and notation to represent given and unknown information in a problem.	Modeling: Interpreting
VIII.A.2	Use mathematical language to represent and communicate the mathematical concepts in a problem.	Modeling: Interpreting
VIII.A.3	Use mathematical language for reasoning, problem solving, making connections, and generalizing.	Modeling: Interpreting
VIII.B	Interpretation of mathematical work	
VIII.B.1	Model and interpret mathematical ideas and concepts using multiple representations.	Modeling: Evaluating; Interpreting
VIII.B.2	Summarize and interpret mathematical information provided orally, visually, or in written form within the given context.	Modeling: Evaluating; Interpreting
VIII.C	Presentation and representation of mathematical work	
VIII.C.1	Communicate mathematical ideas, reasoning, and their implications using symbols, diagrams, models, graphs, and words.	Modeling: Evaluating; Interpreting Geometry: Proof, Reasoning, and Constructions
VIII.C.2	Create and use representations to organize, record, and communicate mathematical ideas.	Geometry: Proof, Reasoning, and Constructions
VIII.C.3	Explain, display, or justify mathematical ideas and arguments using precise mathematical language in written or oral communications.	Geometry: Proof, Reasoning, and Constructions
IX.	Connections	
IX.A	Connections among the strands of mathematics	
IX.A.1	Connect and use multiple key concepts of mathematics in situations and problems.	Modeling: Evaluating
IX.A.2	Connect mathematics to the study of other disciplines.	Modeling: Evaluating
IX.B	Connections of mathematics to nature, real-world situations, and everyday life	
IX.B.1	Use multiple representations to demonstrate links between mathematical and real-world situations.	Functions: Properties of Functions Geometry: Geometric Measurement and Modeling
IX.B.2	Understand and use appropriate mathematical models in the natural, physical, and social sciences.	Modeling: Interpreting; Understanding Geometry: Geometric Measurement and Modeling
IX.B.3	Know and understand the use of mathematics in a variety of careers and professions.	Modeling: Interpreting; Understanding Geometry: Geometric Measurement and Modeling

Texas Essential Knowledge and Skills (TEKS) for Algebra II (adopted 2012) Aligned to the ACT

Texas Essential Knowledge and Skills (TEKS) for Algebra II			ACT Mathematics Reporting Categories and Skill Areas
Strand	Standard Number	Standard	
(c) Knowledge and Skills	1	Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	
	1.A	apply mathematics to problems arising in everyday life, society, and the workplace;	Modeling: Interpreting; Understanding; Evaluating; Improving; Producing
	1.B	use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;	Modeling: Interpreting; Understanding; Evaluating; Improving
	1.C	select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems;	Modeling: Producing; Evaluating
	1.D	communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;	Modeling: Interpreting; Producing
	1.E	create and use representations to organize, record, and communicate mathematical ideas;	Modeling: Producing
	1.F	analyze mathematical relationships to connect and communicate mathematical ideas; and	Modeling: Interpreting; Understanding; Evaluating; Improving
	1.G	display, explain, or justify mathematical ideas and arguments using precise mathematical language in written or oral communication.	Modeling: Interpreting; Understanding; Evaluating
	2	Attributes of functions and their inverses. The student applies mathematical processes to understand that functions have distinct key attributes and understand the relationship between a function and its inverse. The student is expected to:	
	2.A	graph the functions $f(x)=\sqrt{x}$, $f(x)=1/x$, $f(x)=x^3$, $f(x)=3\sqrt{x}$, $f(x)=bx$, $f(x)= x $, and $f(x)=\log_b(x)$ where b is 2, 10, and e , and, when applicable, analyze the key attributes such as domain, range, intercepts, symmetries, asymptotic behavior, and maximum and minimum given an interval;	Functions: Properties of Functions
2.B	graph and write the inverse of a function using notation such as $f^{-1}(x)$;	Functions: Function Composition and Inverse Functions	

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Texas Essential Knowledge and Skills (TEKS) for Algebra II			ACT Mathematics Reporting Categories and Skill Areas
Strand	Standard Number	Standard	
	2.C	describe and analyze the relationship between a function and its inverse (quadratic and square root, logarithmic and exponential), including the restriction(s) on domain, which will restrict its range; and	Functions: Function Composition and Inverse Functions
	2.D	use the composition of two functions, including the necessary restrictions on the domain, to determine if the functions are inverses of each other.	Functions: Function Composition and Inverse Functions
	3	Systems of Equations and Inequalities. The student applies mathematical processes to formulate systems of equations and inequalities, use a variety of methods to solve, and analyze reasonableness of solutions. The student is expected to:	
	3.A	formulate systems of equations, including systems consisting of three linear equations in three variables and systems consisting of two equations, the first linear and the second quadratic;	Algebra: Systems of Equations and Inequalities
	3.B	solve systems of three linear equations in three variables by using Gaussian elimination, technology with matrices, and substitution;	Algebra: Systems of Equations and Inequalities Number and Quantity: Vectors and Matrices
	3.C	solve, algebraically, systems of two equations in two variables consisting of a linear equation and a quadratic equation;	Algebra: Systems of Equations and Inequalities
	3.D	determine the reasonableness of solutions to systems of a linear equation and a quadratic equation in two variables;	Algebra: Systems of Equations and Inequalities
	3.E	formulate systems of at least two linear inequalities in two variables;	Algebra: Systems of Equations and Inequalities
	3.F	solve systems of two or more linear inequalities in two variables; and	Algebra: Systems of Equations and Inequalities
	3.G	determine possible solutions in the solution set of systems of two or more linear inequalities in two variables.	Algebra: Systems of Equations and Inequalities
	4	Quadratic and square root functions, equations, and inequalities. The student applies mathematical processes to understand that quadratic and square root functions, equations, and quadratic inequalities can be used to model situations, solve problems, and make predictions. The student is expected to:	
	4.A	write the quadratic function given three specified points in the plane;	Algebra: Quadratic Expressions, Equations, and Inequalities

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Texas Essential Knowledge and Skills (TEKS) for Algebra II			ACT Mathematics Reporting Categories and Skill Areas
Strand	Standard Number	Standard	
	4.B	write the equation of a parabola using given attributes, including vertex, focus, directrix, axis of symmetry, and direction of opening;	Algebra: Quadratic Expressions, Equations, and Inequalities Geometry: Conic Sections
	4.C	determine the effect on the graph of $f(x) = \sqrt{x}$ when $f(x)$ is replaced by $af(x)$, $f(x) + d$, $f(bx)$, and $f(x - c)$ for specific positive and negative values of a , b , c , and d ;	Functions: Properties of Functions
	4.D	transform a quadratic function $f(x) = ax^2 + bx + c$ to the form $f(x) = a(x - h)^2 + k$ to identify the different attributes of $f(x)$;	Algebra: Quadratic Expressions, Equations, and Inequalities
	4.E	formulate quadratic and square root equations using technology given a table of data;	Algebra: Quadratic Expressions, Equations, and Inequalities; Rational and Radical Expressions and Equations
	4.F	solve quadratic and square root equations;	Algebra: Quadratic Expressions, Equations, and Inequalities; Rational and Radical Expressions and Equations
	4.G	identify extraneous solutions of square root equations; and	Algebra: Rational and Radical Expressions and Equations
	4.H	solve quadratic inequalities.	Algebra: Quadratic Expressions, Equations, and Inequalities
	5	Exponential and Logarithmic Functions and equations. The student applies mathematical processes to understand that exponential and logarithmic functions can be used to model situations and solve problems. The student is expected to:	
	5.A	determine the effects on the key attributes on the graphs of $f(x) = bx$ and $f(x) = \log_b(x)$ where b is 2, 10, and e when $f(x)$ is replaced by $af(x)$, $f(x) + d$, and $f(x - c)$ for specific positive and negative real values of a , c , and d ;	Functions: Properties of Functions
	5.B	formulate exponential and logarithmic equations that model real-world situations, including exponential relationships written in recursive notation;	Functions: Exponential and Logarithmic Functions
	5.C	rewrite exponential equations as their corresponding logarithmic equations and logarithmic equations as their corresponding exponential equations;	Functions: Exponential and Logarithmic Functions
	5.D	solve exponential equations of the form $y = abx$ where a is a nonzero real number and b is greater than zero and not equal to one and single logarithmic equations having real solutions; and	Functions: Exponential and Logarithmic Functions
	5.E	determine the reasonableness of a solution to a logarithmic equation.	Functions: Exponential and Logarithmic Functions

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Texas Essential Knowledge and Skills (TEKS) for Algebra II			ACT Mathematics Reporting Categories and Skill Areas
Strand	Standard Number	Standard	
	6	Cubic, cube root, absolute value and rational functions, equations, and inequalities. The student applies mathematical processes to understand that cubic, cube root, absolute value and rational functions, equations, and inequalities can be used to model situations, solve problems, and make predictions. The student is expected to:	
	6.A	analyze the effect on the graphs of $f(x) = x^3$ and $f(x) = \sqrt[3]{x}$ when $f(x)$ is replaced by $af(x)$, $f(bx)$, $f(x - c)$, and $f(x) + d$ for specific positive and negative real values of a , b , c , and d ;	Functions: Properties of Functions
	6.B	solve cube root equations that have real roots;	Algebra: Rational and Radical Expressions and Equations
	6.C	analyze the effect on the graphs of $f(x) = x $ when $f(x)$ is replaced by $af(x)$, $f(bx)$, $f(x-c)$, and $f(x) + d$ for specific positive and negative real values of a , b , c , and d ;	Functions: Properties of Functions
	6.D	formulate absolute value linear equations;	Algebra: Linear Expressions, Equations, and Inequalities
	6.E	solve absolute value linear equations;	Algebra: Linear Expressions, Equations, and Inequalities
	6.F	solve absolute value linear inequalities;	Algebra: Linear Expressions, Equations, and Inequalities
	6.G	analyze the effect on the graphs of $f(x) = 1/x$ when $f(x)$ is replaced by $af(x)$, $f(bx)$, $f(x-c)$, and $f(x) + d$ for specific positive and negative real values of a , b , c , and d ;	Functions: Properties of Functions
	6.H	formulate rational equations that model real-world situations;	Algebra: Rational and Radical Expressions and Equations
	6.I	solve rational equations that have real solutions;	Algebra: Rational and Radical Expressions and Equations
	6.J	determine the reasonableness of a solution to a rational equation;	Algebra: Rational and Radical Expressions and Equations
	6.K	determine the asymptotic restrictions on the domain of a rational function and represent domain and range using interval notation, inequalities, and set notation; and	Algebra: Rational and Radical Expressions and Equations
	6.L	formulate and solve equations involving inverse variation.	Algebra: Rational and Radical Expressions and Equations
	7	Number and algebraic methods. The student applies mathematical processes to simplify and perform operations on expressions and to solve equations. The student is expected to:	
	7.A	add, subtract, and multiply complex numbers;	Number and Quantity: Complex Numbers
	7.B	add, subtract, and multiply polynomials;	Algebra: Polynomial Expressions and Equations
	7.C	determine the quotient of a polynomial of degree three and of degree four when divided by a polynomial of degree one and of degree two;	Algebra: Polynomial Expressions and Equations

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Texas Essential Knowledge and Skills (TEKS) for Algebra II			ACT Mathematics Reporting Categories and Skill Areas
Strand	Standard Number	Standard	
	7.D	determine the linear factors of a polynomial function of degree three and of degree four using algebraic methods;	Algebra : Polynomial Expressions and Equations
	7.E	determine linear and quadratic factors of a polynomial expression of degree three and of degree four, including factoring the sum and difference of two cubes and factoring by grouping;	Algebra : Polynomial Expressions and Equations
	7.F	determine the sum, difference, product, and quotient of rational expressions with integral exponents of degree one and of degree two;	Algebra : Rational and Radical Expressions and Equations
	7.G	rewrite radical expressions that contain variables to equivalent forms;	Algebra : Rational and Radical Expressions and Equations
	7.H	solve equations involving rational exponents; and	Algebra : Rational and Radical Expressions and Equations
	7.I	write the domain and range of a function in interval notation, inequalities, and set notation.	Functions : Properties of Functions
	8	Data. The student applies mathematical processes to analyze data, select appropriate models, write corresponding functions, and make predictions. The student is expected to:	
	8.A	analyze data to select the appropriate model from among linear, quadratic, and exponential models;	Integrating Essential Skills : Scatterplots and Association Statistics and Probability : Interpret Data on Two Counts
	8.B	use regression methods available through technology to write a linear function, a quadratic function, and an exponential function from a given set of data; and	
	8.C	predict and make decisions and critical judgments from a given set of data using linear, quadratic, and exponential models.	Integrating Essential Skills : Scatterplots and Association Statistics and Probability : Interpret Data on Two Counts

Texas Essential Knowledge and Skills (TEKS) for Geometry (adopted 2012) Aligned to the ACT

Texas Essential Knowledge and Skills (TEKS) for Geometry			The ACT Mathematics Reporting Categories and Skill Areas
Strand	Standard Number	Standard	
(c) Knowledge and Skills	1	Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	
	1.A	apply mathematics to problems arising in everyday life, society, and the workplace;	Modeling: Interpreting; Understanding; Evaluating; Improving; Producing
	1.B	use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;	Modeling: Interpreting; Understanding; Evaluating; Improving
	1.C	select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems;	Modeling: Evaluating; Producing
	1.D	communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;	Modeling: Interpreting; Producing
	1.E	create and use representations to organize, record, and communicate mathematical ideas;	Modeling: Producing
	1.F	analyze mathematical relationships to connect and communicate mathematical ideas; and	Modeling: Interpreting; Understanding; Evaluating; Improving
	1.G	display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.	Modeling: Interpreting; Understanding; Evaluating
	2	Coordinate and transformational geometry. The student uses the process skills to understand the connections between algebra and geometry and uses the one- and two-dimensional coordinate systems to verify geometric conjectures. The student is expected to:	
	2.A	determine the coordinates of a point that is a given fractional distance less than one from one end of a line segment to the other in one- and two-dimensional coordinate systems, including finding the midpoint;	Geometry: Coordinate Geometry
2.B	derive and use the distance, slope, and midpoint formulas to verify geometric relationships, including congruence of segments and parallelism or perpendicularity of pairs of lines; and	Geometry: Coordinate Geometry	
2.C	determine an equation of a line parallel or perpendicular to a given line that passes through a given point.	Geometry: Coordinate Geometry	

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Texas Essential Knowledge and Skills (TEKS) for Geometry			The ACT Mathematics Reporting Categories and Skill Areas
Strand	Standard Number	Standard	
	3	Coordinate and transformational geometry. The student uses the process skills to generate and describe rigid transformations (translation, reflection, and rotation) and non-rigid transformations (dilations that preserve similarity and reductions and enlargements that do not preserve similarity). The student is expected to:	
	3.A	describe and perform transformations of figures in a plane using coordinate notation;	Geometry: Transformations
	3.B	determine the image or pre-image of a given two-dimensional figure under a composition of rigid transformations, a composition of non-rigid transformations, and a composition of both, including dilations where the center can be any point in the plane;	Geometry: Transformations
	3.C	identify the sequence of transformations that will carry a given pre-image onto an image on and off the coordinate plane; and	Geometry: Transformations
	3.D	identify and distinguish between reflectional and rotational symmetry in a plane figure.	Geometry: Transformations Integrating Essential Skills: Properties of Lines, Angles, and Shapes
	4	Logical argument and constructions. The student uses the process skills with deductive reasoning to understand geometric relationships. The student is expected to:	
	4.A	distinguish between undefined terms, definitions, postulates, conjectures, and theorems;	Geometry: Proof, Reasoning, and Constructions
	4.B	identify and determine the validity of the converse, inverse, and contrapositive of a conditional statement and recognize the connection between a biconditional statement and a true conditional statement with a true converse;	Geometry: Proof, Reasoning, and Constructions
	4.C	verify that a conjecture is false using a counterexample; and	Geometry: Proof, Reasoning, and Constructions
	4.D	compare geometric relationships between Euclidean and spherical geometries, including parallel lines and the sum of the angles in a triangle.	
	5	Logical argument and constructions. The student uses constructions to validate conjectures about geometric figures. The student is expected to:	
	5.A	investigate patterns to make conjectures about geometric relationships, including angles formed by parallel lines cut by a transversal, criteria required for triangle congruence, special segments of triangles, diagonals of quadrilaterals, interior and exterior angles of polygons, and special segments and angles of circles choosing from a variety of tools;	Geometry: Proof, Reasoning, and Constructions Integrating Essential Skills: Properties of Lines, Angles, and Shapes

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Texas Essential Knowledge and Skills (TEKS) for Geometry			The ACT Mathematics Reporting Categories and Skill Areas
Strand	Standard Number	Standard	
	5.B	construct congruent segments, congruent angles, a segment bisector, an angle bisector, perpendicular lines, the perpendicular bisector of a line segment, and a line parallel to a given line through a point not on a line using a compass and a straightedge;	Geometry: Proof, Reasoning, and Constructions
	5.C	use the constructions of congruent segments, congruent angles, angle bisectors, and perpendicular bisectors to make conjectures about geometric relationships; and	Geometry: Proof, Reasoning, and Constructions
	5.D	verify the Triangle Inequality theorem using constructions and apply the theorem to solve problems.	Geometry: Proof, Reasoning, and Constructions
	6	Proof and congruence. The student uses the process skills with deductive reasoning to prove and apply theorems by using a variety of methods such as coordinate, transformational, and axiomatic and formats such as two-column, paragraph, and flow chart. The student is expected to:	
	6.A	verify theorems about angles formed by the intersection of lines and line segments, including vertical angles, and angles formed by parallel lines cut by a transversal and prove equidistance between the endpoints of a segment and points on its perpendicular bisector and apply these relationships to solve problems;	Geometry: Proof, Reasoning, and Constructions Integrating Essential Skills: Properties of Lines, Angles, and Shapes
	6.B	prove two triangles are congruent by applying the Side-Angle-Side, Angle-Side-Angle, Side-Side-Side, Angle-Angle-Side, and Hypotenuse-Leg congruence conditions;	Geometry: Proof, Reasoning, and Constructions
	6.C	apply the definition of congruence, in terms of rigid transformations, to identify congruent figures and their corresponding sides and angles;	Geometry: Proof, Reasoning, and Constructions Integrating Essential Skills: Properties of Lines, Angles, and Shapes
	6.D	verify theorems about the relationships in triangles, including proof of the Pythagorean Theorem, the sum of interior angles, base angles of isosceles triangles, midsegments, and medians, and apply these relationships to solve problems; and	Geometry: Proof, Reasoning, and Constructions Integrating Essential Skills: Properties of Lines, Angles, and Shapes; Pythagorean Theorem
	6.E	prove a quadrilateral is a parallelogram, rectangle, square, or rhombus using opposite sides, opposite angles, or diagonals and apply these relationships to solve problems.	Geometry: Proof, Reasoning, and Constructions Integrating Essential Skills: Properties of Lines, Angles, and Shapes
	7	Similarity, proof, and trigonometry. The student uses the process skills in applying similarity to solve problems. The student is expected to:	

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Texas Essential Knowledge and Skills (TEKS) for Geometry			The ACT Mathematics Reporting Categories and Skill Areas
Strand	Standard Number	Standard	
	7.A	apply the definition of similarity in terms of a dilation to identify similar figures and their proportional sides and the congruent corresponding angles; and	Geometry: Proof, Reasoning, and Constructions; Similarity, Right Triangles, and Trigonometry
	7.B	apply the Angle-Angle criterion to verify similar triangles and apply the proportionality of the corresponding sides to solve problems.	Geometry: Proof, Reasoning, and Constructions; Similarity, Right Triangles, and Trigonometry
	8	Similarity, proof, and trigonometry. The student uses the process skills with deductive reasoning to prove and apply theorems by using a variety of methods such as coordinate, transformational, and axiomatic and formats such as two-column, paragraph, and flow chart. The student is expected to:	
	8.A	prove theorems about similar triangles, including the Triangle Proportionality theorem, and apply these theorems to solve problems; and	Geometry: Proof, Reasoning, and Constructions; Similarity, Right Triangles, and Trigonometry Integrating Essential Skills: Properties of Lines, Angles, and Shapes
	8.B	identify and apply the relationships that exist when an altitude is drawn to the hypotenuse of a right triangle, including the geometric mean, to solve problems.	Geometry: Similarity, Right Triangles, and Trigonometry
	9	Similarity, proof, and trigonometry. The student uses the process skills to understand and apply relationships in right triangles. The student is expected to:	
	9.A	determine the lengths of sides and measures of angles in a right triangle by applying the trigonometric ratios sine, cosine, and tangent to solve problems; and	Geometry: Similarity, Right Triangles, and Trigonometry
	9.B	apply the relationships in special right triangles 30°-60°-90° and 45°-45°-90° and the Pythagorean Theorem, including Pythagorean triples, to solve problems.	Geometry: Similarity, Right Triangles, and Trigonometry Integrating Essential Skills: Pythagorean Theorem
	10	Two-dimensional and three-dimensional figures. The student uses the process skills to recognize characteristics and dimensional changes of two- and three-dimensional figures. The student is expected to:	
	10.A	identify the shapes of two-dimensional cross-sections of prisms, pyramids, cylinders, cones, and spheres and identify three-dimensional objects generated by rotations of two-dimensional shapes; and	Geometry: Transformations; Geometric Measurement and Modeling Integrating Essential Skills: Properties of Lines, Angles, and Shapes
	10.B	determine and describe how changes in the linear dimensions of a shape affect its perimeter, area, surface area, or volume, including proportional and non-proportional dimensional change.	Geometry: Transformations; Similarity, Right Triangles, and Trigonometry Integrating Essential Skills: Properties of Lines, Angles, and Shapes; Perimeter, Circumference, and Area; Surface Area and Volume

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Texas Essential Knowledge and Skills (TEKS) for Geometry			The ACT Mathematics Reporting Categories and Skill Areas
Strand	Standard Number	Standard	
	11	Two-dimensional and three-dimensional figures. The student uses the process skills in the application of formulas to determine measures of two- and three-dimensional figures. The student is expected to:	
	11.A	apply the formula for the area of regular polygons to solve problems using appropriate units of measure;	Geometry: Similarity, Right Triangles, and Trigonometry; Geometric Measurement and Modeling Integrating Essential Skills: Properties of Lines, Angles, and Shapes; Perimeter, Circumference, and Area
	11.B	determine the area of composite two-dimensional figures comprised of a combination of triangles, parallelograms, trapezoids, kites, regular polygons, or sectors of circles to solve problems using appropriate units of measure;	Geometry: Similarity, Right Triangles, and Trigonometry; Geometric Measurement and Modeling; Properties of Circles Integrating Essential Skills: Properties of Lines, Angles, and Shapes; Perimeter, Circumference, and Area
	11.C	apply the formulas for the total and lateral surface area of three-dimensional figures, including prisms, pyramids, cones, cylinders, spheres, and composite figures, to solve problems using appropriate units of measure; and	Geometry: Geometric Measurement and Modeling Integrating Essential Skills: Surface Area and Volume
	11.D	apply the formulas for the volume of three-dimensional figures, including prisms, pyramids, cones, cylinders, spheres, and composite figures, to solve problems using appropriate units of measure.	Geometry: Geometric Measurement and Modeling Integrating Essential Skills: Surface Area and Volume
	12	Circles. The student uses the process skills to understand geometric relationships and apply theorems and equations about circles. The student is expected to:	
	12.A	apply theorems about circles, including relationships among angles, radii, chords, tangents, and secants, to solve non-contextual problems;	Geometry: Properties of Circles
	12.B	apply the proportional relationship between the measure of an arc length of a circle and the circumference of the circle to solve problems;	Geometry: Properties of Circles; Geometric Measurement and Modeling
	12.C	apply the proportional relationship between the measure of the area of a sector of a circle and the area of the circle to solve problems;	Geometry: Properties of Circles; Geometric Measurement and Modeling
	12.D	describe radian measure of an angle as the ratio of the length of an arc intercepted by a central angle and the radius of the circle; and	Geometry: Properties of Circles; Geometric Measurement and Modeling
	12.E	show that the equation of a circle with center at the origin and radius r is $x^2 + y^2 = r^2$ and determine the equation for the graph of a circle with radius r and center (h, k) , $(x - h)^2 + (y - k)^2 = r^2$.	Geometry: Conic Sections

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Texas Essential Knowledge and Skills (TEKS) for Geometry			The ACT Mathematics Reporting Categories and Skill Areas
Strand	Standard Number	Standard	
	13	Probability. The student uses the process skills to understand probability in real-world situations and how to apply independence and dependence of events. The student is expected to:	
	13.A	develop strategies to use permutations and combinations to solve contextual problems;	Statistics and Probability : Counting, Permutations, and Combinations
	13.B	determine probabilities based on area to solve contextual problems;	Integrating Essential Skills : Perimeter, Circumference, and Area; Basic Probability
	13.C	identify whether two events are independent and compute the probability of the two events occurring together with or without replacement;	Statistics and Probability : Rules of Probability
	13.D	apply conditional probability in contextual problems; and	Statistics and Probability : Rules of Probability
	13.E	apply independence in contextual problems.	Statistics and Probability : Rules of Probability

Texas Essential Knowledge and Skills (TEKS) for Mathematical Models with Applications (adopted 2012) Aligned to the ACT

Texas Essential Knowledge and Skills (TEKS) for Mathematical Models with Applications			The ACT Mathematics Reporting Categories and Skill Areas
Strand	Standard Number	Standard	
(c) Knowledge and skills.	1	Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	
	1.A	apply mathematics to problems arising in everyday life, society, and the workplace;	Modeling: Interpreting; Understanding; Evaluating; Improving; Producing
	1.B	use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;	Modeling: Interpreting; Understanding; Evaluating; Improving
	1.C	select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems;	Modeling: Evaluating; Producing
	1.D	communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;	Modeling: Interpreting; Producing
	1.E	create and use representations to organize, record, and communicate mathematical ideas;	Modeling: Producing
	1.F	analyze mathematical relationships to connect and communicate mathematical ideas; and	Modeling: Interpreting; Understanding; Evaluating; Improving
	1.G	display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.	Modeling: Interpreting; Understanding; Evaluating
	2	Mathematical modeling in personal finance. The student uses mathematical processes with graphical and numerical techniques to study patterns and analyze data related to personal finance. The student is expected to:	
	2.A	use rates and linear functions to solve problems involving personal finance and budgeting, including compensations and deductions;	Number and Quantity: Quantities and Units Algebra: Linear Expressions, Equations, and Inequalities; Systems of Equations and Inequalities Functions: Properties of Functions Integrating Essential Skills: Ratio, Proportion, and Percent; Writing and Solving Simple Equations and Inequalities; Scatterplots and Association Modeling: Interpreting; Producing

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Texas Essential Knowledge and Skills (TEKS) for Mathematical Models with Applications			The ACT Mathematics Reporting Categories and Skill Areas
Strand	Standard Number	Standard	
	2.B	solve problems involving personal taxes; and	<p>Number and Quantity: Quantities and Units Algebra: Linear Expressions, Equations, and Inequalities; Systems of Equations and Inequalities Functions: Properties of Functions Integrating Essential Skills: Computation and Problem-Solving with Real Numbers; Ratio, Proportion, and Percent; Writing and Solving Simple Equations and Inequalities Modeling: Interpreting; Producing</p>
	2.C	analyze data to make decisions about banking, including options for online banking, checking accounts, overdraft protection, processing fees, and debit card/ATM fees.	<p>Number and Quantity: Quantities and Units Algebra: Linear Expressions, Equations, and Inequalities; Systems of Equations and Inequalities Statistics and Probability: Interpret Data on a Single Count; Interpret Data on Two Counts; Making Inferences from Experiments and Surveys; Rules of Probability Integrating Essential Skills: Computation and Problem-Solving with Real Numbers; Ratio, Proportion, and Percent; Writing and Solving Simple Equations and Inequalities; Data Summary and Displays Modeling: Interpreting; Understanding; Evaluating; Improving; Producing</p>
	3	Mathematical modeling in personal finance. The student uses mathematical processes with algebraic formulas, graphs, and amortization modeling to solve problems involving credit. The student is expected to:	
	3.A	use formulas to generate tables to display series of payments for loan amortizations resulting from financed purchases;	
	3.B	analyze personal credit options in retail purchasing and compare relative advantages and disadvantages of each option;	
	3.C	use technology to create amortization models to investigate home financing and compare buying a home to renting a home; and	
	3.D	use technology to create amortization models to investigate automobile financing and compare buying a vehicle to leasing a vehicle.	
	4	Mathematical modeling in personal finance. The student uses mathematical processes with algebraic formulas, numerical techniques, and graphs to solve problems related to financial planning. The student is expected to:	
	4.A	analyze and compare coverage options and rates in insurance;	
	4.B	investigate and compare investment options, including stocks, bonds, annuities, certificates of deposit, and retirement plans; and	

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Texas Essential Knowledge and Skills (TEKS) for Mathematical Models with Applications			The ACT Mathematics Reporting Categories and Skill Areas
Strand	Standard Number	Standard	
	4.C	analyze types of savings options involving simple and compound interest and compare relative advantages of these options.	Functions: Exponential and Logarithmic Functions
	5	Mathematical modeling in science and engineering. The student applies mathematical processes with algebraic techniques to study patterns and analyze data as it applies to science. The student is expected to:	
	5.A	use proportionality and inverse variation to describe physical laws such as Hook's Law, Newton's Second Law of Motion, and Boyle's Law;	Algebra: Linear Expressions, Equations, and Inequalities; Rational and Radical Expressions and Equations; Polynomial Expressions and Equations Integrating Essential Skills: Ratio, Proportion, and Percentage
	5.B	use exponential models available through technology to model growth and decay in areas, including radioactive decay; and	Functions: Properties of Functions; Exponential and Logarithmic Functions
	5.C	use quadratic functions to model motion.	Algebra: Quadratic Expressions, Equations, and Inequalities Functions: Properties of Functions
	6	Mathematical modeling in science and engineering. The student applies mathematical processes with algebra and geometry to study patterns and analyze data as it applies to architecture and engineering. The student is expected to:	
	6.A	use similarity, geometric transformations, symmetry, and perspective drawings to describe mathematical patterns and structure in architecture;	Geometry: Transformations; Similarity, Right Triangles, and Trigonometry; Geometric Measurement and Modeling Integrating Essential Skills: Properties of Lines, Angles, and Shapes
	6.B	use scale factors with two-dimensional and three-dimensional objects to demonstrate proportional and non-proportional changes in surface area and volume as applied to fields;	Geometry: Similarity, Right Triangles, and Trigonometry; Geometric Measurement and Modeling Integrating Essential Skills: Properties of Lines, Angles, and Shapes; Perimeter, Circumference, and Area; Surface Area and Volume
	6.C	use the Pythagorean Theorem and special right-triangle relationships to calculate distances; and	Geometry: Similarity, Right Triangles, and Trigonometry; Geometric Measurement and Modeling; Pythagorean Theorem
	6.D	use trigonometric ratios to calculate distances and angle measures as applied to fields.	Geometry: Similarity, Right Triangles, and Trigonometry; Geometric Measurement and Modeling; Pythagorean Theorem
	7	Mathematical modeling in fine arts. The student uses mathematical processes with algebra and geometry to study patterns and analyze data as it applies to fine arts. The student is expected to:	
	7.A	use trigonometric ratios and functions available through technology to model periodic behavior in art and music;	Functions: Trigonometric Functions Geometry: Similarity, Right Triangles, and Trigonometry; Geometric Measurement and Modeling

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Texas Essential Knowledge and Skills (TEKS) for Mathematical Models with Applications			The ACT Mathematics Reporting Categories and Skill Areas
Strand	Standard Number	Standard	
	7.B	use similarity, geometric transformations, symmetry, and perspective drawings to describe mathematical patterns and structure in art and photography;	Geometry: Transformations; Similarity, Right Triangles, and Trigonometry; Geometric Measurement and Modeling Integrating Essential Skills: Properties of Lines, Angles, and Shapes
	7.C	use geometric transformations, proportions, and periodic motion to describe mathematical patterns and structure in music; and	Functions: Trigonometric Functions Geometry: Transformations; Similarity, Right Triangles, and Trigonometry; Geometric Measurement and Modeling Integrating Essential Skills: Ratio, Proportion, and Percentage
	7.D	use scale factors with two-dimensional and three-dimensional objects to demonstrate proportional and non-proportional changes in surface area and volume as applied to fields.	Geometry: Similarity, Right Triangles, and Trigonometry; Geometric Measurement and Modeling Integrating Essential Skills: Ratio, Proportion, and Percent; Surface Area and Volume; Measurement Units and Unit Conversion; Properties of Lines, Angles, and Shapes
	8	Mathematical modeling in social sciences. The student applies mathematical processes to determine the number of elements in a finite sample space and compute the probability of an event. The student is expected to:	
	8.A	determine the number of ways an event may occur using combinations, permutations, and the Fundamental Counting Principle;	Statistics and Probability: Counting, Permutations, and Combinations
	8.B	compare theoretical to empirical probability; and	Statistics and Probability: Making Inferences from Experiments and Surveys; Rules of Probability
	8.C	use experiments to determine the reasonableness of a theoretical model such as binomial or geometric.	Statistics and Probability: Making Inferences from Experiments and Surveys; Rules of Probability
	9	Mathematical modeling in social sciences. The student applies mathematical processes and mathematical models to analyze data as it applies to social sciences. The student is expected to:	
	9.A	interpret information from various graphs, including line graphs, bar graphs, circle graphs, histograms, scatterplots, dot plots, stem-and-leaf plots, and box and whisker plots, to draw conclusions from the data and determine the strengths and weaknesses of conclusions;	Statistics and Probability: Interpret Data on Two Counts; Making Inferences from Experiments and Surveys Integrating Essential Skills: Scatterplots and Association; Data Summary and Displays
	9.B	analyze numerical data using measures of central tendency (mean, median, and mode) and variability (range, interquartile range or IQR, and standard deviation) in order to make inferences with normal distributions;	Statistics and Probability: Interpret Data on a Single Count; Making Inferences from Experiments and Surveys Integrating Essential Skills: Data Summary and Displays
	9.C	distinguish the purposes and differences among types of research, including surveys, experiments, and observational studies;	Statistics and Probability: Making Inferences from Experiments and Surveys
	9.D	use data from a sample to estimate population mean or population proportion;	Statistics and Probability: Making Inferences from Experiments and Surveys

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Texas Essential Knowledge and Skills (TEKS) for Mathematical Models with Applications			The ACT Mathematics Reporting Categories and Skill Areas
Strand	Standard Number	Standard	
	9.E	analyze marketing claims based on graphs and statistics from electronic and print media and justify the validity of stated or implied conclusions; and	Statistics and Probability : Interpret Data on a Single Count; Interpret Data on Two Counts; Making Inferences from Experiments and Surveys Integrating Essential Skills : Scatterplots and Association; Data Summary and Displays
	9.F	use regression methods available through technology to model linear and exponential functions, interpret correlations, and make predictions.	Statistics and Probability : Interpret Data on Two Counts; Making Inferences from Experiments and Surveys Integrating Essential Skills : Scatterplots and Association; Data Summary and Displays
	10	Mathematical modeling in social sciences. The student applies mathematical processes to design a study and use graphical, numerical, and analytical techniques to communicate the results of the study. The student is expected to:	
	10.A	formulate a meaningful question, determine the data needed to answer the question, gather the appropriate data, analyze the data, and draw reasonable conclusions; and	Statistics and Probability : Interpret Data on a Single Count; Interpret Data on Two Counts; Making Inferences from Experiments and Surveys
	10.B	communicate methods used, analyses conducted, and conclusions drawn for a data-analysis project through the use of one or more of the following: a written report, a visual display, an oral report, or a multi-media presentation.	Statistics and Probability : Interpret Data on a Single Count; Interpret Data on Two Counts; Making Inferences from Experiments and Surveys

Texas Essential Knowledge and Skills (TEKS) for Precalculus (adopted 2012) Aligned to the ACT

Texas Essential Knowledge and Skills (TEKS) for Precalculus			The ACT Mathematics Reporting Categories and Skill Areas
Strand	Standard Number	Standard	
(c) Knowledge and skills.	1	Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	
	1.A	apply mathematics to problems arising in everyday life, society, and the workplace;	Modeling: Interpreting; Understanding; Evaluating; Improving; Producing
	1.B	use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;	Modeling: Interpreting; Understanding; Evaluating; Improving
	1.C	select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems;	Modeling: Evaluating; Producing
	1.D	communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;	Modeling: Interpreting; Producing
	1.E	create and use representations to organize, record, and communicate mathematical ideas;	Modeling: Producing
	1.F	analyze mathematical relationships to connect and communicate mathematical ideas; and	Modeling: Interpreting; Understanding; Evaluating; Improving
	1.G	display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.	Modeling: Interpreting; Understanding; Evaluating
2		Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple representations of functions and algebraically constructs new functions. The student analyzes and uses functions to model real-world problems. The student is expected to:	
	2.A	use the composition of two functions to model and solve real-world problems;	Functions: Function Composition and Inverse Functions
	2.B	demonstrate that function composition is not always commutative;	Functions: Function Composition and Inverse Functions
	2.C	represent a given function as a composite function of two or more functions;	Functions: Function Composition and Inverse Functions
	2.D	describe symmetry of graphs of even and odd functions;	Functions: Properties of Functions

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Texas Essential Knowledge and Skills (TEKS) for Precalculus			The ACT Mathematics Reporting Categories and Skill Areas
Strand	Standard Number	Standard	
	2.E	determine an inverse function, when it exists, for a given function over its domain or a subset of its domain and represent the inverse using multiple representations;	Functions : Function Composition and Inverse Functions
	2.F	graph exponential, logarithmic, rational, polynomial, power, trigonometric, inverse trigonometric, and piecewise defined functions, including step functions;	Functions : Properties of Functions
	2.G	graph functions, including exponential, logarithmic, sine, cosine, rational, polynomial, and power functions and their transformations, including $af(x)$, $f(x) + d$, $f(x - c)$, $f(bx)$ for specific values of a , b , c , and d , in mathematical and real-world problems;	Functions : Properties of Functions
	2.H	graph $\arcsin x$ and $\arccos x$ and describe the limitations on the domain;	
	2.I	determine and analyze the key features of exponential, logarithmic, rational, polynomial, power, trigonometric, inverse trigonometric, and piecewise defined functions, including step functions such as domain, range, symmetry, relative maximum, relative minimum, zeros, asymptotes, and intervals over which the function is increasing or decreasing;	Functions : Properties of Functions; Trigonometric Functions; Exponential and Logarithmic Functions Algebra : Rational and Radical Expressions and Equations; Polynomial Expressions and Equations
	2.J	analyze and describe end behavior of functions, including exponential, logarithmic, rational, polynomial, and power functions, using infinity notation to communicate this characteristic in mathematical and real-world problems;	Functions : Properties of Functions; Exponential and Logarithmic Functions Algebra : Rational and Radical Expressions and Equations; Polynomial Expressions and Equations
	2.K	analyze characteristics of rational functions and the behavior of the function around the asymptotes, including horizontal, vertical, and oblique asymptotes;	Algebra : Rational and Radical Expressions and Equations Functions : Properties of Functions
	2.L	determine various types of discontinuities in the interval $(-?, ?)$ as they relate to functions and explore the limitations of the graphing calculator as it relates to the behavior of the function around discontinuities;	
	2.M	describe the left-sided behavior and the right-sided behavior of the graph of a function around discontinuities;	
	2.N	analyze situations modeled by functions, including exponential, logarithmic, rational, polynomial, and power functions, to solve real-world problems;	Algebra : Rational and Radical Expressions and Equations; Polynomial Expressions and Equations Functions : Properties of Functions; Exponential and Logarithmic Functions
	2.O	develop and use a sinusoidal function that models a situation in mathematical and real-world problems; and	Functions : Trigonometric Functions

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Texas Essential Knowledge and Skills (TEKS) for Precalculus			The ACT Mathematics Reporting Categories and Skill Areas
Strand	Standard Number	Standard	
	2.P	determine the values of the trigonometric functions at the special angles and relate them in mathematical and real-world problems.	Functions: Trigonometric Functions
	3	Relations and geometric reasoning. The student uses the process standards in mathematics to model and make connections between algebraic and geometric relations. The student is expected to:	
	3.A	graph a set of parametric equations;	
	3.B	convert parametric equations into rectangular relations and convert rectangular relations into parametric equations;	
	3.C	use parametric equations to model and solve mathematical and real-world problems;	
	3.D	graph points in the polar coordinate system and convert between rectangular coordinates and polar coordinates;	
	3.E	graph polar equations by plotting points and using technology;	
	3.F	determine the conic section formed when a plane intersects a double-napped cone;	Geometry: Conic Sections
	3.G	make connections between the locus definition of conic sections and their equations in rectangular coordinates;	
	3.H	use the characteristics of an ellipse to write the equation of an ellipse with center (h, k) ; and	Geometry: Conic Sections
	3.I	use the characteristics of a hyperbola to write the equation of a hyperbola with center (h, k) .	Geometry: Conic Sections
	4	Number and measure. The student uses process standards in mathematics to apply appropriate techniques, tools, and formulas to calculate measures in mathematical and real-world problems. The student is expected to:	
	4.A	determine the relationship between the unit circle and the definition of a periodic function to evaluate trigonometric functions in mathematical and real-world problems;	Functions: Trigonometric Functions
	4.B	describe the relationship between degree and radian measure on the unit circle;	Functions: Trigonometric Functions
	4.C	represent angles in radians or degrees based on the concept of rotation and find the measure of reference angles and angles in standard position;	Functions: Trigonometric Functions

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Texas Essential Knowledge and Skills (TEKS) for Precalculus			The ACT Mathematics Reporting Categories and Skill Areas
Strand	Standard Number	Standard	
	4.D	represent angles in radians or degrees based on the concept of rotation in mathematical and real-world problems, including linear and angular velocity;	Functions: Trigonometric Functions
	4.E	determine the value of trigonometric ratios of angles and solve problems involving trigonometric ratios in mathematical and real-world problems;	Functions: Trigonometric Functions
	4.F	use trigonometry in mathematical and real-world problems, including directional bearing;	Functions: Trigonometric Functions
	4.G	use the Law of Sines in mathematical and real-world problems;	Functions: Trigonometric Functions
	4.H	use the Law of Cosines in mathematical and real-world problems;	Functions: Trigonometric Functions
	4.I	use vectors to model situations involving magnitude and direction;	Number and Quantity: Vectors and Matrices
	4.J	represent the addition of vectors and the multiplication of a vector by a scalar geometrically and symbolically; and	Number and Quantity: Vectors and Matrices
	4.K	apply vector addition and multiplication of a vector by a scalar in mathematical and real-world problems.	Number and Quantity: Vectors and Matrices
	5	Algebraic reasoning. The student uses process standards in mathematics to evaluate expressions, describe patterns, formulate models, and solve equations and inequalities using properties, procedures, or algorithms. The student is expected to:	
	5.A	evaluate finite sums and geometric series, when possible, written in sigma notation;	Functions: Sequences and Series
	5.B	represent arithmetic sequences and geometric sequences using recursive formulas;	Functions: Sequences and Series
	5.C	calculate the n th term and the n th partial sum of an arithmetic series in mathematical and real-world problems;	Functions: Sequences and Series
	5.D	represent arithmetic series and geometric series using sigma notation;	Functions: Sequences and Series
	5.E	calculate the n th term of a geometric series, the n th partial sum of a geometric series, and sum of an infinite geometric series when it exists;	Functions: Sequences and Series
	5.F	apply the Binomial Theorem for the expansion of $(a + b)^n$ in powers of a and b for a positive integer n , where a and b are any numbers;	Algebra: Polynomial Expressions and Equations
	5.G	use the properties of logarithms to evaluate or transform logarithmic expressions;	Functions: Exponential and Logarithmic Functions
	5.H	generate and solve logarithmic equations in mathematical and real-world problems;	Functions: Exponential and Logarithmic Functions

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Texas Essential Knowledge and Skills (TEKS) for Precalculus			The ACT Mathematics Reporting Categories and Skill Areas
Strand	Standard Number	Standard	
	5.I	generate and solve exponential equations in mathematical and real-world problems;	Functions : Exponential and Logarithmic Functions
	5.J	solve polynomial equations with real coefficients by applying a variety of techniques in mathematical and real-world problems;	Algebra : Quadratic Expressions, Equations, and Inequalities; Polynomial Expressions and Equations
	5.K	solve polynomial inequalities with real coefficients by applying a variety of techniques and write the solution set of the polynomial inequality in interval notation in mathematical and real-world problems;	Algebra : Linear Expressions, Equations, and Inequalities; Quadratic Expressions, Equations, and Inequalities
	5.L	solve rational inequalities with real coefficients by applying a variety of techniques and write the solution set of the rational inequality in interval notation in mathematical and real-world problems;	
	5.M	use trigonometric identities such as reciprocal, quotient, Pythagorean, cofunctions, even/odd, and sum and difference identities for cosine and sine to simplify trigonometric expressions; and	Functions : Trigonometric Functions
	5.N	generate and solve trigonometric equations in mathematical and real-world problems.	Functions : Trigonometric Functions

Texas Essential Knowledge and Skills (TEKS) for Statistics (adopted 2012) Aligned to the ACT

Texas Essential Knowledge and Skills (TEKS) for Statistics			The ACT Mathematics Reporting Categories and Skill Areas
Strand	Standard Number	Standard	
(c) Knowledge and skills.	1	Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	
	1.A	apply mathematics to problems arising in everyday life, society, and the workplace;	Modeling: Interpreting; Understanding; Evaluating; Improving; Producing
	1.B	use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;	Modeling: Interpreting; Understanding; Evaluating; Improving
	1.C	select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems;	Modeling: Evaluating; Producing
	1.D	communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;	Modeling: Interpreting; Producing
	1.E	create and use representations to organize, record, and communicate mathematical ideas;	Modeling: Producing
	1.F	analyze mathematical relationships to connect and communicate mathematical ideas; and	Modeling: Interpreting; Understanding; Evaluating; Improving
	1.G	display, explain, or justify mathematical ideas and arguments using precise mathematical language in written or oral communication.	Modeling: Interpreting; Understanding; Evaluating
	2	Statistical process sampling and experimentation. The student applies mathematical processes to apply understandings about statistical studies, surveys, and experiments to design and conduct a study and use graphical, numerical, and analytical techniques to communicate the results of the study. The student is expected to:	
2.A	compare and contrast the benefits of different sampling techniques, including random sampling and convenience sampling methods;	Statistics and Probability: Making Inferences from Experiments and Surveys	
2.B	distinguish among observational studies, surveys, and experiments;	Statistics and Probability: Making Inferences from Experiments and Surveys	
2.C	analyze generalizations made from observational studies, surveys, and experiments;	Statistics and Probability: Making Inferences from Experiments and Surveys	
2.D	distinguish between sample statistics and population parameters;	Statistics and Probability: Interpret Data on a Single Count; Interpret Data on Two Counts	

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Texas Essential Knowledge and Skills (TEKS) for Statistics			The ACT Mathematics Reporting Categories and Skill Areas
Strand	Standard Number	Standard	
	2.E	formulate a meaningful question, determine the data needed to answer the question, gather the appropriate data, analyze the data, and draw reasonable conclusions;	
	2.F	communicate methods used, analyses conducted, and conclusions drawn for a data-analysis project through the use of one or more of the following: a written report, a visual display, an oral report, or a multi-media presentation; and	
	2.G	critically analyze published findings for appropriateness of study design implemented, sampling methods used, or the statistics applied.	
	3	Variability. The student applies the mathematical process standards when describing and modeling variability. The student is expected to:	
	3.A	distinguish between mathematical models and statistical models;	
	3.B	construct a statistical model to describe variability around the structure of a mathematical model for a given situation;	
	3.C	distinguish among different sources of variability, including measurement, natural, induced, and sampling variability; and	
	3.D	describe and model variability using population and sampling distributions.	
	4	Categorical and quantitative data. The student applies the mathematical process standards to represent and analyze both categorical and quantitative data. The student is expected to:	
	4.A	distinguish between categorical and quantitative data;	
	4.B	represent and summarize data and justify the representation;	Statistics and Probability : Interpret Data on a Single Count; Interpret Data on Two Counts Integrating Essential Skills : Scatterplots and Association; Data Summary and Displays
	4.C	analyze the distribution characteristics of quantitative data, including determining the possible existence and impact of outliers;	Statistics and Probability : Interpret Data on a Single Count; Interpret Data on Two Counts Integrating Essential Skills : Scatterplots and Association; Data Summary and Displays
	4.D	compare and contrast different graphical or visual representations given the same data set;	Statistics and Probability : Interpret Data on a Single Count; Interpret Data on Two Counts Integrating Essential Skills : Scatterplots and Association; Data Summary and Displays

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Texas Essential Knowledge and Skills (TEKS) for Statistics			The ACT Mathematics Reporting Categories and Skill Areas
Strand	Standard Number	Standard	
	4.E	compare and contrast meaningful information derived from summary statistics given a data set; and	Statistics and Probability : Interpret Data on a Single Count; Interpret Data on Two Counts Integrating Essential Skills : Scatterplots and Association; Data Summary and Displays
	4.F	analyze categorical data, including determining marginal and conditional distributions, using two-way tables.	Statistics and Probability : Interpret Data on a Single Count; Interpret Data on Two Counts Integrating Essential Skills : Scatterplots and Association; Data Summary and Displays
	5	Probability and random variables. The student applies the mathematical process standards to connect probability and statistics. The student is expected to:	
	5.A	determine probabilities, including the use of a two-way table;	Statistics and Probability : Rules of Probability
	5.B	describe the relationship between theoretical and empirical probabilities using the Law of Large Numbers;	Statistics and Probability : Rules of Probability
	5.C	construct a distribution based on a technology-generated simulation or collected samples for a discrete random variable; and	Statistics and Probability : Rules of Probability
	5.D	compare statistical measures such as sample mean and standard deviation from a technology-simulated sampling distribution to the theoretical sampling distribution.	
	6	Inference. The student applies the mathematical process standards to make inferences and justify conclusions from statistical studies. The student is expected to:	
	6.A	explain how a sample statistic and a confidence level are used in the construction of a confidence interval;	
	6.B	explain how changes in the sample size, confidence level, and standard deviation affect the margin of error of a confidence interval;	
	6.C	calculate a confidence interval for the mean of a normally distributed population with a known standard deviation;	
	6.D	calculate a confidence interval for a population proportion;	
	6.E	interpret confidence intervals for a population parameter, including confidence intervals from media or statistical reports;	
	6.F	explain how a sample statistic provides evidence against a claim about a population parameter when using a hypothesis test;	

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Texas Essential Knowledge and Skills (TEKS) for Statistics			The ACT Mathematics Reporting Categories and Skill Areas
Strand	Standard Number	Standard	
	6.G	construct null and alternative hypothesis statements about a population parameter;	
	6.H	explain the meaning of the p-value in relation to the significance level in providing evidence to reject or fail to reject the null hypothesis in the context of the situation;	
	6.I	interpret the results of a hypothesis test using technology-generated results such as large sample tests for proportion, mean, difference between two proportions, and difference between two independent means; and	
	6.J	describe the potential impact of Type I and Type II Errors.	
	7	Bivariate data. The student applies the mathematical process standards to analyze relationships among bivariate quantitative data. The student is expected to:	
	7.A	analyze scatterplots for patterns, linearity, outliers, and influential points;	Integrating Essential Skills: Scatterplots and Association
	7.B	transform a linear parent function to determine a line of best fit;	Statistics and Probability: Interpret Data on Two Counts
	7.C	compare different linear models for the same set of data to determine best fit, including discussions about error;	Statistics and Probability: Interpret Data on Two Counts
	7.D	compare different methods for determining best fit, including median-median and absolute value;	
	7.E	describe the relationship between influential points and lines of best fit using dynamic graphing technology; and	
	7.F	identify and interpret the reasonableness of attributes of lines of best fit within the context, including slope and y -intercept.	Statistics and Probability: Interpret Data on Two Counts

VII. Science

The ACT Content Description

- *Item tally and time* – The ACT science test is a 40-item, 35-minute test.
- *Concept* – The test measures science and engineering knowledge, practices, and skills that are highly correlated with college success. The correlations are based on both decades of empirical research and the responses of post-secondary educators on the ACT National Curriculum Survey.
- *Knowledge and skills tested* – The test measures knowledge areas and related skills reflected in the reporting categories for this test (further described in a chart below):
 - **Interpretation of Data:** Students locate, translate, infer, and extend from and evaluate data and information in scientific graphs, tables, and diagrams of varying complexity. This reporting category is divided into the following three subcategories:
 - Locating and Understanding
 - Inferring and Translating
 - Extending and Reevaluating
 - **Scientific Investigation:** Students understand the tools, procedures, and designs of scientific experiments and compare, extend, and modify those experiments. This reporting category is divided into the following three subcategories:
 - Locating and Comparing
 - Designing and Implementing
 - Extending and Improving
 - **Evaluating Models, Inferences, and Experimental Results:** Students evaluate the validity of scientific claims based on evidence and formulate conclusions and predictions based on that information using a claim, evidence, or reasoning model of scientific argument. This reporting category is divided into the following three subcategories:
 - Inferences and Results – Evaluating and Extending
 - Models – Understanding
 - Models – Evaluating and Extending

- (Note: The latter two subcategories (for Models) are reserved for conflicting viewpoints passages, while the first can be used with any passage type.)
- *Format and question types* – Science and engineering knowledge, skills, and practices are applied to rich scientific scenarios that require students to engage in scientific sense-making around the following, as suggested by Pellegrino et al. (NRC, 2014):
 - Experimental phenomena
 - Data presentations
 - Scientific models and explanations

Science test blueprints and specifications. Four scores are reported for the ACT science test—a total test score based on all 40 items and the three reporting category scores. The reporting categories constitute a specific number of items and percentage of the test, as shown below. A table describing the reporting categories in detail follows this.

Reporting Category	Number of Items	Percentage of Test
Interpretation of Data	18–22	45–55%
Scientific Investigation	8–12	20–30%
Evaluation of Models, Inferences, and Experimental Results	10–14	25–35%

In addition, the overall science test score is combined with the overall mathematics score to determine the STEM score.

Note: Although specific content standards are not reported on by the ACT science test, all major disciplines (biology, chemistry, physics, and Earth and space science) are used on the test to elicit evidence of students using science practices. Some items will require specific content knowledge to successfully complete the task; however, these tasks always involve the use of a science practice as well. Consequently, no specific science content subscore is reported according to the major science disciplines.

The ACT Reporting Category Descriptions

Reporting Category	Skill Area	Description/Examples
Interpretation of Data	Locating and Understanding	Locate one or more pieces of data and understand features of graphs such as units, tables, legends, and axes.
	Inferring and Translating	Use data from one or more graphs to identify trends, make inferences and comparisons, or translate into other graphic formats.
	Extending and Reevaluating	Make predictions based on trends in data.
Scientific Investigation	Locating and Comparing	Locate, compare, and contrast information about one or more scientific investigations or experiments.
	Designing and Implementing	Understand and evaluate aspects of experimental design such as methods, tools, variables, and controls.
	Extending and Implementing	Make predictions about future experiments or experimental conditions and determine additional methods to improve or evaluate investigations.
Evaluation of Models, Inferences, and Experimental Results	Inferences and Results: Evaluating and Extending	Evaluate and formulate hypotheses, predictions, and conclusions based on experimental results and other scientific data and knowledge.
	Models: Understanding and Comparing	Locate and compare information within a theoretical model or across competing models. (Note: These skills are only used with conflicting viewpoints passages.)

Reporting Category	Skill Area	Description/Examples
	Models: Evaluating and Extending	Evaluate and formulate predictions and hypotheses based on the examination of competing theoretical models. (Note: These skills are only used with conflicting viewpoints passages.)

MATRIX: The ACT to Texas Standards

The ACT Aligned to Texas College and Career Readiness Standards (CCRS) for Science (adopted 2009)

Texas College and Career Readiness Standards (CCRS) for Science													
I. Nature of Science: Scientific Ways of Learning and Thinking													
The ACT Science Reporting Categories and Skill Areas	Cognitive skills in science				Scientific inquiry	Collaborative and safe working practices			Current scientific technology			Effective communication of scientific information	
	I.A				I.B	I.C			I.D			I.E	
	1	2	3	4	1	1	2	3	1	2	3	1	2
Interpretation of Data													
Locating and Understanding				X									X
Inferring and Translating		X		X						X	X	X	
Extending and Reevaluating	X	X								X			
Scientific Investigation													
Locating and Comparing					X			X					
Designing and Implementing	X		X		X		X	X		X	X		
Extending and Implementing	X		X		X						X		
Evaluation of Models, Inferences, and Experimental Results													
Inferences and Results: Evaluating and Extending	X	X		X								X	X
Models: Understanding and Comparing	X			X						X			X
Models: Evaluating and Extending	X	X		X						X		X	X
The ACT Math Reporting Categories and Skill Areas (no matches)													

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Texas College and Career Readiness Standards (CCRS) for Science																		
II. Foundation Skills: Scientific Applications of Mathematics																		
The ACT Science Reporting Categories and Skill Areas	Basic mathematics conventions							Mathematics as a symbolic language		Understand relationships among geometry, algebra, and trigonometry				Scientific problem solving	Scientific application of probability and statistics	Scientific measurement		
	II.A							II.B		II.C				II.D	II.E	II.F		
	1	2	3	4	5	6	7	1	2	1	2	3	4	1	1	1	2	3
Interpretation of Data																		
Locating and Understanding													X	X	X			X
Inferring and Translating		X	X	X		X		X	X	X	X	X					X	
Extending and Reevaluating						X												
Scientific Investigation																		
Locating and Comparing																		
Designing and Implementing														X	X	X		
Extending and Implementing																		
Evaluation of Models, Inferences, and Experimental Results																		
Inferences and Results: Evaluating and Extending									X	X								
Models: Understanding and Comparing									X	X								
Models: Evaluating and Extending									X	X								
The ACT Math Reporting Categories and Skill Areas																		
Number and Quantity																		
Rational and Irrational Numbers	X																	
Properties of Exponents		X																
Vectors and Matrices										X								
Complex Numbers																		
Quantities and Units						X								X		X		
Algebra																		
Linear Expressions, Equations, and Inequalities					X			X	X									
Quadratic Expressions, Equations, and Inequalities								X	X									

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Texas College and Career Readiness Standards (CCRS) for Science																		
II. Foundation Skills: Scientific Applications of Mathematics																		
	Basic mathematics conventions							Mathematics as a symbolic language		Understand relationships among geometry, algebra, and trigonometry				Scientific problem solving	Scientific application of probability and statistics	Scientific measurement		
	II.A							II.B		II.C				II.D	II.E	II.F		
	1	2	3	4	5	6	7	1	2	1	2	3	4	1	1	1	2	3
The ACT Math Reporting Categories and Skill Areas																		
Rational and Radical Expressions and Equations								X	X									
Polynomial Expressions and Equations					X			X	X									
Functions																		
Properties of Functions											X							
Exponential and Logarithmic Functions																		X
Geometry																		
Similarity, Right Triangles, and Trigonometry												X						
Coordinate Geometry											X							
Geometric Measurement and Modeling													X					
Statistics and Probability																		
Interpret Data on a Single Count								X										X
Interpret Data on Two Counts								X										X
Integrating Essential Skills																		
Properties of Real Numbers	X		X															
Computation and Problem-Solving with Real Numbers						X												
Ratio, Proportion, and Percentage			X	X														
Measurement Units and Unit Conversion																	X	
Data Summary and Displays								X									X	
Modeling (no matches)																		

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Texas College and Career Readiness Standards (CCRS) for Science													
III. Foundation Skills: Scientific Applications of Communication										IV. Science, Technology, and Society			
The ACT Science Reporting Categories and Skill Areas	Scientific writing	Scientific reading				Presentation of scientific/technical information	Research skills/information literacy		Interactions between innovations and science	Social ethics		History of science	
	III.A 1	1	2	III.B 3	4	III.C 1	1	III.D 2	IV.A 1	1	IV.B 2	1	IV.C 2
Interpretation of Data													
Locating and Understanding		X		X									
Inferring and Translating		X											
Extending and Reevaluating													
Scientific Investigation													
Locating and Comparing		X											
Designing and Implementing		X						X					
Extending and Implementing													
Evaluation of Models, Inferences, and Experimental Results													
Inferences and Results: Evaluating and Extending		X		X				X	X				
Models: Understanding and Comparing		X		X								X	
Models: Evaluating and Extending		X		X				X	X			X	
The ACT Math Reporting Categories and Skill Areas (no matches)													

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Texas College and Career Readiness Standards (CCRS) for Science										VI.	VII.	VIII.	IX.	X.
V. Cross-Disciplinary Themes										Biology	Chemistry	Physics	Earth and Space Sciences	Environmental Science
	Matter/states of matter		Energy (thermodynamics, kinetic, potential, energy transfers)		Change over time/ equilibrium	Classification	Measurements and models			<i>Specific content standards are not reported on by the ACT Science Test.</i>				
	V.A		V.B		V.C	V.D	V.E							
The ACT Science Reporting Categories and Skill Areas	1	2	1	2	1	1	1	2	3					
Interpretation of Data														
Locating and Understanding														
Inferring and Translating					X				X					
Extending and Reevaluating														
Scientific Investigation														
Locating and Comparing														
Designing and Implementing						X								
Extending and Implementing														
Evaluation of Models, Inferences, and Experimental Results														
Inferences and Results: Evaluating and Extending					X	X	X		X					
Models: Understanding and Comparing						X	X	X	X					
Models: Evaluating and Extending					X	X	X	X	X					
The ACT Math Reporting Categories and Skill Areas (no matches)														

The ACT Aligned to Texas Essential Knowledge and Skills (TEKS) for Biology (adopted 2017)

The ACT Science Reporting Categories and Skill Areas	Texas Essential Knowledge and Skills (TEKS) for Biology																	
	Scientific and engineering practices																	
	1								2				3			4		
	A	B	C	D	E	F	G	H	A	B	C	D	A	B	C	A	B	C
Interpretation of Data																		
Locating and Understanding	X	X		X	X	X	X		X	X						X		
Inferring and Translating	X	X		X	X	X	X		X	X	X					X		
Extending and Reevaluating	X				X	X					X					X		
Scientific Investigation																		
Locating and Comparing	X	X		X	X					X		X				X		
Designing and Implementing	X	X	X	X	X					X		X				X		
Extending and Implementing	X	X	X	X	X					X		X				X		
Evaluation of Models, Inferences, and Experimental Results																		
Inferences and Results: Evaluating and Extending	X			X	X	X	X	X	X	X	X	X	X	X	X	X		
Models: Understanding and Comparing	X			X	X	X	X	X	X				X	X	X	X		
Models: Evaluating and Extending	X			X	X	X	X	X	X				X	X	X	X		

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Texas Essential Knowledge and Skills (TEKS) for Biology																															
Science concepts – biological structures, functions, and processes					Science concepts – mechanisms of genetics				Science concepts – biological evolution				Science concepts – biological structures, functions, and processes				Science concepts – interdependence within environmental systems														
5					6			7				8		9		10				11		12		13							
The ACT Science Reporting Categories and Skill Areas					A	B	C	D	A	B	C	A	B	C	D	A	B	A	B	C	D	A	B	A	B	A	B	C	D		
Interpretation of Data																															
Locating and Understanding					X	X		X							X																
Inferring and Translating					X	X		X							X	X	X	X	X	X	X	X	X					X	X	X	X
Extending and Reevaluating																X		X	X	X	X	X	X		X			X	X	X	X
Scientific Investigation																															
Locating and Comparing							X						X										X				X				
Designing and Implementing							X						X										X				X				
Extending and Implementing							X						X			X						X	X	X			X	X			
Evaluation of Models, Inferences, and Experimental Results																															
Inferences and Results: Evaluating and Extending					X	X		X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Models: Understanding and Comparing						X		X	X			X	X	X	X	X	X	X	X	X	X	X	X	X			X	X			
Models: Evaluating and Extending						X		X	X			X	X	X	X	X	X	X	X	X	X	X	X	X			X	X			

The ACT Aligned to Texas Essential Knowledge and Skills (TEKS) for Chemistry (adopted 2017)

The ACT Science Reporting Categories and Skill Areas	Texas Essential Knowledge and Skills (TEKS) for Chemistry																	
	Scientific and engineering practices																	
	1								2				3			4		
	A	B	C	D	E	F	G	H	A	B	C	D	A	B	C	A	B	C
Interpretation of Data																		
Locating and Understanding	X	X		X	X	X	X		X	X						X		
Inferring and Translating	X	X		X	X	X	X		X	X	X					X		
Extending and Reevaluating	X				X	X					X					X		
Scientific Investigation																		
Locating and Comparing	X	X	X	X	X					X		X				X		
Designing and Implementing	X	X	X	X	X					X		X				X		
Extending and Implementing	X	X		X	X					X		X				X		
Evaluation of Models, Inferences, and Experimental Results																		
Inferences and Results: Evaluating and Extending	X			X	X	X	X	X	X	X	X	X	X	X	X	X		
Models: Understanding and Comparing	X			X	X	X	X	X	X				X	X	X	X		
Models: Evaluating and Extending	X			X	X	X	X	X	X				X	X	X	X		

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Texas Essential Knowledge and Skills (TEKS) for Chemistry																																									
Science concepts																																									
The ACT Science Reporting Categories and Skill Areas	5			6					7				8				9				10			11						12					13				14		
	A	B	C	A	B	C	D	E	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	A	B	C	D	E	F	A	B	C	D	E	A	B	C	D	A	B	C
Interpretation of Data																																									
Locating and Understanding	X	X	X			X	X	X	X	X	X			X	X										X	X									X	X	X				
Inferring and Translating	X	X	X	X	X	X	X	X	X	X			X	X										X	X	X	X									X	X	X			
Extending and Reevaluating	X	X	X	X	X	X	X	X	X	X					X									X	X									X	X	X					
Scientific Investigation																																									
Locating and Comparing						X																			X	X									X						
Designing and Implementing						X																			X	X									X						
Extending and Implementing		X				X																			X	X									X						
Evaluation of Models, Inferences, and Experimental Results																																									
Inferences and Results: Evaluating and Extending	X	X	X	X	X	X	X	X	X	X					X									X	X									X	X						
Models: Understanding and Comparing	X	X	X	X	X	X	X	X	X	X														X	X										X						
Models: Evaluating and Extending	X	X	X	X	X	X	X	X	X	X														X	X										X						

The ACT Aligned to Texas Essential Knowledge and Skills (TEKS) for Integrated Physics and Chemistry (adopted 2017)

		Texas Essential Knowledge and Skills (TEKS) for Integrated Physics and Chemistry																		
		Scientific and engineering practices																		
The ACT Science Reporting Categories and Skill Areas		1								2				3			4			
		A	B	C	D	E	F	G	H	A	B	C	D	A	B	C	A	B	C	
Interpretation of Data																				
Locating and Understanding		X	X		X	X	X	X		X	X							X		
Inferring and Translating		X	X		X	X	X	X		X	X	X						X		
Extending and Reevaluating		X				X	X					X						X		
Scientific Investigation																				
Locating and Comparing		X	X	X	X	X					X		X					X		
Designing and Implementing		X	X	X	X	X					X		X					X		
Extending and Implementing		X	X		X	X					X		X					X		
Evaluation of Models, Inferences, and Experimental Results																				
Inferences and Results: Evaluating and Extending		X			X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Models: Understanding and Comparing		X			X	X	X	X	X	X				X	X	X	X	X		
Models: Evaluating and Extending		X			X	X	X	X	X	X				X	X	X	X	X		

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Texas Essential Knowledge and Skills (TEKS) for Integrated Physics and Chemistry																							
Science concepts																							
The ACT Science Reporting Categories and Skill Areas	5					6							7						8				
	A	B	C	D	E	A	B	C	D	E	F	G	A	B	C	D	E	F	A	B	C	D	
Interpretation of Data																							
Locating and Understanding	X	X	X		X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	
Inferring and Translating	X	X	X		X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	
Extending and Reevaluating	X	X	X		X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	
Scientific Investigation																							
Locating and Comparing	X		X			X	X	X	X	X								X	X				
Designing and Implementing	X		X			X	X	X	X	X								X	X				
Extending and Implementing	X		X			X	X	X	X	X				X				X	X				
Evaluation of Models, Inferences, and Experimental Results																							
Inferences and Results: Evaluating and Extending	X	X	X		X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	
Models: Understanding and Comparing	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	
Models: Evaluating and Extending	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	

The ACT Aligned to Texas Essential Knowledge and Skills (TEKS) for Physics (adopted 2017)

The ACT Science Reporting Categories and Skill Areas	Texas Essential Knowledge and Skills (TEKS) for Physics																	
	Scientific and engineering practices																	
	1								2				3			4		
	A	B	C	D	E	F	G	H	A	B	C	D	A	B	C	A	B	C
Interpretation of Data																		
Locating and Understanding	X	X		X	X	X	X		X	X						X		
Inferring and Translating	X	X		X	X	X	X		X	X	X					X		
Extending and Reevaluating	X				X	X					X					X		
Scientific Investigation																		
Locating and Comparing	X	X	X	X	X					X		X				X		
Designing and Implementing	X	X	X	X	X					X		X				X		
Extending and Implementing	X	X		X	X					X		X				X		
Evaluation of Models, Inferences, and Experimental Results																		
Inferences and Results: Evaluating and Extending	X			X	X	X	X	X	X	X	X	X	X	X	X	X		
Models: Understanding and Comparing	X			X	X	X	X	X	X				X	X	X	X		
Models: Evaluating and Extending	X			X	X	X	X	X	X				X	X	X	X		

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Texas Essential Knowledge and Skills (TEKS) for Physics																														
Science concepts																														
The ACT Science Reporting Categories and Skill Areas	5								6					7					8					9						
	A	B	C	D	E	F	G	H	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	F	G	A	B	C	D	
Interpretation of Data																														
Locating and Understanding	X		X	X	X		X				X	X			X	X		X			X	X		X				X		
Inferring and Translating	X		X	X	X		X	X	X		X	X			X	X		X			X	X		X				X		
Extending and Reevaluating	X		X	X	X		X				X	X			X	X		X			X	X		X				X		
Scientific Investigation																														
Locating and Comparing	X						X				X	X			X			X			X	X		X				X		
Designing and Implementing	X						X				X	X			X			X			X	X		X				X		
Extending and Implementing	X						X				X	X			X			X			X	X		X				X		
Evaluation of Models, Inferences, and Experimental Results																														
Inferences and Results: Evaluating and Extending	X		X	X	X		X				X	X			X	X		X			X			X				X		
Models: Understanding and Comparing	X		X	X	X		X									X		X			X			X						
Models: Evaluating and Extending	X		X	X	X		X									X		X			X			X						

CROSSWALK: Texas Standards to the ACT

Texas College and Career Readiness Standards (CCRS) for Science (adopted 2009) Aligned to the ACT

Texas College and Career Readiness Standards (CCRS) for Science		The ACT Science Reporting Categories and Skill Areas
Standard Number	Standard	
I.	Nature of Science: Scientific Ways of Learning and Thinking	
I.A.	Cognitive skills in science	
I.A.1.	Utilize skepticism, logic, and professional ethics in science.	Evaluation of Models, Inferences, and Experimental Results: Inferences and Results: Evaluating and Extending; Models: Understanding and Comparing; Models: Evaluating and Extending Scientific Investigation: Designing and Implementing; Extending and Implementing Interpretation of Data: Extending and Reevaluating
I.A.2.	Use creativity and insight to recognize and describe patterns in natural phenomena.	Interpretation of Data: Inferring and Translating; Extending and Reevaluating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results: Evaluating and Extending; Models: Evaluating and Extending
I.A.3.	Formulate appropriate questions to test understanding of natural phenomena.	Scientific Investigation: Designing and Implementing; Extending and Implementing
I.A.4.	Rely on reproducible observations of empirical evidence when constructing, analyzing, and evaluating explanations of natural events and processes.	Interpretation of Data: Locating and Understanding; Inferring and Translating; Extending and Reevaluating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results: Evaluating and Extending; Understanding and Comparing; Models: Evaluating and Extending
I.B.	Scientific inquiry	
I.B.1.	Design and conduct scientific investigations in which hypotheses are formulated and tested.	Scientific Investigation: Locating and Comparing; Designing and Implementing; Extending and Implementing
I.C.	Collaborative and safe working practices	
I.C.1.	Collaborate on joint projects.	<i>Not appropriate for large-scale, standardized testing</i>
I.C.2.	Understand and apply safe procedures in the laboratory and field, including chemical, electrical, and fire safety and safe handling of live or preserved organisms.	Scientific Investigation: Designing and Implementing
I.C.3.	Demonstrate skill in the safe use of a wide variety of apparatuses, equipment, techniques, and procedures.	Scientific Investigation: Locating and Comparing; Designing and Implementing
I.D.	Current scientific technology	
I.D.1.	Demonstrate literacy in computer use.	<i>Not appropriate for large-scale, standardized testing</i>
I.D.2.	Use computer models, applications, and simulations.	Interpretation of Data: Inferring and Translating; Extending and Reevaluating Scientific Investigation: Designing and Implementing Evaluation of Models, Inferences, and Experimental Results: Models: Understanding and Comparing; Models: Evaluating and Extending

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Texas College and Career Readiness Standards (CCRS) for Science		The ACT Science Reporting Categories and Skill Areas
Standard Number	Standard	
I.D.3.	Demonstrate appropriate use of a wide variety of apparatuses, equipment, techniques, and procedures for collecting quantitative and qualitative data.	Scientific Investigation: Designing and Implementing; Extending and Implementing Interpretation of Data: Inferring and Translating
I.E.	Effective communication of scientific information	
I.E.1.	Use several modes of expression to describe or characterize natural patterns and phenomena. These modes of expression include narrative, numerical, graphical, pictorial, symbolic, and kinesthetic.	Interpretation of Data: Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results: Evaluating and Extending; Models: Evaluating and Extending
I.E.2.	Use essential vocabulary of the discipline being studied.	Interpretation of Data: Locating and Understanding Evaluation of Models, Inferences, and Experimental Results: Inferences and Results: Evaluating and Extending; Models: Understanding and Comparing; Models: Evaluating and Extending
II.	Foundation Skills: Scientific Applications of Mathematics	
II.A	Basic mathematics conventions	
II.A.1.	Understand the real number system and its properties.	
II.A.2.	Use exponents and scientific notation.	Interpretation of Data: Inferring and Translating
II.A.3.	Understand ratios, proportions, percentages, and decimal fractions, and translate from any form to any other.	Interpretation of Data: Inferring and Translating
II.A.4.	Use proportional reasoning to solve problems.	Interpretation of Data: Inferring and Translating
II.A.5.	Simplify algebraic expressions.	
II.A.6.	Estimate results to evaluate whether a calculated result is reasonable.	Interpretation of Data: Inferring and Translating; Extending and Reevaluating
II.A.7.	Use calculators, spreadsheets, computers, etc., in data analysis.	
II.B.	Mathematics as a symbolic language	
II.B.1.	Carry out formal operations using standard algebraic symbols and formulae.	Interpretation of Data: Inferring and Translating
II.B.2.	Represent natural events, processes, and relationships with algebraic expressions and algorithms.	Interpretation of Data: Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results: Evaluating and Extending; Models: Understanding and Comparing; Models: Evaluating and Extending
II.C.	Understand relationships among geometry, algebra, and trigonometry	
II.C.1.	Understand simple vectors, vector notations, and vector diagrams, and carry out simple calculations involving vectors.	Interpretation of Data: Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results: Evaluating and Extending; Models: Understanding and Comparing; Models: Evaluating and Extending

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Texas College and Career Readiness Standards (CCRS) for Science		The ACT Science Reporting Categories and Skill Areas
Standard Number	Standard	
II.C.2.	Understand that a curve drawn on a defined set of axes is fully equivalent to a set of algebraic equations.	Interpretation of Data: Inferring and Translating
II.C.3.	Understand basic trigonometric principles, including definitions of terms such as sine, cosine, tangent, cotangent, and their relationship to triangles.	
II.C.4.	Understand basic geometric principles.	Interpretation of Data: Locating and Understanding; Inferring and Translating
II.D.	Scientific problem solving	
II.D.1.	Use dimensional analysis in problem solving.	Interpretation of Data: Inferring and Translating
II.E.	Scientific application of probability and statistics	
II.E.1.	Understand descriptive statistics.	Interpretation of Data: Inferring and Translating Scientific Investigation: Designing and Implementing
II.F.	Scientific measurement	
II.F.1.	Select and use appropriate Standard International (SI) units and prefixes to express measurements for real world problems.	Interpretation of Data: Locating and Understanding; Inferring and Translating Scientific Investigation: Designing and Implementing
II.F.2.	Use appropriate significant digits.	Scientific Investigation: Designing and Implementing
II.F.3.	Understand and use logarithmic notation (base 10).	Interpretation of Data: Locating and Understanding
III.	Foundation Skills: Scientific Applications of Communication	
III.A.	Scientific writing	
III.A.1.	Use correct applications of writing practices in scientific communication.	
III.B.	Scientific reading	
III.B.1.	Read technical and scientific articles to gain understanding of interpretations, apparatuses, techniques or procedures, and data.	Interpretation of Data: Locating and Understanding; Inferring and Translating Scientific Investigation: Locating and Comparing; Designing and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results: Evaluating and Extending; Models: Understanding and Comparing; Models: Evaluating and Extending
III.B.2.	Set up apparatuses, carry out procedures, and collect specified data from a given set of appropriate instructions.	<i>Not appropriate for large-scale, standardized testing</i>
III.B.3.	Recognize scientific and technical vocabulary in the field of study and use this vocabulary to enhance clarity of communication.	Interpretation of Data: Locating and Understanding Evaluation of Models, Inferences, and Experimental Results: Inferences and Results: Evaluating and Extending; Models: Understanding and Comparing; Models: Evaluating and Extending
III.B.4.	List, use, and give examples of specific strategies before, during, and after reading to improve comprehension.	

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Texas College and Career Readiness Standards (CCRS) for Science		The ACT Science Reporting Categories and Skill Areas
Standard Number	Standard	
III.C.	Presentation of scientific/technical information	
III.C.1.	Prepare and present scientific/technical information in appropriate formats for various audiences.	<i>Not appropriate for large-scale, standardized testing</i>
III.D.	Research skills/information literacy	
III.D.1.	Use search engines, databases, and other digital electronic tools effectively to locate information.	<i>Not appropriate for large-scale, standardized testing</i>
III.D.2.	Evaluate quality, accuracy, completeness, reliability, and currency of information from any source.	Evaluation of Models, Inferences, and Experimental Results: Inferences and Results: Evaluating and Extending; Models: Evaluating and Extending Scientific Investigation: Designing and Implementing
IV.	Science, Technology, and Society	
IV.A.	Interactions between innovations and science	
IV.A.1.	Recognize how scientific discoveries are connected to technological innovations.	Evaluation of Models, Inferences, and Experimental Results: Inferences and Results: Evaluating and Extending; Models: Evaluating and Extending
IV.B.	Social ethics	
IV.B.1.	Understand how scientific research and technology have an impact on ethical and legal practices.	
IV.B.2.	Understand how commonly held ethical beliefs impact scientific research.	
IV.C.	History of science	
IV.C.1.	Understand the historical development of major theories in science.	Evaluation of Models, Inferences, and Experimental Results: Models: Understanding and Comparing; Models: Evaluating and Extending
IV.C.2.	Recognize the role of people in important contributions to scientific knowledge.	
V.	Cross-Disciplinary Themes	
V.A	Matter/states of matter	
V.A.1.	Know modern theories of atomic structure.	
V.A.2.	Understand the typical states of matter (solid, liquid, gas) and phase changes among these.	
V.B.	Energy (thermodynamics, kinetic, potential, energy transfers)	
V.B.1.	Understand the Laws of Thermodynamics.	
V.B.2.	Know the processes of energy transfer.	
V.C.	Change over time/equilibrium	
V.C.1.	Recognize patterns of change.	Interpretation of Data: Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results: Evaluating and Extending; Models: Evaluating and Extending

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Texas College and Career Readiness Standards (CCRS) for Science		The ACT Science Reporting Categories and Skill Areas
Standard Number	Standard	
V.D.	Classification	
V.D.1	Understand that scientists categorize things according to similarities and differences.	Scientific Investigation: Designing and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results: Evaluating and Extending; Models: Understanding and Comparing; Models: Evaluating and Extending
V.E.	Measurements and models	
V.E.1	Use models to make predictions.	Evaluation of Models, Inferences, and Experimental Results: Inferences and Results: Evaluating and Extending; Models: Understanding and Comparing; Models: Evaluating and Extending
V.E.2	Use scale to relate models and structures.	Evaluation of Models, Inferences, and Experimental Results: Models: Understanding and Comparing; Models: Evaluating and Extending
V.E.3	Demonstrate familiarity with length scales from sub-atomic particles through macroscopic objects.	Interpretation of Data: Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results: Evaluating and Extending; Models: Understanding and Comparing; Models: Evaluating and Extending
VI.	Biology	* The ACT requires that the students have discipline-specific content knowledge, but all items focus on science process skills.
VII.	Chemistry	* The ACT requires that the students have discipline-specific content knowledge, but all items focus on science process skills.
VIII.	Physics	* The ACT requires that the students have discipline-specific content knowledge, but all items focus on science process skills.
IX.	Earth and Space Sciences	* The ACT requires that the students have discipline-specific content knowledge, but all items focus on science process skills.
X.	Environmental Science	* The ACT requires that the students have discipline-specific content knowledge, but all items focus on science process skills.

Texas Essential Knowledge and Skills (TEKS) for Biology (adopted 2020) Aligned to the ACT

Texas Essential Knowledge and Skills (TEKS) for Biology			ACT Science Reporting Categories and Skill Areas
Strand	Standard Number / Skill	Standard / Description	
(c) knowledge and skills	1		
	1.a	ask questions and define problems based on observations or information from text, phenomena, models, or investigations;	Interpretation of Data: all subcategories Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	1.b	apply scientific practices to plan and conduct descriptive, comparative, and experimental investigations and use engineering practices to design solutions to problems;	Interpretation of Data: Locating and Understanding; Inferring and Translating Scientific Investigation: all subcategories
	1.c	use appropriate safety equipment and practices during laboratory, classroom, and field investigations as outlined in Texas Education Agency-approved safety standards;	Scientific Investigation: Locating and Comparing; Designing and Implementing (DI)
	1.d	use appropriate tools such as microscopes, slides, Petri dishes, laboratory glassware, metric rulers, digital balances, pipets, filter paper, micropipettes, gel electrophoresis and polymerase chain reaction (PCR) apparatuses, microcentrifuges, water baths, incubators, thermometers, hot plates, data collection probes, test tube holders, lab notebooks or journals, hand lenses, and models, diagrams, or samples of biological specimens or structures;	Interpretation of Data: Locating and Understanding; Inferring and Translating Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	1.e	collect quantitative data using the International System of Units (SI) and qualitative data as evidence;	Interpretation of Data: all subcategories Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	1.f	organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models;	Interpretation of Data: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	1.g	develop and use models to represent phenomena, systems, processes, or solutions to engineering problems; and	Interpretation of Data: Locating and Understanding; Inferring and Translating (IT) Evaluation of Models, Inferences, and Experimental Results: all subcategories
	1.h	distinguish among scientific hypotheses, theories, and laws.	Evaluation of Models, Inferences, and Experimental Results: all subcategories
		2	
	2.a	identify advantages and limitations of models such as their size, scale, properties, and materials;	Interpretation of Data: Locating and Understanding; Inferring and Translating (IT) Evaluation of Models, Inferences, and Experimental Results: all subcategories

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Texas Essential Knowledge and Skills (TEKS) for Biology			ACT Science Reporting Categories and Skill Areas
Strand	Standard Number / Skill	Standard / Description	
	2.b	analyze data by identifying significant statistical features, patterns, sources of error, and limitations;	Interpretation of Data: Locating and Understanding; Inferring and Translating (IT) Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: Inferences and Results: Evaluating and Extending
	2.c	use mathematical calculations to assess quantitative relationships in data; and	Interpretation of Data: Inferring and Translating; Extending and Reevaluating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results: Evaluating and Extending
	2.d	evaluate experimental and engineering designs.	Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: Inferences and Results: Evaluating and Extending
	3		
	3.a	develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories;	Evaluation of Models, Inferences, and Experimental Results: all subcategories
	3.b	communicate explanations and solutions individually and collaboratively in a variety of settings and formats;	Evaluation of Models, Inferences, and Experimental Results: all subcategories
	3.c	engage respectfully in scientific argumentation using applied scientific explanations and empirical evidence.	Evaluation of Models, Inferences, and Experimental Results: all subcategories
	4		
	4.a	analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student;	Interpretation of Data: all subcategories Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	4.b	relate the impact of past and current research on scientific thought and society, including research methodology, cost-benefit analysis, and contributions of diverse scientists as related to the content;	
	4.c	research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers.	
	5		
	5.a	relate the functions of different types of biomolecules, including carbohydrates, lipids, proteins, and nucleic acids, to the structure and function of a cell;	Interpretation of Data: Locating and Understanding; Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results: Evaluating and Extending

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Texas Essential Knowledge and Skills (TEKS) for Biology			ACT Science Reporting Categories and Skill Areas
Strand	Standard Number / Skill	Standard / Description	
	5.b	compare and contrast prokaryotic and eukaryotic cells, including their complexity, and compare and contrast scientific explanations for cellular complexity;	Interpretation of Data: Locating and Understanding; Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: all subcategories
	5.c	investigate homeostasis through the cellular transport of molecules;	Scientific Investigation: all subcategories
	5.d	compare the structures of viruses to cells and explain how viruses spread and cause disease.	Interpretation of Data: Locating and Understanding; Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: all subcategories
	6		
	6.a	explain the importance of the cell cycle to the growth of organisms, including an overview of the stages of the cell cycle and deoxyribonucleic acid (DNA) replication models;	Evaluation of Models, Inferences, and Experimental Results: all subcategories
	6.b	explain the process of cell specialization through cell differentiation, including the role of environmental factors; and	
	6.c	relate disruptions of the cell cycle to how they lead to the development of diseases such as cancer.	
	7		
	7.a	identify components of DNA, explain how the nucleotide sequence specifies some traits of an organism, and examine scientific explanations for the origin of DNA;	Evaluation of Models, Inferences, and Experimental Results: all subcategories
	7.b	describe the significance of gene expression and explain the process of protein synthesis using models of DNA and ribonucleic acid (RNA)	Evaluation of Models, Inferences, and Experimental Results: all subcategories
	7.c	identify and illustrate changes in DNA and evaluate the significance of these changes; and	
	7.d	discuss the importance of molecular technologies such as polymerase chain reaction (PCR), gel electrophoresis, and genetic engineering that are applicable in current research and engineering practices.	Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	8		
	8.a	analyze the significance of chromosome reduction, independent assortment, and crossing-over during meiosis in increasing diversity in populations of organisms that reproduce sexually;	Interpretation of Data: Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: all subcategories

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Texas Essential Knowledge and Skills (TEKS) for Biology			ACT Science Reporting Categories and Skill Areas
Strand	Standard Number / Skill	Standard / Description	
	8.b	predict possible outcomes of various genetic combinations using monohybrid and dihybrid crosses, including non-Mendelian traits of incomplete dominance, codominance, sex-linked traits, and multiple alleles.	Interpretation of Data: Inferring and Translating; Extending and Reevaluating Scientific Investigation: Extending and Implementing Evaluation of Models, Inferences, and Experimental Results: all subcategories
	9		
	9.a	analyze and evaluate how evidence of common ancestry among groups is provided by the fossil record, biogeography, and homologies, including anatomical, molecular, and developmental;	Interpretation of Data: Locating and Understanding; Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: all subcategories
	9.b	examine scientific explanations for varying rates of change such as gradualism, abrupt appearance, and stasis in the fossil record.	Interpretation of Data: Inferring and Translating; Extending and Reevaluating Evaluation of Models, Inferences, and Experimental Results: all subcategories
	10		
	10.a	analyze and evaluate how natural selection produces change in populations and not in individuals;	Interpretation of Data: Inferring and Translating; Extending and Reevaluating Evaluation of Models, Inferences, and Experimental Results: all subcategories
	10.b	analyze and evaluate how the elements of natural selection, including inherited variation, the potential of a population to produce more offspring than can survive, and a finite supply of environmental resources, result in differential reproductive success;	Interpretation of Data: Inferring and Translating; Extending and Reevaluating Evaluation of Models, Inferences, and Experimental Results: all subcategories
	10.c	analyze and evaluate how natural selection may lead to speciation	Interpretation of Data: Inferring and Translating; Extending and Reevaluating Evaluation of Models, Inferences, and Experimental Results: all subcategories
	10.d	analyze evolutionary mechanisms other than natural selection, including genetic drift, gene flow, mutation, and genetic recombination, and their effect on the gene pool of a population.	Interpretation of Data: Inferring and Translating; Extending and Reevaluating Scientific Investigation: Extending and Implementing Evaluation of Models, Inferences, and Experimental Results: all subcategories
	11		
	11.a	explain how matter is conserved and energy is transferred during photosynthesis and cellular respiration using models, including the chemical equations for these processes;	Interpretation of Data: Inferring and Translating; Extending and Reevaluating Scientific Investigation: Extending and Implementing Evaluation of Models, Inferences, and Experimental Results: all subcategories
	11.b	investigate and explain the role of enzymes in facilitating cellular processes.	Interpretation of Data: Inferring and Translating Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories

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Texas Essential Knowledge and Skills (TEKS) for Biology			ACT Science Reporting Categories and Skill Areas
Strand	Standard Number / Skill	Standard / Description	
	12		
	12.a	analyze the interactions that occur among systems that perform the functions of regulation, nutrient absorption, reproduction, and defense from injury or illness in animals;	Interpretation of Data: Inferring and Translating; Extending and Reevaluating Evaluation of Models, Inferences, and Experimental Results: all subcategories
	12.b	explain how the interactions that occur among systems that perform functions of transport, reproduction, and response in plants are facilitated by their structures.	Evaluation of Models, Inferences, and Experimental Results: all subcategories
	13		
	13.a	investigate and evaluate how ecological relationships, including predation, parasitism, commensalism, mutualism, and competition, influence ecosystem stability;	Interpretation of Data: Inferring and Translating; Extending and Reevaluating Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: Inferences and Results: Evaluating and Extending
	13.b	analyze how ecosystem stability is affected by disruptions to the cycling of matter and flow of energy through trophic levels using models;	Interpretation of Data: Inferring and Translating; Extending and Reevaluating Scientific Investigation: Extending and Implementing Evaluation of Models, Inferences, and Experimental Results: all subcategories
	13.c	explain the significance of the carbon and nitrogen cycles to ecosystem stability and analyze the consequences of disrupting these cycles;	Interpretation of Data: Inferring and Translating; Extending and Reevaluating Evaluation of Models, Inferences, and Experimental Results: all subcategories
	13.d	explain how environmental change, including change due to human activity, affects biodiversity and analyze how changes in biodiversity impact ecosystem stability.	Interpretation of Data: Inferring and Translating; Extending and Reevaluating Evaluation of Models, Inferences, and Experimental Results: all subcategories

Texas Essential Knowledge and Skills (TEKS) for Integrated Physics and Chemistry (adopted 2017) Aligned to the ACT

Texas Essential Knowledge and Skills (TEKS) for Integrated Physics and Chemistry			ACT Science Reporting Categories and Skill Areas
Strand	Standard Number / Skill	Standard / Description	
(c) knowledge and skills	1		
	1.a	ask questions and define problems based on observations or information from text, phenomena, models, or investigations;	Interpretation of Data: all subcategories Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	1.b	apply scientific practices to plan and conduct descriptive, comparative, and experimental investigations and use engineering practices to design solutions to problems;	Interpretation of Data: Locating and Understanding; Inferring and Translating Scientific Investigation: all subcategories
	1.c	use appropriate safety equipment and practices during laboratory, classroom, and field investigations as outlined in Texas Education Agency-approved safety standards;	Scientific Investigation: Locating and Comparing; Designing and Implementing
	1.d	use appropriate tools such as data-collecting probes, software applications, the internet, standard laboratory glassware, metric rulers, meter sticks, spring scales, multimeters, Gauss meters, wires, batteries, light bulbs, switches, magnets, electronic balances, mass sets, Celsius thermometers, hot plates, an adequate supply of consumable chemicals, lab notebooks or journals, timing devices, models, and diagrams;	Interpretation of Data: Locating and Understanding; Inferring and Translating Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	1.e	collect quantitative data using the International System of Units (SI) and qualitative data as evidence;	Interpretation of Data: all subcategories Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	1.f	organize quantitative and qualitative data using labeled drawings and diagrams, graphic organizers, charts, tables, and graphs;	Interpretation of Data: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	1.g	develop and use models to represent phenomena, systems, processes, or solutions to engineering problems; and	Interpretation of Data: Locating and Understanding; Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: all subcategories
	1.h	distinguish between scientific hypotheses, theories, and laws.	Evaluation of Models, Inferences, and Experimental Results: all subcategories
	2		
	2.a	identify advantages and limitations of models such as their size, scale, properties, and materials;	Interpretation of Data: Locating and Understanding; Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: all subcategories

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Texas Essential Knowledge and Skills (TEKS) for Integrated Physics and Chemistry			ACT Science Reporting Categories and Skill Areas
Strand	Standard Number / Skill	Standard / Description	
	2.b	analyze data by identifying significant statistical features, patterns, sources of error, and limitations;	Interpretation of Data: Locating and Understanding; Inferring and Translating Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: Inferences and Results: Evaluating and Extending
	2.c	use mathematical calculations to assess quantitative relationships in data; and	Interpretation of Data: Inferring and Translating; Extending and Reevaluating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results: Evaluating and Extending
	2.d	evaluate experimental and engineering designs.	Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: Inferences and Results: Evaluating and Extending
3			
	3.a	develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories;	Evaluation of Models, Inferences, and Experimental Results: all subcategories
	3.b	communicate explanations and solutions individually and collaboratively in a variety of settings and formats;	Evaluation of Models, Inferences, and Experimental Results: all subcategories
	3.c	engage respectfully in scientific argumentation using applied scientific explanations and empirical evidence.	Evaluation of Models, Inferences, and Experimental Results: all subcategories
4			
	4.a	analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student;	Interpretation of Data: all subcategories Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	4.b	relate the impact of past and current research on scientific thought and society, including research methodology, cost-benefit analysis, and contributions of diverse scientists as related to the content; and	
	4.c	research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers.	<i>Not appropriate for large-scale, standardized testing</i>

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Texas Essential Knowledge and Skills (TEKS) for Integrated Physics and Chemistry			ACT Science Reporting Categories and Skill Areas
Strand	Standard Number / Skill	Standard / Description	
	5		
	5.a	investigate, analyze, and model motion in terms of position, velocity, acceleration, and time using tables, graphs, and mathematical relationships;	Interpretation of Data: all subcategories Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	5.b	analyze data to explain the relationship between mass and acceleration in terms of the net force on an object in one dimension using force diagrams, tables, and graphs;	Interpretation of Data: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	5.c	apply the concepts of momentum and impulse to design, evaluate, and refine a device to minimize the net force on objects during collisions such as those that occur during vehicular accidents, sports activities, or the dropping of personal electronic devices;	Interpretation of Data: all subcategories Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	5.d	describe the nature of the four fundamental forces: gravitation; electromagnetic; the strong and weak nuclear forces, including fission and fusion; and mass-energy equivalency;	
	5.e	construct and communicate an explanation based on evidence for how changes in mass, charge, and distance affect the strength of gravitational and electrical forces between two objects.	Interpretation of Data: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	6		
	6.a	design and construct series and parallel circuits that model real-world circuits such as in-home wiring, automobile wiring, and simple electrical devices to evaluate the transfer of electrical energy;	Interpretation of Data: all subcategories Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	6.b	design, evaluate, and refine a device that generates electrical energy through the interaction of electric charges and magnetic fields;	Interpretation of Data: all subcategories Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	6.c	plan and conduct an investigation to provide evidence that energy is conserved within a closed system;	Interpretation of Data: all subcategories Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	6.d	investigate and demonstrate the movement of thermal energy through solids, liquids, and gases by convection, conduction, and radiation such as weather, living, and mechanical systems;	Interpretation of Data: all subcategories Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	6.e	plan and conduct an investigation to evaluate the transfer of energy or information through different materials by different types of waves such as wireless signals, ultraviolet radiation, and microwaves;	Interpretation of Data: all subcategories Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories

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Texas Essential Knowledge and Skills (TEKS) for Integrated Physics and Chemistry			ACT Science Reporting Categories and Skill Areas
Strand	Standard Number / Skill	Standard / Description	
	6.f	construct and communicate an evidence-based explanation for how wave interference, reflection, and refraction are used in technology such as medicine, communication, and scientific research;	Interpretation of Data: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	6.g	evaluate evidence from multiple sources to critique the advantages and disadvantages of various renewable and nonrenewable energy sources and their impact on society and the environment.	Interpretation of Data: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	7		
	7.a	model basic atomic structure and relate an element's atomic structure to its bonding, reactivity, and placement on the Periodic Table;	Interpretation of Data: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	7.b	use patterns within the Periodic Table to predict the relative physical and chemical properties of elements;	Interpretation of Data: all subcategories Scientific Investigation: Extending and Implementing Evaluation of Models, Inferences, and Experimental Results: all subcategories
	7.c	explain how physical and chemical properties of substances are related to their usage in everyday life such as in sunscreen, cookware, industrial applications, and fuels;	Evaluation of Models, Inferences, and Experimental Results: Models: Understanding and Comparing; Models: Evaluating and Extending
	7.d	explain how electrons can transition from a high energy level to a low energy state, emitting photons at different frequencies for different energy transitions;	Evaluation of Models, Inferences, and Experimental Results: Models: Understanding and Comparing; Models: Evaluating and Extending
	7.e	explain how atomic energy levels and emission spectra present evidence for the wave particle duality;	Interpretation of Data: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	7.f	plan and conduct an investigation to provide evidence that the rate of reaction or dissolving is affected by multiple factors such as particle size, stirring, temperature, and concentration.	Interpretation of Data: all subcategories Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	8		
	8.a	investigate how changes in properties are indicative of chemical reactions such as hydrochloric acid with a metal, oxidation of metal, combustion, and neutralizing an acid with a base;	Interpretation of Data: all subcategories Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: Inferences and Results: Evaluating and Extending
	8.b	develop and use models to balance chemical equations and support the claim that atoms, and therefore mass, are conserved during a chemical reaction;	Interpretation of Data: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories

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Texas Essential Knowledge and Skills (TEKS) for Integrated Physics and Chemistry			ACT Science Reporting Categories and Skill Areas
Strand	Standard Number / Skill	Standard / Description	
	8.c	research and communicate the uses, advantages, and disadvantages of nuclear reactions in current technologies;	Interpretation of Data : all subcategories Evaluation of Models, Inferences, and Experimental Results : all subcategories
	8.d	construct and communicate an evidence-based explanation of the environmental impact of the end-products of chemical reactions such as those that may result in degradation of water, soil, air quality, and global climate change.	Interpretation of Data : all subcategories Evaluation of Models, Inferences, and Experimental Results : all subcategories

Texas Essential Knowledge and Skills (TEKS) for Chemistry (adopted 2017) Aligned to the ACT

Texas Essential Knowledge and Skills (TEKS) for Chemistry			ACT Science Reporting Categories and Skill Areas
Strand	Standard Number / Skill	Standard / Description	
(c) knowledge and skills	1		
	1.a	ask questions and define problems based on observations or information from text, phenomena, models, or investigations;	Interpretation of Data: all subcategories Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	1.b	apply scientific practices to plan and conduct descriptive, comparative, and experimental investigations and use engineering practices to design solutions to problems;	Interpretation of Data: Locating and Understanding; Inferring and Translating Scientific Investigation: all subcategories
	1.c	use appropriate safety equipment and practices during laboratory, classroom, and field investigations as outlined in Texas Education Agency-approved safety standards;	Scientific Investigation: Locating and Comparing; Designing and Implementing
	1.d	use appropriate tools such as Safety Data Sheets (SDS), scientific or graphing calculators, computers and probes, electronic balances, an adequate supply of consumable chemicals, and sufficient scientific glassware such as beakers, Erlenmeyer flasks, pipettes, graduated cylinders, volumetric flasks, and burettes;	Interpretation of Data: Locating and Understanding; Inferring and Translating Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	1.e	collect quantitative data using the International System of Units (SI) and qualitative data as evidence;	Interpretation of Data: all subcategories Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	1.f	organize quantitative and qualitative data using oral or written lab reports, labeled drawings, particle diagrams, charts, tables, graphs, journals, summaries, or technology-based reports;	Interpretation of Data: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	1.g	develop and use models to represent phenomena, systems, processes, or solutions to engineering problems;	Interpretation of Data: Locating and Understanding; Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: all subcategories
	1.h	distinguish between scientific hypotheses, theories, and laws.	Evaluation of Models, Inferences, and Experimental Results: all subcategories
	2		
	2.a	identify advantages and limitations of models such as their size, scale, properties, and materials;	Interpretation of Data: Locating and Understanding; Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: all subcategories

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Texas Essential Knowledge and Skills (TEKS) for Chemistry			ACT Science Reporting Categories and Skill Areas
Strand	Standard Number / Skill	Standard / Description	
	2.b	analyze data by identifying significant statistical features, patterns, sources of error, and limitations;	Interpretation of Data: Locating and Understanding; Inferring and Translating Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: Inferences and Results; Evaluating and Extending
	2.c	use mathematical calculations to assess quantitative relationships in data;	Interpretation of Data: Inferring and Translating; Extending and Reevaluating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results; Evaluating and Extending
	2.d	evaluate experimental and engineering designs.	Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: Inferences and Results; Evaluating and Extending
	3		
	3.a	develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories;	Evaluation of Models, Inferences, and Experimental Results: all subcategories
	3.b	communicate explanations and solutions individually and collaboratively in a variety of settings and formats;	Evaluation of Models, Inferences, and Experimental Results: all subcategories
	3.c	engage respectfully in scientific argumentation using applied scientific explanations and empirical evidence.	Evaluation of Models, Inferences, and Experimental Results: all subcategories
	4		
	4.a	analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student;	Interpretation of Data: all subcategories Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	4.b	relate the impact of past and current research on scientific thought and society, including research methodology, cost-benefit analysis, and contributions of diverse scientists as related to the content;	
	4.c	research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers.	
	5		
	5.a	explain the development of the Periodic Table over time using evidence such as chemical and physical properties;	Interpretation of Data: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories

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Texas Essential Knowledge and Skills (TEKS) for Chemistry			ACT Science Reporting Categories and Skill Areas
Strand	Standard Number / Skill	Standard / Description	
	5.b	predict the properties of elements in chemical families, including alkali metals, alkaline earth metals, halogens, noble gases, and transition metals, based on valence electrons patterns using the Periodic Table; and	Interpretation of Data: all subcategories Scientific Investigation: Extending and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results: Evaluating and Extending
	5.c	analyze and interpret elemental data, including atomic radius, atomic mass, electronegativity, ionization energy, and reactivity to identify periodic trends.	Interpretation of Data: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
6			
	6.a	construct models using Dalton's Postulates, Thomson's discovery of electron properties, Rutherford's nuclear atom, Bohr's nuclear atom, and Heisenberg's Uncertainty Principle to show the development of modern atomic theory over time;	Interpretation of Data: Inferring and Translating; Extending and Reevaluating Evaluation of Models, Inferences, and Experimental Results: all subcategories
	6.b	describe the structure of atoms and ions, including the masses, electrical charges, and locations of protons and neutrons in the nucleus and electrons in the electron cloud;	
	6.c	investigate the mathematical relationship between energy, frequency, and wavelength of light using the electromagnetic spectrum and relate it to the quantization of energy in the emission spectrum;	Interpretation of Data: all subcategories Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	6.d	calculate average atomic mass of an element using isotopic composition;	
	6.e	construct models to express the arrangement of electrons in atoms of representative elements using electron configurations and Lewis dot structures.	Interpretation of Data: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
7			
	7.a	construct an argument to support how periodic trends such as electronegativity can predict bonding between elements;	Interpretation of Data: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	7.b	name and write the chemical formulas for ionic and covalent compounds using International Union of Pure and Applied Chemistry (IUPAC) nomenclature rules;	
	7.c	classify and draw electron dot structures for molecules with linear, bent, trigonal planar, trigonal pyramidal, and tetrahedral molecular geometries as explained by Valence Shell Electron Pair Repulsion (VSEPR) theory;	Interpretation of Data: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories

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Texas Essential Knowledge and Skills (TEKS) for Chemistry			ACT Science Reporting Categories and Skill Areas
Strand	Standard Number / Skill	Standard / Description	
	7.d	analyze the properties of ionic, covalent, and metallic substances in terms of intramolecular and intermolecular forces.	Interpretation of Data: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	8		
	8.a	define mole and apply the concept of molar mass to convert between moles and grams;	
	8.b	calculate the number of atoms or molecules in a sample of material using Avogadro's number;	
	8.c	calculate percent composition of compounds;	Interpretation of Data: Locating and Understanding; Inferring and Translating
	8.d	differentiate between empirical and molecular formulas.	
	9		
	9.a	interpret, write, and balance chemical equations, including synthesis, decomposition, single replacement, double replacement, and combustion reactions using the law of conservation of mass;	Interpretation of Data: all subcategories Evaluation of Models, Inferences, and Experimental Results: Inferences and Results: Evaluating and Extending
	9.b	differentiate among acid-base reactions, precipitation reactions, and oxidation-reduction reactions;	
	9.c	differentiate among acid-base reactions, precipitation reactions, and oxidation-reduction reactions;	
	9.d	describe the concept of limiting reactants in a balanced chemical equation.	
	10		
	10.a	describe the postulates of the kinetic molecular theory;	
	10.b	describe and calculate the relationships among volume, pressure, number of moles, and temperature for an ideal gas;	
	10.c	define and apply Dalton's law of partial pressure.	
	11		
	11.a	describe the unique role of water in solutions in terms of polarity	
	11.b	distinguish among types of solutions, including electrolytes and nonelectrolytes and unsaturated, saturated, and supersaturated solutions;	

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Texas Essential Knowledge and Skills (TEKS) for Chemistry			ACT Science Reporting Categories and Skill Areas
Strand	Standard Number / Skill	Standard / Description	
	11.c	investigate how solid and gas solubilities are influenced by temperature using solubility curves and how rates of dissolution are influenced by temperature, agitation, and surface area;	Interpretation of Data: all subcategories Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	11.d	investigate the general rules regarding solubility and predict the solubility of the products of a double replacement reaction;	Interpretation of Data: all subcategories Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	11.e	calculate the concentration of solutions in units of molarity;	Interpretation of Data: Inferring and Translating
	11.f	calculate the dilutions of solutions using molarity.	Interpretation of Data: Inferring and Translating
	12		
	12.a	name and write the chemical formulas for acids and bases using IUPAC nomenclature rules;	
	12.b	define acids and bases and distinguish between Arrhenius and Bronsted-Lowry definitions;	
	12.c	differentiate between strong and weak acids and bases	
	12.d	predict products in acid-base reactions that form water;	
	12.e	define pH and calculate the pH of a solution using the hydrogen ion concentration.	
	13		
	13.a	explain everyday examples that illustrate the four laws of thermodynamics;	
	13.b	investigate the process of heat transfer using calorimetry;	Interpretation of Data: all subcategories Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: Inferences and Results: Evaluating and Extending
	13.c	classify processes as exothermic or endothermic and represent energy changes that occur in chemical reactions using thermochemical equations or graphical analysis;	Interpretation of Data: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	13.d	perform calculations involving heat, mass, temperature change, and specific heat.	
	14		
	14.a	describe the characteristics of alpha, beta, and gamma radioactive decay processes in terms of balanced nuclear equations;	Interpretation of Data: all subcategories
	14.b	compare fission and fusion reactions	
	14.c	give examples of applications of nuclear phenomena such as nuclear stability, radiation therapy, diagnostic imaging, solar cells, and nuclear power.	

Texas Essential Knowledge and Skills (TEKS) for Physics (adopted 2017) Aligned to the ACT

Texas Essential Knowledge and Skills (TEKS) for Physics			ACT Science Reporting Categories and Skill Areas
Strand	Standard Number / Skill	Standard / Description	
(c) knowledge and skills	1		
	1.a	ask questions and define problems based on observations or information from text, phenomena, models, or investigations;	Interpretation of Data: all subcategories Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	1.b	apply scientific practices to plan and conduct descriptive, comparative, and experimental investigations, and use engineering practices to design solutions to problems;	Interpretation of Data: Locating and Understanding; Inferring and Translating Scientific Investigation: all subcategories
	1.c	use appropriate safety equipment and practices during laboratory, classroom, and field investigations as outlined in Texas Education Agency-approved safety standards;	Scientific Investigation: Locating and Comparing; Designing and Implementing (DI)
	1.d	use appropriate tools such as balances, ballistic carts or equivalent, batteries, computers, constant velocity cars, convex lenses, copper wire, discharge tubes with power supply (H, He, Ne, Ar), data acquisition probes and software, dynamics and force demonstration equipment, electrostatic generators, electrostatic kits, friction blocks, graph paper, graphing technology, hand-held visual spectrometers, inclined planes, iron filings, lab masses, laser pointers, magnets, magnetic compasses, metric rulers, motion detectors, multimeters (current, voltage, resistance), optics bench, optics kit, photogates, plane mirrors, prisms, protractors, pulleys, resistors, rope or string, scientific calculators, stopwatches, springs, spring scales, switches, tuning forks, wave generators, or other equipment and materials that will produce the same results;	Interpretation of Data: Locating and Understanding; Inferring and Translating Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	1.e	collect quantitative data using the International System of Units (SI) and qualitative data as evidence;	Interpretation of Data: all subcategories Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	1.f	organize quantitative and qualitative data using bar charts, line graphs, scatter plots, data tables, labeled diagrams, and conceptual mathematical relationships;	Interpretation of Data: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	1.g	develop and use models to represent phenomena, systems, processes, or solutions to engineering problems	Interpretation of Data: Locating and Understanding; Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: all subcategories

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Texas Essential Knowledge and Skills (TEKS) for Physics			ACT Science Reporting Categories and Skill Areas
Strand	Standard Number / Skill	Standard / Description	
	1.h	distinguish among scientific hypotheses, theories, and laws.	Evaluation of Models, Inferences, and Experimental Results: all subcategories
	2		
	2.a	identify advantages and limitations of models such as their size, scale, properties, and materials;	Interpretation of Data: Locating and Understanding; Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: all subcategories
	2.b	analyze data by identifying significant statistical features, patterns, sources of error, and limitations;	Interpretation of Data: Locating and Understanding; Inferring and Translating Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: Inferences and Results: Evaluating and Extending
	2.c	use mathematical calculations to assess quantitative relationships in data;	Interpretation of Data: Inferring and Translating; Extending and Reevaluating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results: Evaluating and Extending
	2.d	evaluate experimental and engineering designs.	Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: Inferences and Results: Evaluating and Extending
	3		
	3.a	develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories;	Evaluation of Models, Inferences, and Experimental Results: all subcategories
	3.b	communicate explanations and solutions individually and collaboratively in a variety of settings and formats;	Evaluation of Models, Inferences, and Experimental Results: all subcategories
	3.c	engage respectfully in scientific argumentation using applied scientific explanations and empirical evidence.	Evaluation of Models, Inferences, and Experimental Results: all subcategories
	4		
	4.a	analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student;	Interpretation of Data: all subcategories Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	4.b	relate the impact of past and current research on scientific thought and society, including research methodology, cost-benefit analysis, and contributions of diverse scientists as related to the content;	

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Texas Essential Knowledge and Skills (TEKS) for Physics			ACT Science Reporting Categories and Skill Areas
Strand	Standard Number / Skill	Standard / Description	
	4.c	research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers.	
	5		
	5.a	analyze different types of motion by generating and interpreting position versus time, velocity versus time, and acceleration versus time using hand graphing and real-time technology such as motion detectors, photogates, or digital applications;	Interpretation of Data: all subcategories Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	5.b	define scalar and vector quantities related to one- and two-dimensional motion and combine vectors using both graphical vector addition and the Pythagorean theorem;	
	5.c	describe and analyze motion in one dimension using equations with the concepts of distance, displacement, speed, velocity, frames of reference, and acceleration;	Interpretation of Data: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	5.d	describe and analyze acceleration in uniform circular and horizontal projectile motion in two dimensions using equations;	Interpretation of Data: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	5.e	explain and apply the concepts of equilibrium and inertia as represented by Newton's first law of motion using relevant real-world examples such as rockets, satellites, and automobile safety devices;	Interpretation of Data: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	5.f	calculate the effect of forces on objects, including tension, friction, normal, gravity, centripetal, and applied forces, using free body diagrams and the relationship between force and acceleration as represented by Newton's second law of motion;	
	5.g	illustrate and analyze the simultaneous forces between two objects as represented in Newton's third law of motion using free body diagrams and in an experimental design scenario;	Interpretation of Data: all subcategories Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	5.h	describe and calculate, using scientific notation, how the magnitude of force between two objects depends on their masses and the distance between their centers, and predict the effects on objects in linear and orbiting systems using Newton's law of universal gravitation.	Interpretation of Data: Inferring and Translating

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Texas Essential Knowledge and Skills (TEKS) for Physics			ACT Science Reporting Categories and Skill Areas
Strand	Standard Number / Skill	Standard / Description	
	6		
	6.a	use scientific notation and predict how the magnitude of the electric force between two objects depends on their charges and the distance between their centers using Coulomb's law;	Interpretation of Data: Inferring and Translating
	6.b	identify and describe examples of electric and magnetic forces and fields in everyday life such as generators, motors, and transformers;	
	6.c	investigate and describe conservation of charge during the processes of induction, conduction, and polarization using different materials such as electroscopes, balloons, rods, fur, silk, and Van de Graaf generators;	Interpretation of Data: all subcategories Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: Inferences and Results: Evaluating and Extending
	6.d	analyze, design, and construct series and parallel circuits using schematics and materials such as switches, wires, resistors, lightbulbs, batteries, voltmeters, and ammeters;	Interpretation of Data: all subcategories Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: Inferences and Results: Evaluating and Extending
	6.e	calculate current through, potential difference across, resistance of, and power used by electric circuit elements connected in both series and parallel circuits using Ohm's law.	
	7		
	7.a	calculate and explain work and power in one dimension and identify when work is and is not being done by or on a system;	
	7.b	investigate and calculate mechanical, kinetic, and potential energy of a system;	Interpretation of Data: all subcategories Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: Inferences and Results: Evaluating and Extending
	7.c	apply the concept of conservation of energy using the work-energy theorem, energy diagrams, and energy transformation equations, including transformations between kinetic, potential, and thermal energy;	Interpretation of Data: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	7.d	calculate and describe the impulse and momentum of objects in physical systems such as automobile safety features, athletics, and rockets;	
	7.e	analyze the conservation of momentum qualitatively in inelastic and elastic collisions in one dimension using models, diagrams, and simulations.	Interpretation of Data: all subcategories Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories

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Texas Essential Knowledge and Skills (TEKS) for Physics			ACT Science Reporting Categories and Skill Areas
Strand	Standard Number / Skill	Standard / Description	
	8		
	8.a	examine and describe simple harmonic motion such as masses on springs and pendulums and wave energy propagation in various types of media such as surface waves on a body of water and pulses in ropes;	
	8.b	compare the characteristics of transverse and longitudinal waves, including electromagnetic and sound waves;	
	8.c	investigate and analyze characteristics of waves, including velocity, frequency, amplitude, and wavelength, and calculate using the relationships between wave speed, frequency, and wavelength;	Interpretation of Data: all subcategories Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	8.d	investigate behaviors of waves, including reflection, refraction, diffraction, interference, standing wave, the Doppler effect and polarization and superposition;	Interpretation of Data: all subcategories Scientific Investigation: all subcategories
	8.e	compare the different applications of the electromagnetic spectrum, including radio telescopes, microwaves, and x-rays;	
	8.f	investigate the emission spectra produced by various atoms and explain the relationship to the electromagnetic spectrum;	Interpretation of Data: all subcategories Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: all subcategories
	8.g	describe and predict image formation as a consequence of reflection from a plane mirror and refraction through a thin convex lens.	
	9		
	9.a	describe the photoelectric effect and emission spectra produced by various atoms and how both are explained by the photon model for light;	
	9.b	investigate Malus's Law and describe examples of applications of wave polarization, including 3-D movie glasses and LCD computer screens;	Interpretation of Data: all subcategories Scientific Investigation: all subcategories Evaluation of Models, Inferences, and Experimental Results: Inferences and Results: Evaluating and Extending
	9.c	compare and explain how superposition of quantum states is related to the wave-particle duality nature of light;	
	9.d	give examples of applications of quantum phenomena, including the Heisenberg uncertainty principle, quantum computing, and cybersecurity	

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